THE YORK POTASH HARBOUR FACILITIES ORDER 201X

Consultation Report – Appendices 10 to 21

Regulation Number:	**Section 37(3)(c) Planning Act 2008**
Document Ref:	**6.1**
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YORKPOTASH
A Sirius Minerals Project

Nathaniel Lichfield & Partners
Planning. Design. Economics.

Harbour Facilities Development Consent Order

Consultation Report
Appendices 10 to 21
Section 37(3)(c) Planning Act 2008

Doc. No: 6.1
York Potash Limited

19 December 2014

50303/HS/Con/A10-21

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Appendices

(Appendices marked in **bold** are included within this volume)

Project-wide consultation (non-statutory)

Appendix 1 Full Account of Early Consultation on the Project (2011 to 2013)

Appendix 2 YPL Update newsletters

Appendix 3 Full account of consultation during 2014

Appendix 4 Consultation Benchmarking Document for the 2014 public consultation on the mine, MTS and MHF

Appendix 5 The York Potash Project Explained brochure [June 2014]

Appendix 6 Schedule of comments received during the public consultation on the mine, MTS and MHF (June to September 2014)

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Harbour DCO statutory consultation

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Appendix 15 Plan of the Authorities consulted under Section 43

Appendix 16 Section 46 letter sent to the Planning Inspectorate

Appendix 17 Final Statement of Community Consultation

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Appendix 20 Public consultation notice and locations in local areas where this was displayed

Appendix 21 Photographs of public exhibitions

Appendix 10

Harbour facilities EIA Scoping Opinion list of statutory consultees

APPENDIX 1

LIST OF BODIES FORMALLY CONSULTED DURING THE SCOPING EXERCISE

CONSULTEE	ORGANISATION
SCHEDULE 1	
The Health and Safety Executive	Health and Safety Executive
The National Health Service Commissioning Board and the relevant clinical commissioning group	NHS England
	NHS South Tees Clinical Commissioning Group
Natural England	Natural England
The Historic Buildings and Monuments Commission for England	English Heritage
The Relevant Fire and Rescue Authority	Cleveland Fire and Rescue Service
The Relevant Police and Crime Commissioner	Police & Crime Commissioner for Cleveland
The Relevant Parish Council(s) or Relevant Community Council	Billingham Town Council
The Environment Agency	The Environment Agency
The Joint Nature Conservation Committee	Joint Nature Conservation Committee
The Maritime and Coastguard Agency	The Maritime & Coastguard Agency
The Marine Management Organisation	Marine Management Organisation (MMO)
The Highways Agency	The Highways Agency - regional contact
The Relevant Highways Authority	Redcar & Cleveland Borough Council Hartlepool Borough Council Stockton-on -Tees Borough Council
The Coal Authority	The Coal Authority
Trinity House	Trinity House
Public Health England, an executive agency to the Department of Health	Public Health England
The Crown Estate Commissioners	The Crown Estate
RELEVANT STATUTORY UNDERTAKERS	
Health Bodies (s.16 of the Acquisition of Land Act (ALA) 1981)	
The relevant clinical commissioning board	NHS England
The relevant clinical commissioning group	NHS South Tees Clinical Commissioning Group
Local Area Team	Durham, Darlington And Tees Area

	Team
Ambulance Trusts	North East Ambulance Service NHS
Relevant Statutory Undertakers (s.8 ALA 1981)	
Railways	Highways Agency Historical Railways Estate
Dock	PD Teesport
Universal Service Provider	Royal Mail Group
Relevant Environment Agency	Environment Agency
Water and Sewage Undertakers	Hartlepool Water (Anglian Water)
The relevant public gas transporters	British Gas Pipelines Limited Energetics Gas Limited ES Pipelines Ltd ESP Connections Ltd ESP Networks Ltd ESP Pipelines Ltd Fulcrum Pipelines Limited GTC Pipelines Limited Independent Pipelines Limited LNG Portable Pipeline Services Limited National Grid Gas Plc Quadrant Pipelines Limited SSE Pipelines Ltd The Gas Transportation Company Limited Utility Grid Installations Limited Northern Gas Networks Limited
The relevant electricity licence holder with CPO Powers (electricity distributors)	Energetics Electricity Limited ESP Electricity Limited Independent Power Networks Limited The Electricity Network Company Limited Northern Powergrid (Northeast) Limited
The relevant electricity licence holder with CPO Powers (electricity transmitters)	National Grid Electricity Transmission Plc
SECTION 42 Consultees	
Marine Management Organisation	
LOCAL AUTHORITIES (SECTION 43)	
Redcar & Cleveland Borough Council Hartlepool Borough Council Stockton-on -Tees Borough Council Middlesbrough Council Durham County Council Darlington Borough Council North Yorkshire County Council	

Hambleton District Council Scarborough Borough Council North York Moors National Park Authority
NON-PRESCRIBED CONSULTATION BODIES
Royal National Lifeboat Institute

Appendix 11

List of Section 42 consultees

s42 (Part 1 Parties)

Consultee body	*DCO Schedule Entry*	*Has address been verified (how?) or yet to be verified.*	*Contact title (Mr, Mrs etc, enter nothing where we do not have a name)*	*Contact First Name or Initial*	*Contact Surname*	*Contact Role*	*Contact Address Line 1*	*Contact Address Line 2*	*Contact Address Line 3*	*Contact Address Line 4*	*Contact Address City*	*Contact Address County*	*Contact Address Postcode*
Citibank N.A	Mortgagee	Companies House	The Secretary		Citibank N.A		33 Canada Square				London		E14 5LB
Deutsche Trustee Company Limited	Mortgagee and Part 2	Companies House	The Secretary		Deutsche Trustee Company Limited		Winchester House	1 Great Winchester Street			London		EC2N 2DB
ICI Chemicals & Polymers Limited	Part 1 and Part 2	Companies House, LIQ	The Secretary		ICI Chemicals & Polymers Limited		26th Floor	Portland House	Bressenden Place		London		SW1E 5BG
Ineos Chlorvinyls Limited	Part 1 and Part 2	Companies House	The Secretary		Ineos Chlorvinyls Limited		PO Box 9	Runcorn Site HQ	South Parade		Runcorn		WA7 4JE
Krungthai Bank pcl	Mortgagee/Floating Charge	LIQ, Website	The Secretary		Krungthai Bank pcl		35 Sukhumvit Road	Klong Toey Nua Subdistrict	Wattana District		Bangkok 10110	Thailand	
Langtree North East Limited	Mortgagee	Companies House	The Secretary		Langtree North East Limited		Centrix House	Crow Lane East			Newton Le Willows		WA12 9UY
M & G Solid Fuels LLP	Part 1 and Part 2	Companies House	The Secretary		M & G Solid Fuels LLP		Sandgate Industrial Estate	Mainsforth Terrace			Hartlepool		TS25 1TZ
Network Rail Infrastructure Limited	Part 1 and Part 2	Companies House	The Secretary		Network Rail Infrastructure Limited		Kings Place	90 York Way			London		N1 9AG
Northumbrian Water Limited	Part 1 and Part 2	Companies House	The Secretary		Northumbrian Water Limited		Northumbria House	Abbey Road			Durham		DH1 5FJ
One Northeast	Mortgagee	Companies House	The Secretary		One Northeast		Stella House	Goldcrest Way			Newcastle Upon Tyne		NE15 8NY
Onsite North East General Partner Limited	Part 1 and Part 2	Companies House	The Secretary		Onsite North East General Partner Limited		Centrix House	Crow Lane East			Newton Le Willows		WA12 9UY
Onsite North East Nominees Limited	Part 1 and Part 2	Companies House	The Secretary		Onsite North East Nominees Limited		Centrix House	Crow Lane East			Newton Le Willows		WA12 9UY
PD Teesport Limited	Part 1 and Part 2	Companies House	The Secretary		PD Teesport Limited		17-27 Queens Square				Middlesbrough		TS2 1AH
Redcar Bulk Terminal Limited	Part 1 and Part 2	Companies House	The Secretary		Redcar Bulk Terminal Limited		Steel House	Trunk Road			Redcar		TS10 5QW
RWE DEA UK SNS Limited	Part 1 and Part 2	Companies House	The Secretary		RWE DEA UK SNS Limited		90 High Holborn				London		WC1V 6LJ
Sahaviriya Steel Industries UK Limited	Part 1 and Part 2	Companies House	The Secretary		Sahaviriya Steel Industries UK Limited		Steel House	Trunk Road			Redcar		TS10 5QW
Seal Sands Gas Transportation Limited	Part 1	Companies House	The Secretary		Seal Sands Gas Transportation Limited		P X House	Westpoint Road	Thornaby		Stockton-on-Tees		TS17 6BF
Sembcorp Utilities (UK) Limited	Part 1	Companies House	The Secretary		Sembcorp Utilities (UK) Limited		Sembcorp UK Headquarters	Wilton International			Middlesbrough		TS90 8WS
Siam Commercial Bank pcl	Mortgagee/Floating Charge	LIQ, Website	The Secretary		Siam Commercial Bank pcl		9 Ratchadapisek Road	Jatujak			Bangkok 10900	Thailand	
Sterling Resources (UK) plc	Part 1 and Part 2	Companies House	The Secretary		Sterling Resources (UK) plc		Harbour Court	Compass Road			Portsmouth		PO6 4ST
Tata Steel UK Limited	Part 1 and Part 2	Companies House	The Secretary		Tata Steel UK Limited		30 Millbank				London		SW1P 4WY
The Council of the Borough of Redcar and Cleveland	Part 1 and Part 2	Official Website	The Chief Executive		The Council of the Borough of Redcar and Cleveland		Redcar & Cleveland House	Kirkleatham Street			Redcar		TS10 1RT
The Queen`s Most Excellent Majesty in Right of Her Crown	Part 1 and Part 2	Contact and Official Website	The Secretary		The Queen`s Most Excellent Majesty in Right of Her Crown		c/o The Crown Estate	16 New Burlington Place			London		W1S 2HX
The Royal Bank of Scotland plc	Mortgagee and Part 2	Companies House	The Secretary		The Royal Bank of Scotland plc		38 St. Andrew Square				Edinburgh		EH2 2AD
Tisco Financial Group pcl	Mortgagee/Floating Charge	LIQ, Website	The Secretary		Tisco Financial Group pcl		Tisco Tower	48/49 North Sathom Road	Bangrak		Bangkok 10500	Thailand	
Homes and Communities Agency	Future part 1, current part 2 (In process of acquiring Onsite Land)	Webpage, (registered address), RM	Head of Legal Services		Homes and Communities Agency		Arpley House	110 Birchwood Boulevard	Birchwood		Warrington		WA3 7QH

s42 (Part 2 Parties)

Consultee body	*DCO Schedule Entry*	*Has address been verified (how?) or yet to be verified.*	*Contact title (Mr, Mrs etc, enter nothing where we do not have a name)*	*Contact First Name or Initial*	*Contact Surname*	*Contact Role*	*Contact Address Line 1*	*Contact Address Line 2*	*Contact Address Line 3*	*Contact Address Line 4*	*Contact Address City*	*Contact Address County*	*Contact Address Postcode*
Amoco (U.K.) Exploration Company, LLC	Part 2	Companies House	The Secretary		Amoco (U.K.) Exploration Company, LLC		1 Wellheads Avenue	Dyce			Aberdeen		AB21 7PB
Asda Stores Limited	Part 2	Companies House	The Secretary		Asda Stores Limited		Asda House	South Bank	Great Wilson Street		Leeds		LS11 5AD
BASF plc	Part 2	Companies House	The Secretary		BASF plc		Earl Road	Cheadle Hulme			Cheadle		SK8 6QG
Biffa Polymers Limited	Part 2	Companies House	The Secretary		Biffa Polymers Limited		Third Floor	The Gatehouse	Gatehouse Way		Aylesbury		HP19 8DB
BP Chemicals Limited	Part 2	Companies House	The Secretary		BP Chemicals Limited		Chertsey Road				Sunbury On Thames		TW16 7BP
Christopher Mark Briggs	Part 2	[redacted]	Mr	[redacted]	[redacted]		[redacted]	[redacted]			[redacted]		[redacted]
Ian Brown (as liquidator to Enron Teesside Operations Limited)	Part 2	Companies House	Mr	Ian	Brown		c/o Deloitte LLP	1 City Square			Leeds		LS1 2AL
BT Group plc	Part 2	Companies House	The Secretary		BT Group plc		BT Centre	81 Newgate Street			London		EC1A 7AJ
Nicholas James Dargan (as liquidator to Enron Teesside Operations Limited)	Part 2	Companies House	Mr	Nicholas James	Dargan		c/o Deloitte LLP	1 City Square			Leeds		LS1 2AL
Dorman Long Technology Limited	Part 2	Companies House	The Secretary		Dorman Long Technology Limited		The Charles Parker Building	Midland Road	Higham Ferrers		Rushden		NN10 8DN
Dow (Wilton) Limited	Part 2	Companies House	The Secretary		Dow (Wilton) Limited		Diamond House	Lotus Park	Kingsbury Crescent		Staines		TW18 3AG
Du Pont (UK) Limited	Part 2	Companies House	The Secretary		Du Pont (UK) Limited		Wedgewood Way				Stevenage		SG1 4QN
Egdon Resources UK Limited	Part 2	Companies House	The Secretary		Egdon Resources UK Limited		The Wheat House	98 High Street	Odiham		Hook		RG29 1LP
Ener.G Natural Power Limited	Part 2	Companies House	The Secretary		Ener.G Natural Power Limited		Ener G House	Daniel Adamson Road			Salford		M50 1DT
Enron Gas & Petrochemicals Trading Limited	Part 2	Companies House	The Secretary		Enron Gas & Petrochemicals Trading Limited		7 More London Riverside				London		SE1 2RT
Ensus UK Limited	Part 2	Companies House	The Secretary		Ensus UK Limited		The Granary	17A High Street			Yarm		TS15 9BW
GDF Suez Teesside Limited	Part 2	Companies House	The Secretary		GDF Suez Teesside Limited		Senator House	85 Queen Victoria Street			London		EC4V 4DP
Gordon Smythe Goldie (as liquidator to Wilton Waste Treatment Limited)	Part 2	Companies House	Mr	Gordon Smythe	Goldie		c/o Tait Walker	Bulman House	Regent Centre	Gosforth	Newcastle Upon Tyne		NE3 3LS
Grainco Limited	Part 2	Companies House	The Secretary		Grainco Limited		Tyne Dock				South Shields		NE34 9PL
Growhow UK Limited	Part 2	Companies House	The Secretary		Growhow UK Limited		Growhow Offices	Ince			Chester		CH2 4LB
Hertel (UK) Limited	Part 2	Companies House	The Secretary		Hertel (UK) Limited		1 The Halyard	Hudson Quay	Middlehaven		Middlesbrough		TS3 6RT
Huntsman Polyurethanes (UK) Limited	Part 2	Companies House	The Secretary		Huntsman Polyurethanes (UK) Limited		Hanzard Drive	Wynyard Business Park			Billingham		TS22 5FD
Imperial Chemical Industries Limited	Part 2	Companies House	The Secretary		Imperial Chemical Industries Limited		26th Floor	Portland House	Bressenden Place		London		SW1E 5BH
Allan David Kelly (as liquidator to Wilton Waste Treatment Limited)	Part 2	Companies House	Mr	Allan David	Kelly		c/o Tait Walker	Bulman House	Regent Centre	Gosforth	Newcastle Upon Tyne		NE3 3LS
National Grid Gas plc	Part 2	Companies House	The Secretary		National Grid Gas plc		1-3 Strand				London		WC2N 5EH
North Tees Waste Management Limited	Part 2	Companies House	The Secretary		North Tees Waste Management Limited		The Cube	Barrack Road			Newcastle Upon Tyne		NE4 6DB
Northern Electric Distribution Limited	Part 2	Companies House	The Secretary		Northern Electric Distribution Limited		Lloyds Court	78 Grey street			Newcastle Upon Tyne		NE1 6AF
Northern Gas Networks Limited	Part 2	Companies House	The Secretary		Northern Gas Networks Limited		1100 Century Way	Thorpe Business Park			Leeds		LS15 8TU
PD Ports Limited	Part 2	Companies House	The Secretary		PD Ports Limited		17-27 Queens Square				Middlesbrough		TS2 1AH
Sabic UK Petrochemicals Limited	Part 2	Companies House	The Secretary		Sabic UK Petrochemicals Limited		The Wilton Centre	Wilton			Redcar		TS10 4RF
Sita Sembcorp UK Limited	Part 2	Companies House	The Secretary		Sita Sembcorp UK Limited		Sita House	13-35 Grenfell Road			Maidenhead		SL6 1ES
The BOC Group Limited	Part 2	Companies House	The Secretary		The BOC Group Limited		The Priestly Centre	10 Priestly Road	Surrey Research Park		Guildford		GU2 7XY
UK Wood Recycling Limited	Part 2	Companies House	The Secretary		UK Wood Recycling Limited		Lumm Farm	Little Moss	Droylsden		Manchester		M43 7LB
Uniqema Limited	Part 2	Companies House	The Secretary		Uniqema Limited		Cowick Hall	Snaith			Goole		DN14 9AA
Anthony Charles Philip Wharton	Part 2	[redacted]	Mr	[redacted]	[redacted]		[redacted]	[redacted]	[redacted]		[redacted]		[redacted]
Yara UK Limited	Part 2	Companies House	The Secretary		Yara UK Limited		Harvest House	Origin Way	Europarc		Grimsby		DN37 9TZ
York Potash Processing and Ports Limited	Part 2	Companies House	The Secretary		York Potash Processing and Ports Limited		3rd Floor	Greener House	66-68 Haymarket		London		SW1Y 4RF

s42 (Statutory Consultees)

Consultee body	*DCO Schedule Entry*	*Has address been verified (how?) or yet to be verified.*	*Contact title (Mr, Mrs etc, enter nothing where we do not have a name)*	*Contact First Name or Initial*	*Contact Surname*	*Contact Role*	*Contact Address Line 1*	*Contact Address Line 2*	*Contact Address Line 3*	*Contact Address Line 4*	*Contact Address City*	*Contact Address County*	*Contact Address Postcode*
AWE plc	Statutory Undertaker	Companies House	The Secretary				Atomic Weapons Establishment	Aldermaston			Reading		RG7 4PR
BOC Limited (A Member of the Linde Group)	Statutory Undertaker	Companies House	The Secretary				The Priestley Centre	10 Priestley Road	The Surrey Research Park		Guildford		GU2 7XY
BP Midstream Pipelines	Statutory Undertaker	Companies House	The Secretary				1 St James's Square				London		SW1Y 4PD
British Gas Pipelines Limited	Statutory Undertaker	Companies House	The Secretary				Millstream	Maidenhead Road			Windsor		SL4 5GD
British Pipeline Agency Limited	Statutory Undertaker	Companies House	The Secretary				5-7 Alexandra Road				Hemel Hempstead		HP2 5BS
British Telecommunications Public Limited Company	Statutory Undertaker	Companies House	The Secretary				81 Newgate Street				London		EC1A 7AJ
C.A. Telecom UK Limited	Statutory Undertaker	Companies House	The Secretary				Dockers Field Farm	Pean Hill			Whitstable		CT5 3BJ
Centrica Energy	Statutory Undertaker	Companies House	The Secretary				Millstream Maidenhead Road				Windsor		SL4 5GD
Centrica Storage Limited	Statutory Undertaker	Companies House	The Secretary				Venture House	42-54 London Road			Staines		TW18 4HF
Channel Cable Limited	Statutory Undertaker	Companies House	The Secretary				Kings Parade	Lower Coombe Street			Croydon		CR0 1AA
CityFibre Holdings Limited	Statutory Undertaker	Companies House	The Secretary				53 Chandos Place				London		WC2N 4HS
ConocoPhillips (UK) Limited	Statutory Undertaker	Companies House	The Secretary				Portman House	2 Portman Street			London		W1H 6DU
Coryton Energy Co Limited (Gas Pipeline)	Statutory Undertaker	Companies House	The Secretary				Coryton Power Station	The Manorway			Stanford-Le-Hope		SS17 9GN
East West Cable One Limited	Statutory Undertaker	Companies House	The Secretary				2nd Floor	Craan Ard Business Centre	Fethard Road		Clonmel		
Easynet Global Services Limited	Statutory Undertaker	Companies House	The Secretary				St James House	Oldbury			Bracknell		RG12 8TH
EirGrid	Statutory Undertaker	Companies House	The Secretary				The Oval	160 Shelbourne Road	Ballsbridge		Dublin 4		
Electricity North West Limited	Statutory Undertaker	Companies House	The Secretary				304 Bridgewater Place	Birchwood Park			Warrington		WA3 6XG
Energetics Electricity Limited	Statutory Undertaker	Companies House	The Secretary				International House	Stanley Boulevard	Hamilton International Technology Park	Blantyre	Glasgow		G72 0BN
Envoy Asset Management Limited	Statutory Undertaker	Companies House	The Secretary				c/o GTC	Energy House	Woolpit Business Park	Woolpit	Bury St Edmonds		IP30 9UP
E-on UK plc (Gas Pipelines Only)	Statutory Undertaker	Companies House	The Secretary				Westwood Way	Westwood Business Park			Coventry		CV4 8LG
ESP Connections Limited	Statutory Undertaker	Companies House	The Secretary				Hazeldean	Station Road			Leatherhead		KT22 7AA
ESP Electricity Limited	Statutory Undertaker	Companies House	The Secretary				Hazeldean	Station Road			Leatherhead		KT22 7AA
ESP Networks Limited	Statutory Undertaker	Companies House	The Secretary				Hazeldean	Station Road			Leatherhead		KT22 7AA
ESP Pipelines Limited	Statutory Undertaker	Companies House	The Secretary				Hazeldean	Station Road			Leatherhead		KT22 7AA
ESP Utilities Group	Statutory Undertaker	Companies House	The Secretary				Hazeldean	Station Road			Leatherhead		KT22 7AA
Esso Petroleum Company Limited	Statutory Undertaker	Companies House	The Secretary				ExxonMobil House	Ermyn Way			Leatherhead		KT22 8UX
FibreSpeed Limited	Statutory Undertaker	Companies House	The Secretary				Harmsworth House	13-15 Bouverie Street			London		EC4Y 8DP
Fulcrum Pipelines Limited	Statutory Undertaker	Companies House	The Secretary				5th Floor	6 St. Andrew Street			London		EC4A 3AE
Gamma	Statutory Undertaker	Companies House	The Secretary				5 Fleet Place				London		EC4M 7RD
Geo Networks Limited	Statutory Undertaker	Companies House	The Secretary				4th Floor	Harmsworth House	13-15 Bouverie Street		London		EC4Y 8DP
Government Pipelines & Storage System	Statutory Undertaker	Companies House	The Secretary				The Oil and Pipelines Agency	York House	23 Kingsway		London		WC2B 6UJ
GTC Pipelines Limited	Statutory Undertaker	Companies House	The Secretary				Energy House	Woolpit Business Park	Woolpit		Bury St Edmonds		IP30 9UP
Humbly Grove Energy	Statutory Undertaker	Companies House	The Secretary				Grand Buildings	1-3 Strand			London		WC2N 5EJ
IGas Energy	Statutory Undertaker	Companies House	The Secretary				7 Down Street				London		W1J 7AJ
Independent Pipelines Limited	Statutory Undertaker	Companies House	The Secretary				c/o Company Secretary	Energy House	Woolpit Business Park	Woolpit	Bury St Edmonds		IP30 9UP
Independent Power Networks Limited	Statutory Undertaker	Companies House	The Secretary				c/o Company Secretary	Energy House	Woolpit Business Park	Woolpit	Bury St Edmonds		IP30 9UP
Ineos Enterprises Limited	Statutory Undertaker	Companies House	The Secretary				Runcorn Site HQ	South Parade			Runcorn		WA7 4JE
INEOS Manufacturing (Scotland and TSEP)	Statutory Undertaker	Companies House	The Secretary				Runcorn Site HQ	South Parade			Runcorn		WA7 4JE
Instalcom Limited	Statutory Undertaker	Companies House	The Secretary				202 Northolt Road				Harrow		HA2 0EX
Interoute Communications Limited	Statutory Undertaker	Companies House	The Secretary				Wallbrook Building	195 Marsh Wall			London		E14 9SG
KCOM Group plc	Statutory Undertaker	Companies House	The Secretary				Telephone House	35-37 Carr Lane			Hull		HU1 3RE
Kier MG Limited (Fujitsu)	Statutory Undertaker	Companies House	The Secretary				Tempsford Hall				Sandy		SG19 2BD
Lark Energy	Statutory Undertaker	Companies House	The Secretary				Larkfleet House	Falcon Way	Southfield Business Park		Bourne		PE10 0FF
LNG Portable Pipeline Services Limited	Statutory Undertaker	Companies House	The Secretary				Athena House	Athena Drive	Tachbrook		Warwick		CV34 6RL
Mainline Pipelines Limited	Statutory Undertaker	Companies House	The Secretary				7th Floor	11 Old Jewry			London		EC2R 8DU
Manchester Jetline Limited	Statutory Undertaker	Companies House	The Secretary				3 Water Lane				Richmond		TW9 1TJ
Marchwood Power Limited (Gas Pipeline)	Statutory Undertaker	Companies House	The Secretary				Oceanic Way	Marchwood Industrial Park	Marchwood		Southampton		SO40 4BD
McNicholas [KPN Networks]	Statutory Undertaker	Companies House	The Secretary				Lismirrane Industrial Park	Elstree Road	Elstree		Borehamwood		WD6 3EA
McNicholas [TATA networks]	Statutory Undertaker	Companies House	The Secretary				Lismirrane Industrial Park	Elstree Road	Elstree		Borehamwood		WD6 3EA
National Grid Electricity Transmission plc	Statutory Undertaker	Companies House	The Secretary				1-3 The Strand				London		WC2N 5EH
National Grid plc	Statutory Undertaker	Companies House	The Secretary				1-3 The Strand				London		WC2N 5EH
Northumbrian Water Limited	Statutory Undertaker	Companies House	The Secretary				Northumbria House	Abbey Road			Durham		DH1 5FJ
Oikos Storage Limited	Statutory Undertaker	Companies House	The Secretary				Hole Haven Wharf	Haven Road			Canvey Island		SS8 0NR
Perenco UK Limited (Purbeck Southampton Pipeline)	Statutory Undertaker	Companies House	The Secretary				Anchor House	15-19 Britten Street			London		SW3 3TY
Phillips 66	Statutory Undertaker	Companies House	The Secretary				7th Floor	200-202 Aldersgate Street			London		EC1A 4HD
Premier Transmission Limited (SNIP)	Statutory Undertaker	Companies House	The Secretary				First Floor	The Arena Building	85 Ormeau Road		Belfast		BT7 1SH
Quadrant Pipelines Limited	Statutory Undertaker	Companies House	The Secretary				c/o Company Secretary	Energy House	Woolpit Business Park	Woolpit	Bury St Edmonds		IP30 9UP
RWE Npower (Little Barford and South Haven)	Statutory Undertaker	Companies House	The Secretary				Windmill Hill Business Park	Whitehill Way			Swindon		SN5 6PB
Scottish Power Generation	Statutory Undertaker	Companies House	The Secretary				1 Atlantic Quay	Robertson Street			Glasgow		G2 8SP
Sea Fibre Networks	Statutory Undertaker	Companies House	The Secretary				26 Fitzwilliam Street Upper				Dublin 2		
Seabank Power Limited	Statutory Undertaker	Companies House	The Secretary				Severn Road	Hallen			Bristol		BS10 7SP
Severn Gas Transportation Limited	Statutory Undertaker	Companies House	The Secretary				16 Axis Court	Mallard Way	Swansea Vale		Swansea		SA7 0AJ
Shell Pipelines	Statutory Undertaker	Companies House	The Secretary				Shell Centre				London		SE1 7NA
SP Distribution Plc	Statutory Undertaker	Companies House	The Secretary				1 Atlantic Quay	Robertson Street			Glasgow		G2 8SP
SP Manweb Plc	Statutory Undertaker	Companies House	The Secretary				3 Prenton Way				Prenton		CH43 3ET
Spiecapag UK Limited (Carrington)	Statutory Undertaker	Companies House	The Secretary				46 West Bar Street				Banbury		OX16 9RZ
SSE plc	Statutory Undertaker	Companies House	The Secretary				Inveralmond House	200 Dunkeld Road			Perth		PH1 3AQ

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Telent on behalf of Teliasonera	Statutory Undertaker	Companies House	The Secretary				Crompton Close				Basildon		SS14 3BA
The Electricity Network Company Limited	Statutory Undertaker	Companies House	The Secretary				Energy House	Woolpit Business Park	Woolpit		Bury St Edmonds		IP30 9UP
The Gas Transportation Company Limited	Statutory Undertaker	Companies House	The Secretary				The Energy Centre	Admiral Park			St Peter Port		GY1 3TB
Total Gas and Power Limited (Finaline, Colnbrook & Colwick Pipelines)	Statutory Undertaker	Companies House	The Secretary				10 Upper Bank Street	Canary Wharf			London		E14 5BF
TrafficMaster Limited	Statutory Undertaker	Companies House	The Secretary				Martell House	University Way	Cranfield		Bedford		MK43 0TR
Transmission Capital Services Limited	Statutory Undertaker	Companies House	The Secretary				Two London Bridge				London		SE1 9RA
UK Power Networks (Operations) Limited	Statutory Undertaker	Companies House	The Secretary				Newington House	237 Southwark Bridge Road			London		SE1 6NP
Utility Grid Installations Limited	Statutory Undertaker	Companies House	The Secretary				Energy House	Woolpit Business Park	Woolpit		Bury St Edmonds		IP30 9UP
Verizon UK Limited	Statutory Undertaker	Companies House	The Secretary				Reading International Business Park	Basingstoke Road			Reading		RG2 6DA
Virgin Media Limited	Statutory Undertaker	Companies House	The Secretary				10-14 Bartley Wood Business Park	Bartley Way			Hook		RG27 9UP
Vodafone Limited	Statutory Undertaker	Companies House	The Secretary				Vodafone House	The Connection			Newbury		RG14 2FN
Vtesse Networks Limited	Statutory Undertaker	Companies House	The Secretary				John Tate Road	Foxholes Business Park			Hertford		SG13 7DT
Wales and West Utilities Limited	Statutory Undertaker	Companies House	The Secretary				Wales & West House	Spooner Close	Coedkernew		Newport		NP10 8FZ
Western Power Distribution (South Wales) plc	Statutory Undertaker	Companies House	The Secretary				Avonbank	Feeder Road			Bristol		BS2 OTB
Wingas Storage UK Limited	Statutory Undertaker	Companies House	The Secretary				Building 3	Chiswick Business Park	556 Chiswick High Road	Chiswick	London		W4 5YA
3 Utilities Companies we only had partial hits for													
Colt	Statutory Undertaker	Companies House	The Secretary				Beaufort House	15 St Botolph Street			London		EC3A 7QN
ESSAR	Statutory Undertaker	Companies House	The Secretary				2nd Floor	Lansdowne House	57 Berkeley Square		London		W1J 6ER
NPower CHP Pipelines	Statutory Undertaker	Companies House	The Secretary				Windmill Hill Business Park	Whitehill Way			Swindon	Wiltshire	SN5 6PB

Salutation	Title	First Name	Surname	Company	Position	Address 1	Address 2	Town	Postcode	Telephone	Email
As per PA 2008 Regs and Guidance											
s.43 Local Authorities											
				Redcar and Cleveland Borough Council	Planning Department	Redcar & Cleveland House	Kirkleatham Street	Redcar	TS10 1RT	01642 774 774	planning_admin@redcar-cleveland.gov.uk
Ms Horne	Ms	Janet	Horne	Redcar and Cleveland Borough Council	Principal Planning Officer	Redcar & Cleveland House	Kirkleatham Street	Redcar	TS10 1RT	01287 612340	Janet.Horne@redcar-cleveland.gov.uk
				Hartlepool Borough Council	Development Control	Civic Centre	Victoria Road	Hartlepool	TS24 8AY	01429 266522	developmentcontrol@hartlepool.gov.uk
				Stockton-on-Tees Borough Council	Development Services	Municipal Buildings	Church Road	Stockton-on-Tees	TS18 1LD	01642 526022	developmentservices@stockton.gov.uk
Ms Atkinson	Ms	Elaine	Atkinson	Stockton-on-Tees Borough Council	Senior Planning Officer	Municipal Buildings	Church Road	Stockton-on-Tees	TS18 1LD	01642 526062	Elaine.Atkinson@stockton.gov.uk
				Middlesbrough Council	Development Control	Ground Floor, Civic Centre	PO Box 504	Middlesbrough	TS1 9FY	01642 729377	developmentcontrol@middlesbrough.gov.uk
				Darlington Borough Council	Planning Department	Town Hall	Darlington		DL1 5QT	01325 388799	planning.enquiries@darlington.gov.uk
				Durham County Council	Planning - Strategic	County Hall	Durham	County Durham	DH1 5UL	03000 261397	dmstrategic@durham.gov.uk
				Durham County Council	Planning Development Central/East	PO Box 616	Durham		DH1 9HY	03000 262830	dmcentraleast@durham.gov.uk
				Durham County Council	Planning Development North	PO Box 255	Chester-le-Street		DH3 9EA	03000 264891	dmnorth@durham.gov.uk
				Durham County Council	Planning Development South/West	PO Box 114	Spennymoor		DL16 9BW	03000 261060	dmsouthwest@durham.gov.uk
				North Yorkshire County Council	Planning Department	County Hall	Northallerton	North Yorkshire	DL7 8LD	0845 241 1307	planning.control@northyorks.gov.uk
Ms Perkin	Ms	Vicky	Perkin	North Yorkshire County Council	Planning Services	County Hall	Northallerton	North Yorkshire	DL7 8LD	01609 533323	vicky.perkin@northyorks.gov.uk
Mr Walker	Mr	David	Walker	Scarborough Borough Council	Development Control	Town Hall	St Nicholas Street	Scarborough	YO11 2HG	01723 232323	planning.services@scarborough.gov.uk
Mr Read	Mr	Nick	Read	Scarborough Borough Council	Area Planning Manager	Town Hall	St Nicholas Street	Scarborough	YO11 2HG	01723 232483	nick.read@scarborough.gov.uk
Sir/Madam				Scarborough Borough Council	Planning Department	Town Hall	St Nicholas Street	Scarborough	YO11 2HG	01723 232483	
				Hambleton District Council	Development Management	Civic Centre	Stone Cross	Northallerton	DL6 2UU	01609 779977	info@hambleton.gov.uk
				North York Moors National Park Authority	Planning Department	Old Vicarage	Bondgate	Helmsley	YO62 5BP	01439 770657	
Mr France	Mr	Chris	France	North York Moors National Park Authority	Director of Planning	Old Vicarage	Bondgate	Helmsley	YO62 5BP	01439 772700	c.france@northyorkmoors.co.uk
Prescribed Consultees											
Sir/Madam				The Health and Safety Executive		NSIP Consultations, 5.s.2 Redgrave Court	Merton Road	Bootle, Merseyside	L20 7HS		NSIP.applications@hse.gsi.gov.uk
Sir/Madam				The Health and Safety Executive		Alnwick House	Benton Park View	Newcastle-Upon-Tyne	NE98 1YX		
Professor Johnstone	Professor	Paul	Johnstone	PHE North of England Regional Office	Regional Director	Blenheim House	West One Duncombe Street	Leeds	LS1 4PL	0300 303 8395	
Dr Marshall	Dr	Roberta	Marshall	North East PHE Centre	Centre Director	Floor 2 Citygate	Gallowgate	Newcastle - Upon - Tyne	NE1 4WH	0844 225 3550	
Sir/Madam				NHS England		PO Box 16738	Redditch		B97 9PT	0300 311 22 33	
Sir/Madam				NHS South Tees Clinical Commissioning Group		North Ormesby Health Village 11 Trinity Mews	North Ormesby	Middlesborough Cleveland	TS3 6AL		
Sir/Madam				NHS Hartlepool and Stockton - On - Tees Clinical Commissioning Group		Billingham Health Centre Queensway	Billingham	Cleveland	TS23 2LA		
Sir/Madam				NHS Durham Dales, Easington and Sedgefield Clinical Commissioning Group		Sedgefiled Community Hospital Salters Lane	Sedgefield	Stockton-on-Tees Cleveland	TS21 3EE		
Sir/Madam				Natural England Consultation Service	Natural England Consultation Service	Hornbeam House Electra Way	Crewe Business Park	Crewe Cheshire	CW1 6GJ		
Dr O'Halloran	Des	O'Halloran	Principal Adviser	Natural England		Juniper House	Murley Moss BV	Oxenholme Rd Kendal Cumbria	LA9 7RL		
Ms Hall	Debbie	Hall	Senior Adviser - Energy	Natural England	Lancaster Hosue	Hampshire Court	Newcastle-Upon-Tyne		NE4 7YH		
Sir/Madam				English Heritage (North East)	The Historic Buildings and Monuments Commission for England	Bessie Surtees House 41 - 44	Sandhill	Newcastle - Upon - Tyne	NE1 3JF	0191 269 1200	
Sir/Madam				English Heritage (Head Office)	The Historic Buildings and Monuments Commission for England	1 Waterhouse Square	138 - 142 Holborn	London	EC1N 2ST	020 7973 3000	
Sir/Madam				Cleveland Fire & Rescue	Fire and Rescue Authority	Endeavour House	Stockton Road Hartlepool	Cleveland	TS25 5TB	01429 872311	
Mr Coppinger	Mr	Barry	Coppinger	Cleveland Police and Crime Commissioner	Police and Crime Commissioner for Cleveland	Cleveland Police Headquarters	Ladgate Lane	Middlesborough	TS8 9EH	01642 301632	pcc@cleveland.pnn.police.uk

Sir/Madam				Billingham Town Council		Old Billingham Business Centre	1 Chapel Road	Billingham Teeside	TS23 1EN	01642 551171	
Sir/Madam				The Environment Agency Head Office		Horizon House	Deanery Road	Bristol	BS1 5AH	0370 8506506	
Mr Kipling	Mr	Sam	Kipling	The Environment Agency Regional Office		Lateral	8 City Walk	Leeds West Yorkshire	LS11 9AT	0370 8506506	
Mr Sked	Mr	Cameron	Sked	The Environment Agency Area Office		North East Area Office Tyneside House	Skinnerburn Road Newcastle Business Park	Newcastle Upon Tyne	NE4 7AR	0370 8506506	
Mr Kendall	Mr	Jonathan	Kendall	Environment Agency		Coverdale House	Aviator Court Clifton Moor	York	YO30 4GZ		
Sir/Madam				Joint Nature Conservation Committee		Monkstone House	City Road	Peterborough	PE1 1JY	01733 562626	
Sir/Madam				Maritime and Coastguard Agency		Spring Place	105 Commercial Road	Southampton Hants	SO15 1EG		
Sir/Madam				Maritime and Coastguard Agency		Crosskill House	Mill Lane Beverley	North Humberside	HU17 9JB	01482 866 606	
Sir/Madam				Maritime and Coastguard Agency		Compass House Unit 1	Tyne Dock South Shields	Tyne and Wear	NE34 9PY	0191 496 9900	
Sir/Madam				Marine Management Organisation		Lancaster House	Hampshire Court	Newcastle Upon Tyne	NE4 7YH	0300 123 1032	
Sir/Madam				Highways Agency		Lateral	8 City Walk	Leeds	LS11 9AT	08459 55 65 75	
Mr Bell	Mr	Christopher	Bell	Highways Agency	Asset Manager	Lateral	8 City Walk	Leeds	LS11 9AT	0113 283 4774	chris.bell2@highways.gsi.gov.uk
Sir/Madam				Redcar and Cleveland Borough Council	Highways Department	Redcar & Cleveland House	Kirkleatham Street	Redcar	TS10 1RT	01642 774 774	
Sir/Madam				Hartlepool Borough Council	Highways Department	Civic Centre	Victoria Road	Hartlepool	TS24 8AY	01429 266522	
Sir/Madam				Stockton-on-Tees Borough Council	Highways Department	Municipal Buildings	Church Road	Stockton-on-Tees	TS18 1LD	01642 526022	
Sir/Madam				Integrated Transport Authority		Newcastle Civic Centre	Barras Bridge	Newcastle Upon Tyne	NE1 8PD	0191 232 8520	
Sir/Madam				Passenger Transport Executive Group		Wellington House	40-50 Wellington Street	Leeds	LS1 2DE	0113 251 7204	
Sir/Madam				The Coal Authority	Planning and Local Liaison Department	200 Lichfield Lane	Mansfield	Nottinghamshire	NG18 4RG	01623 637119	planningconsultation@coal.gov.uk
Sir/Madam				Trinity House		Tower Hill	London		EC3N 4DH	020 7481 6900	
Sir/Madam				Public Health England		Wellington House	133 - 155 Waterloo Road	London	SE1 8UG	020 7654 8000	
Professor Johnstone	Professor	Paul	Johnstone	Public Health England		Blenheim House	West One Duncombe Street	Leeds	LS1 4PL	0300 303 8395	
Relevant Statutory Undertakers (See below)											
Health Bodies (s.16 of the Acquisition of Land Act (ALA) 1981)											
Sir/Madam				Local Area Team		Durham, Darlington and Tees Area Team	The Old Exchange Barnard Street	Darlington	DL3 7DR		jo.dea@nhs.net
Sir/Madam				NHS Foundation Trust		South Tyneside NHS Foundation Trust	Harton Lane	South Shields Tyne and Wear	NE34 0PL	0191 404 1000	chris.morgan@stft.nhs.uk
Sir/Madam				Health & Social Care Information Centre		1 Trevelyan Square	Boar Lane	Leeds	LS1 6AE	0845 300 6016	enquiries@hscic.gov.uk
Sir/Madam				Health Education England		1st Floor Blenheim House	Duncombe Street	Leeds	LS1 4PL		
Sir/Madam				Health Research Authority		Skipton House	80 London Road	London	SE1 6LH	020797 22545	contact.hra@nhs.net
Sir/Madam				National Institute for Health and Clinical Excellence (NICE)		10 Spring Gardens		London	SW1A 2BU	0845 003 7780	nice@nice.org.uk
Sir/Madam				NHS England		4 - 8 Maple Street		London	W1T 5HD	01138 252525	england.contactus@nhs.net
The Business Coordinator	Ms	Amanda	Taylor	National Treatment Agency for Substance Misuse		2nd Floor Waterfront 4	Goldcrest Way Newburn Riverside	Newcastle Upon Tyne	NE15 8NY	0300 303 8596	amanda.taylor@phe.gov.uk
Sir/Madam				NHS Blood and Transplant		Oak House	Reeds Crescent	Watford Hertfordshire	WD24 4QN		
Sir/Madam				NHS Business Services Authority		NHS Business Services Authority	Stella House Goldcrest Way	Newburn Riverside Newcastle Upon Tyne	NE15 8NY	0191 244 6883	
Sir/Madam				NHS England		PO Box 16738		Redditch	B97 9PT	0300 311 22 33	england.contactus@nhs.net
Sir/Madam				NHS Litigation Authority		2nd Floor 151 Buckingham Palace Road		London	SW1W 9SZ	020 7811 2700	
Sir/Madam				NHS Trust Development Authority		NHS TDA Southside	105 Victoria Street	London	SW1E 6QT		
Sir/Madam				NHS Trust Development Authority		2nd Floor Quarry House	Quarry Hill	Leeds	LS2 7UE		

Sir/Madam				NHS Institute for Innovation and Improvement		i-House University of Warwick Science Park	Millburn Hill Road	Coventry	CV4 7HS	02476 475800	enquiries@institute.nhs.uk
Sir/Madam				North East Ambulance Service NHS Foundation Trust		Bernicia House	Goldcrest Way	Newburn Riverside Newcastle Upon Tyne	NE15 8NY	0191 430 2000	publicrelations@neas.nhs.uk
Sir/Madam				Leeds Community Healthcare NHS Trust		Stockdale House	8 Victoria Road	Leeds West Yorkshire	LS6 1PF	0113 220 8500	
Sir/Madam				County Durham and Darlington NHS Foundation Trust		Darlington Memorial Hospital	Hollyhurst Road	Darlington County Durham	DL3 6HX	01325 380100	information@cddft.nhs.uk
Sir/Madam				Tees, Esk and Wear Valleys NHS Foundation Trust		Trust Headquarters West Park Hospital	Edward Pease Way	Darlington Durham	DL2 2TS	01325 552203	tewv.enquiries@nhs.net
Sir/Madam				North Tees and Hartlepool NHS Foundation Trust		University Hospital of Hartlepool	Holdforth Road	Hartlepool Cleveland	TS24 9AH	01642 617617	
Sir/Madam				South Tees Hospitals NHS Foundation Trust		The James Cook University Hospital	Marton Road	Middlesborough Cleveland	TS4 3BW	01642 850 850	
Sir/Madam				Royal National Orthopaedic Hospital NHS Trust		Brockley Hill	Stanmore	Middlesex	HA7 4LP	020 8954 2300	
Sir/Madam				Royal National Hospital for Rheumatic Diseases NHS Foundation Trust		Upper Borough Walls		Bath Avon	BA1 1RL	01225 465941	
Sir/Madam				Northumberland Tyne and Wear NHS Foundation Trust		Communications Department, St Nicholas Hospital	Gosforth	Newcastle Upon Tyne	NE3 3XT	0191 213 0151	
Sir/Madam				Highways Agency Historical Railways Estate		Hudson House	Toft Green	York	YO1 6HP	01904 524786	hreenquiries@highways.gsi.gov.uk
Sir/Madam				Canal & River Trust		Head Office First Floor North	Station House 500 Elder Gate	Milton Keynes	MK9 1BB	0303 040 4040	customer.services@canalrivertrust.org.uk
Sir/Madam				The Environment Agency Head Office		Horizon House	Deanery Road	Bristol	BS1 5AH	0370 8506506	
Sir/Madam				The Environment Agency Regional Office		Lateral	8 City Walk	Leeds West Yorkshire	LS11 9AT	0370 8506506	
Sir/Madam				The Environment Agency Area Office		North East Area Office Tyneside House	Skinnerburn Road Newcastle Business Park	Newcastle Upon Tyne	NE4 7AR	0370 8506506	
Sir/Madam				PD Ports - Teesport		17 - 27 Queen's Square	Middlesbrough		TS2 1AH	01642 877000	enquiries@pdports.co.uk
Sir/Madam				Tees and Hartlepool Harbour Police		Harbour Office	Teesport	Middlesbrough	TS6 6UD	01642 277 216	police@pdports.co.uk
Sir/Madam				Trinity House		Tower Hill		London	EC3N 4DH	020 7481 6900	
Sir/Madam				NATS		4000 Parkway	Whiteley Fareham	Hants	PO15 7FL	01489 616001	
Sir/Madam				Royal Mail Group		Group Communications Royal Mail Group	100 Victoria Embankment	London	EC4 0HQ		
Sir/Madam				Anglian Water Services Ltd (Hartlepool Water)		Anglian House	Ambury Road	Huntingdon	PE29 3NZ	01480 323 000	
Sir/Madam				Northumbrian Water		Customer Centre	PO Box 300	Durham	DH1 9WQ		
Sir/Madam				British Gas Pipelines Limited		Millstream, Maidenhead Road	Windsor	Berkshire	SL4 5GD		
Sir/Madam				Energetics Gas Limited		International House, Stanley Boulevard	Hamilton International Technology Park, Glasgow	South Lanarkshire, Scotland	G72 0BN	01698 404949	
Sir/Madam				ES Pipelines Ltd		ESP Utilities Group Ltd, Hazeldean	Station Road	Leatherhead, Surrey	KT22 7AA	01372 227560	
Sir/Madam				ESP Connections Ltd		Hazeldean	Station Road	Leatherhead, Surrey	KT22 7AA		
Sir/Madam				ESP Networks Ltd		Hazeldean	Station Road	Leatherhead, Surrey	KT22 7AA		
Sir/Madam				ESP Pipelines Limited		Hazeldean	Station Road	Leatherhead Surrey	KT22 7AA		
Sir/Madam				Fulcrum Pipelines Ltd		5th Floor	6 St Andrew Street	London	EC4A 3AE	0845 641 3010	enquiries@fulcrum.co.uk
Sir/Madam				GTC Pipelines Ltd		Energy House	Woolpit Business Park, Woolpit	Bury St Edmunds, Suffolk	IP30 9UP	01359 240363	info@gtc-uk.co.uk
Sir/Madam				Independent Pipelines Ltd	c/o Company Secretary	Energy House Woolpit Business Park	Windmill Avenue, Woolpit	Bury St Edmunds, Suffolk	IP30 9UP		

Sir/Madam				LNG Portable Pipeline Services Ltd		Cadarache Bere Court Pangbourne	Reading	Berkshire	RG8 8HT		
Sir/Madam				National Grid Gas PLC		1 - 3 Strand		London	WC2N 5EH		
Sir/Madam				Quadrant Pipelines Limited	c/o Company Secretary	Energy House, Woolpit Business Park	Windmill Avenue, Woolpit	Bury St Edmunds, Suffolk	IP30 9UP		
Sir/Madam				SSE Pipelines Ltd		55 Vastern Road	Reading	Berkshire	RG1 8BU		
Sir/Madam				The Gas Transportation Company Ltd		The Energy Centre, Admiral Park	St Peter Port	Guernsey Islands, Channel Islands	GY1 3TB		
Sir/Madam				Utility Grid Installations Ltd		Energy House	Woolpit Business Park, Woolpit	Bury St Edmunds, Suffolk	IP30 9UP		
Sir/Madam				Northern Gas Networks Ltd		1100 Century Way	Thorpe Park Business Park	Colton, Leeds	LS15 8TU		
Sir/Madam				Energetics Electricity Ltd		International House, Stanley Boulevard	Hamilton International Technology Park, Glasgow	South Lanarkshire, Scotland	G72 0BN		
Sir/Madam				ESP Electricity Limited		Hazeldean	Station Road	Leatherhead, Surrey	KT22 7AA		
Sir/Madam				Independent Power Networks Ltd	c/o Company Secretary	Energy House, Woolpit Business Park	Windmill Avenue, Woolpit	Bury St Edmunds, Suffolk	IP30 9UP	01359 243311	customerservices@gtc-uk.co.uk
Sir/Madam				The Electricity Network Company Ltd		Energy House	Woolpit Business Park, Woolpit	Bury St Edmunds, Suffolk	IP30 9UP		
Sir/Madam				Northern Powergrid (Northeast) Limited		Lloyds Court	78 Grey Street	Newcastle Upon Tyne	NE1 6AF		
Sir/Madam				National Grid Electricity Transmission Plc		1 - 3 Strand	London		WC2N 5EH		
Mr Mills	Mr	Iain	Mills	The Crown Estate Commissioners	Asset Manager	16 New Burlington Place	London		W1S 2HX	020 7851 5267	enquiries@thecrownestate.co.uk
Mr Everington	Mr	Nick	Everington	The Crown Estate Commissioners	Commercial Manager Marine Minerals and Infrastructure	16 New Burlington Place	London		W1S 2HX	020 7851 5000	enquiries@thecrownestate.co.uk
Sir/Madam				The Crown Estate Commissioners		16 New Burlington Place	London		W1S 2HX	020 7851 5000	enquiries@thecrownestate.co.uk
Sir	Rt Hon	Michael	Fallon	The Secretary of State for Defence		Ministry of Defence Floor 5 Zone A	Main Building Whitehall	London	SW1A 2HB	020 7218 9000	DefenceSecretary-Group@mod.uk
Sir/Madam				Royal National Lifeboat Institute		RNLI West Quay Road	Poole		BH15 1HZ	0845 122 6999	
Consulted at discretion - Dogger Bank DCO application											
Mr Guyton		Andrew	Guyton	Forewind Limited		5th Floor Davidson House	Forbury Square	Reading Berkshire	RG1 3EU		
Sir/Madam				Forewind Limited		55 Vastern Road	Reading	Berkshire	RG1 8BU		
Specific Contacts at various bodies											
Ms Edwards	Ms	Ruth	Edwards	Centre for Environment Fisheries and Aquaculture Science		Pakefield Road	Lowestoft	Suffolk	NR33 0HT		
Ms Lonsdale	Ms	Jemma	Lonsdale	Centre for Environment Fisheries and Aquaculture Science		Pakefield Road	Lowestoft	Suffolk	NR33 0HT		
Mr Armstrong	Mr	Peter	Armstrong	Redcar & Cleveland Borough Council	Team Leader - Development Engineers	Redcar and Cleveland House	Kirkleatham Street	Redcar	TS10 1RT		
Mr Jones	Mr	Phil	Jones	Redcar & Cleveland Borough Council		Redcar and Cleveland House	Kirkleatham Street	Redcar	TS10 1RT		
Mr Gent	Mr	Mick	Gent	Redcar & Cleveland Borough Council		Redcar and Cleveland House	Kirkleatham Street	Redcar	TS10 1RT		
Mr Miller	Mr	Adrian	Miller	Redcar & Cleveland Borough Council		Redcar and Cleveland House	Kirkleatham Street	Redcar	TS10 1RT		
Mr Smuk	Mr	Alan	Smuk	Redcar & Cleveland Borough Council		Redcar and Cleveland House	Kirkleatham Street	Redcar	TS10 1RT		
Ms Hepburn	Ms	Rachel	Hepburn	RSPB		1 Sirius House Amethyst Road	Newcastle Business Park	Newcastle Upon Tyne	NE4 7YL		
Mr Douglas	Mr	Neil	Douglas	RSPB		1 Sirius House Amethyst Road	Newcastle Business Park	Newcastle Upon Tyne	NE4 7YL		
Mr Chumbley	Mr	Adam	Chumbley	Marine Management Organisation		Lancaster House	Hampshire Court	Newcastle Upon Tyne	NE4 7YH		
Ms Wooles	Ms	Joanna	Wooles	Marine Management Organisation		Lancaster House	Hampshire Court	Newcastle Upon Tyne	NE4 7YH		
Mr McCandless	Mr	David	McCandless	North Eastern Inshore Fisheries and Conservation Authority		Town Hall	Bridlington		YO1 6LF		
Mr Thorpe	Mr	Roger	Thorpe	The Crown Estates (Carter Jonas)		Carter Jonas	82 Micklegate	York	YO1 6LF		

Mr Drewitt	Mr	Jerry	Drewitt	PD Ports - Harbour Master's Office		Teesport	Grangetown	Middlesborough	TS6 6UD		
Additional contact - YPL contact												
Mr Parry-Jones	Mr	Daniel	Parry-Jones	BNP Paribas Real Estate		Portwall Place	Portwall Lane	Bristol	BS1 6NA	7770854975	
Site Specific Pipeline Operators (OFGEM List as at 12 June 2014)												
Sir/Madam				Caythorpe Gas Storage Limited		Venture House	42 - 54 London Road	Staines Middlesex	TW18 4HF		
Sir/Madam				Greenpark Energy Transportation Limited		1 London Wall	London		EC2Y 5AB		
Sir/Madam				Humbly Grove Energy Services Limited		Grand Buildings	1-3 Strand	London	WC2N 5EJ		
Sir/Madam				LNG Portable Pipeline Services Limited		Athena House Athena Drive	Tachbrook Park	Warwick	CV34 6RL		
Sir/Madam				Severn Gas Transportation Limited		16 Axis Court	Mallard Way	Swansea Vale Swansea	SA7 0AJ		
Sir/Madam				SP Gas Transportation Cockenzie Limited		5th Floor 1 Atlantic Way	Robertson Street	Glasgow	G2 8SP		
Sir/Madam				SP Gas Transportation Hatfield Limited		5th Floor 1 Atlantic Way	Robertson Street	Glasgow	G2 8SP		
Sir/Madam				Wyre Gas Transportation Limited		First Floor	18 Park Place	Cardiff	CF10 3DQ		
Sir/Madam				Alkane Energy PLC		Edwinstowe House	High Street	Edwinstowe Nottinghamshire	NG21 9PR		
Sir/Madam				Alkane Energy UK Limited		Edwinstowe House	High Street	Edwinstowe Nottinghamshire	NG21 9PR		
Site Specific - Linesearch results												
Sir/Madam				BOC		Bawtry Road	Brinsworth	Rotherham South Yorkshire	S60 5NT		
Sir/Madam				National Grid Plant Protection		Block 1 Floor 1	Brick Kiln Street	Hinckley	LE10 0NA		plantprotection@nationalgrid.com
Mr Smith	Ken	Smith		BP Midstream Pipelines		PO Box 21746	Calendar Business Park	Falkirk	FK1 1XR	0800 281279	BP.Pipelines.Enquiries@uk.bp.com
Sir/Madam				BSkyB Telecommunications Limited		Grant Way	Isleworth	Middlesex	TW7 5QD		
Sir/Madam				BT Group Plc		BT Centre	81 Newgate Street	London	EC1A 7AJ		
Sir/Madam				C A Telecom UK Ltd		Dockers Field Farm	Pean Hill	Whitstable Kent	CT5 3BJ		
Sir/Madam				Instalcom Limited		Instalcom House	Manor Way	Borehamwood Herts	WD6 1QH		
Sir/Madam				Interoute Communications		31st Floor	25 Canada Square	Canary Wharf London	E14 5LQ		
Sir/Madam				Northern Gas Networks Limited		1100 Century Way	Thorpe Park Business Park	Colton Leeds	LS15 8TU		
Sir/Madam				Northern Powergrid Limited		Lloyds Court	78 Grey Street	Newcastle Upon Tyne	NE1 6AF		
Sir/Madam				Network Rail		Kings Place	90 York Way	London	N1 9AG		
Sir/Madam				McNicholas		Lismirrane Industrial Park	Elstree Road Elstree	Herts	WD6 3EA		
Sir/Madam				Verizon UK Limited		Reading International Business Park	Basingstoke Road	Reading Berkshire	RG2 6DA		
Sir/Madam				Virgin Media Limited		Media House	Bartley Wood Business Park	Hook Hampshire	RG27 9UP		
Sir/Madam				Vodafone Limited		Vodafone House	The Connection	Newbury Berkshire	RG14 2FN		
Sir/Madam				Vtesse Networks Limited		John Tate Road	Foxholes Business Park	Hertford Hertfordshire	SG13 7DT		

Appendix 12

Consultation notification letter sent to Section 42 consultees

Planning Consultancy of the Year 2011-2014 RTPI

JustGiving Awards Company of the Year 2013

Nathaniel Lichfield & Partners
Planning. Design. Economics.

ADDRESS DETAILS

14 Regent's Wharf
All Saints Street
London N1 9RL

020 7837 4477
london@nlpplanning.com

nlpplanning.com

Date 11 September 2014
Our ref 50303/HS/NM/7401239v2
Your ref

Dear Sir/Madam

Proposals for the Construction and Operation of Harbour Facilities on Teesside for the export of Polyhalite Bulk Fertilizer: Pre-Application Consultation pursuant to Section 42 of the Planning Act 2008

The purpose of this letter is to consult you on proposals for new Harbour Facilities at Bran Sands, Teesside.

The Planning Act 2008 ('the Act') introduced new procedures for applications for categories of development that are identified as 'Nationally Significant Infrastructure Projects' ('NSIPs'). The categories of development are set out within the Act and the York Potash proposal falls within the category described in Section 24 – ***"Harbour Facilities"***. A successful application results in the issue of a Development Consent Order ('DCO') which would then be administered by the Local Planning Authority, Redcar and Cleveland Borough Council.

York Potash Limited ('the Applicant') will be submitting to the Planning Inspectorate ('PINS') an application for a DCO for the construction and operation of Harbour Facilities at Bran Sands, Teesside which will be linked by conveyor to a Material Handling Facility located within the Wilton International Complex.

Consultation

The Applicant is now undertaking consultation pursuant to Section 42 of the Act to understand the issues and concerns of all interested parties. Responses to the consultation will be considered and how the consultation has influenced the proposal will be explained in the consultation report which will form part of the formal application to PINS.

Notice of the proposed application is to be publicised under the requirements of Section 48 of the Act (detailed under Regulation 4 of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009, a copy of this notice is enclosed. Concurrent community consultation, under Section 47, is taking place in accordance with a Statement of Community Consultation that has been considered by Redcar and Cleveland Borough Council and Stockton-on-Tees Borough Council (as the Local Planning Authorities) and subsequently publicised.

The Proposals

The proposals comprise:

- The construction and operation of a quay structure on the River Tees at Bran Sands to facilitate the mooring of vessels in the estuary directly adjacent to the onshore harbour facilities and allow shiploader access;
- Dredging of the berthing area;
- The construction of shiploaders on the quay structure to load the mineral product onto ships for onward transportation;
- The erection of surge bins for the ship loading flow management of the mineral product;
- A conveyor system to transport the polyhalite connecting the harbour with the Material Handling Facility within the Wilton International Complex; and
- Ancillary infrastructure.

Further information

Enclosed with this letter is a document entitled ***'Summary of Proposals'*** that gives more detail on the routing and installation methods.

In addition, there is a large amount of information available to be viewed or downloaded from the project website, www.yorkpotash.co.uk. This information includes:

- Preliminary Environmental Information;
- Project Description (of the overall project);
- Draft Development Consent Order and draft Explanatory Memorandum;
- Draft Works Plans;
- Draft Book of Reference;
- Draft Land Plans;
- Draft Statement of Reasons;
- Draft layout plans; and
- Draft Access and Rights of Way Plans.

Copies of this information are available to view at the following locations:

- Redcar and Cleveland Borough Council offices, Kirkleatham Street, Redcar, TS10 1RT Monday to Friday between 09:00 – 17:00;
- York Potash Limited, 7 – 10 Manor Court, Manor Garth, Scarborough, YO11 3TU Monday to Friday between 09:00 – 17:00;
- Redcar Library, Kirkleatham St, Redcar, Cleveland TS10 1RT Mondays to Wednesdays and Fridays 09:00 to 18:00, Thursdays 09:00 to 17:00 and Saturdays 09:30 to 12:30; and
- Tuned In, Majuba Road, Redcar, TS10 5BJ Mondays to Fridays 08:30 to 20:00, Saturdays 08:30 to 18:00 and Sundays 08:30 to 16:00.

Consultation Responses

Comments are invited on the proposals. The Act allows a period of 28 days for this consultation from the day after receipt of this letter and enclosures. We anticipate, from the posting date, that you will receive this letter on 12 September 2014. Please note that the **deadline** for receipt of responses is **16 October 2014**. Responses will be made public.

Please could you respond using one of the following methods:

By Post:
York Potash Consultation Team, Nathaniel Litchfield & Partners, 14 Regent's Wharf, All Saints Street, London N1 9RL

By e-mail:
yorkpotash@nlpplanning.com

Yours faithfully

NATHANIEL LICHFIELD & PARTNERS

Encs: 'Summary of Proposals' document
Section 48 Press Notice

Appendix 13

The York Potash Harbour Facilities Summary of Proposals Document [Also Doc Ref: 7.2]

THE YORK POTASH PROJECT
HARBOUR FACILITIES

Summary of
Proposals Document

September 2014

Reg 5(2)(a)
Doc No: 7.2

YORKPOTASH
A Sirius Minerals Project

A GUIDE TO THIS DOCUMENT

THIS DOCUMENT IS A GUIDE TO THE PROPOSED HARBOUR FACILITIES IN TEESSIDE WHICH WOULD SERVE THE YORK POTASH PROJECT.

IT IS AN IMPORTANT PART OF THE CONSULTATION AND WE ENCOURAGE YOU TO READ IT AND OTHER TECHNICAL INFORMATION THAT IS AVAILABLE AND PROVIDE US WITH YOUR COMMENTS.

CONTENTS: PAGE

THE HARBOUR FACILITIES CONSULTATION

BACKGROUND

The proposed harbour facilities at Teesside are an integral part of the York Potash Project.

The harbour development is classified as a Nationally Significant Infrastructure Project (NSIP). This requires a Development Consent Order (DCO) from the Secretary of State for Transport before it can be developed. As part of the application for a DCO York Potash has to consult with a wide range of stakeholders, including local residents, to ensure they are given the opportunity to find out more, comment on and influence the proposals where appropriate.

WHAT WE ARE CONSULTING ON?

York Potash Ltd is asking for views on the proposed harbour facilities and associated infrastructure; its construction and the ongoing operation of the facilities and their overall impact.

Your views on any element of the proposals are encouraged at this stage and could help to shape further development of the harbour facilities going forward.

TELL US WHAT YOU THINK

The consultation includes both public events and more technical information available for people to view. The public exhibition schedule is detailed below. A range of draft technical reports is available at public locations and on the Company website www.yorkpotash.co.uk.

HAVE YOUR SAY NOW

York Potash is proposing a one-stage consultation process for the harbour facilities so it's important to have your say now.

PUBLIC EXHIBITION SCHEDULE

DATE/TIME	VENUE
Wed 17 Sept 2014 10am–5pm	**Dormanstown** Westfield Farm Community Centre, The Green, Redcar, Dormanstown TS10 5NA
Thurs 18 Sept 2014 12–6.30pm	**Redcar** Tuned In, Majuba Road, Redcar TS10 5BJ
Fri 26 Sept 2014 10am–5pm	**Redcar** Tuned In, Majuba Road, Redcar TS10 5BJ
Sat 27 Sept 2014 10am–2pm	**Dormanstown** Westfield Farm Community Centre, The Green, Redcar, Dormanstown TS10 5NA

YOUR VIEWS COUNT

PLEASE TAKE TIME TO COMPLETE THE FEEDBACK FORM ON OUR WEBSITE WWW.YORKPOTASH.CO.UK/CONSULTATION

OVERVIEW OF THE WIDER YORK POTASH PROPOSALS

THE YORK POTASH PROJECT AIMS TO BUILD THE FIRST POTASH MINE IN THE UK FOR OVER 40 YEARS – AN OPPORTUNITY FOR NORTH YORKSHIRE AND TEESSIDE THAT HAS LOCAL, NATIONAL AND GLOBAL SIGNIFICANCE.

The state-of-the-art mine would be the first in the world focused on the extraction of polyhalite. The Project would boost the local, regional and UK national economies.

It has the potential to create thousands of jobs, benefit local businesses, help improve skills in the region and contribute to people's prosperity for generations to come.

There are four main elements to the York Potash Project as outlined in the concept drawing and the brief description on this page.

MINE SITE

This would be situated approximately three miles south of Whitby and include two mine shafts from which the polyhalite would be extracted.

MINERAL TRANSPORT SYSTEM (MTS)

The MTS would transport the mined polyhalite from the mine site on an underground conveyor belt system in a tunnel to the materials handling facility at Wilton, Teesside.

MATERIALS HANDLING FACILITY (MHF)

This would consist of the plant and equipment necessary to granulate the polyhalite and create the final product.

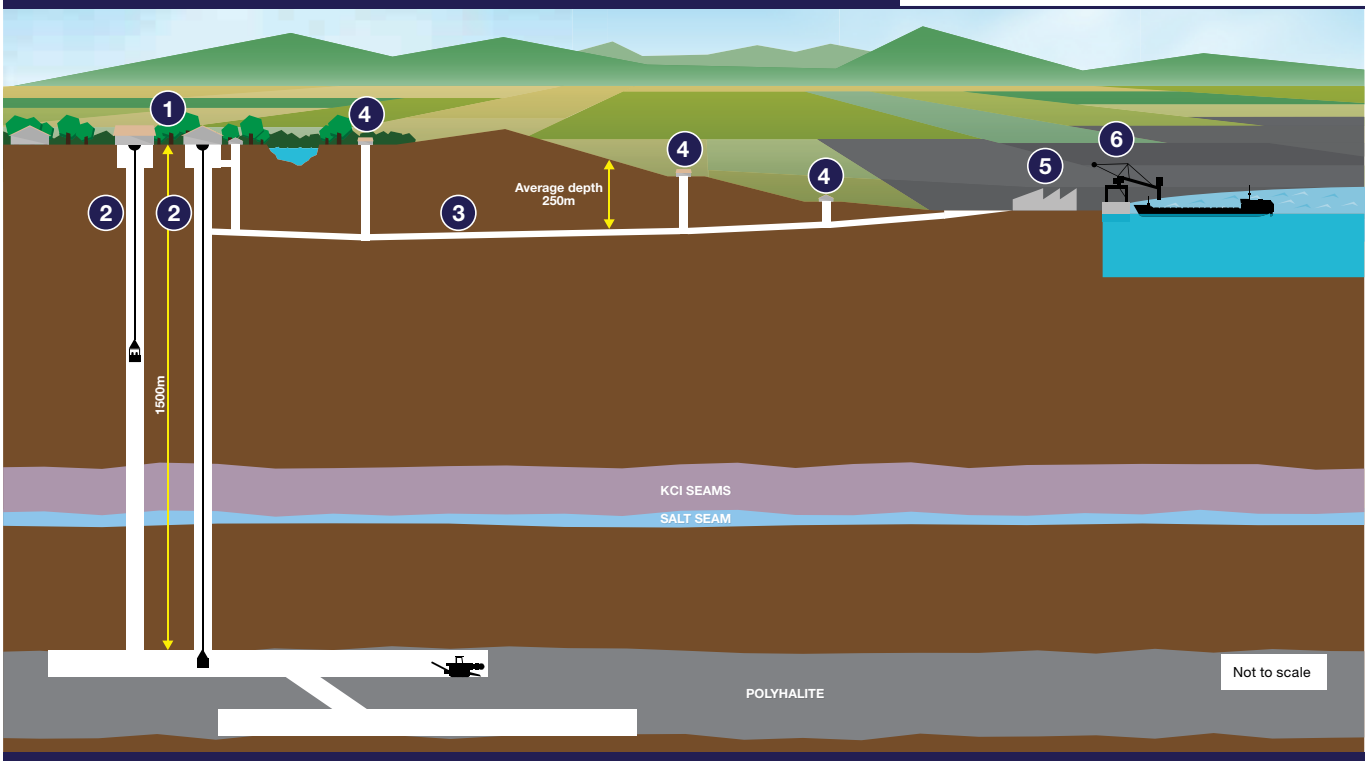
HARBOUR FACILITIES

This incorporates the conveyor system used to take the granulated polyhalite from the MHF, and the quayside infrastructure needed to enable the polyhalite to be exported by ship.

APPROVALS REQUIRED FOR THE YORK POTASH PROJECT

York Potash Ltd will be submitting two separate planning applications for the mine and MTS and for the MHF at the end of September 2014. As previously stated, the harbour facilities will require a Development Consent Order (DCO). This document focuses on the harbour facilities and has been written to support the consultation for the DCO application.

PROJECT OVERVIEW



1 Mine Site
2 Mine Shafts
3 Mineral Transport System (MTS)
4 MTS Access Points
5 Materials Handling Facility (MHF)
6 Harbour

POLYHALITE – FERTILIZER OF THE FUTURE

THE YORK POTASH PROJECT FOCUSES ON MINING THE LARGEST AND HIGHEST GRADE RESOURCE OF POLYHALITE FOUND ANYWHERE IN THE WORLD.

WHAT IS POLYHALITE?

Polyhalite is a type of potash, an essential ingredient in plant fertilizer. It contains a unique combination of four of the six essential nutrients plants need – potassium, magnesium, sulphur and calcium. It can be used directly on crops or combined with the other nutrients – nitrogen and phosphorus – to create other commonly used NPK fertilizer products.

Polyhalite core

Polyhalite has a low carbon footprint, no measurable effects on soil pH and is essentially chloride free. Its high total nutrient content delivers excellent nutrient availability and polyhalite has been certified for use in organic farming.

WHY IS IT NEEDED?

As the world population grows, demand for food increases. New wealthy economies are emerging and within them a growing middle-class which demands more protein rich and higher quality diets. Sustaining greater efficiency from grain production and arable land requires farmers and food producers to use balanced fertilization to increase yields.

The situation has become even more challenging as there is increasingly less farm land available to grow the required crops, necessary for both food supply and to support biofuel technology.

Potash, and polyhalite in particular, can play a major role in more efficient and productive agricultural techniques.

GLOBAL MARKET

Since it began marketing polyhalite, York Potash has already signed major sales agreements with leading commercial organisations in North America, Central America and China and has commitments from many other regions including Europe, Africa, the Americas and Asia.

The proposed harbour facilities at Teesside would allow the Company to be able to export polyhalite around the world, generating up to £1.2 billion in export revenue annually at full production. This would reduce the UK's balance of trade deficit by 4%.

POLYHALITE — MACRO-NUTRIENT COMPOSITION (1)

19 **K**	**POTASSIUM (14% K_2O)**	16 **S**	**SULPHUR (19% S)**
12 **Mg**	**MAGNESIUM (6% MgO)**	20 **Ca**	**CALCIUM (17% CaO)**
7 **N**	**NITROGEN**	15 **P**	**PHOSPHORUS**

SUITABLE FOR ORGANIC USE WITH NO CHEMICAL PROCESSING REQUIRED

Poly4 is the trademark name for polyhalite products from the York Potash Project.

Notes: (1) Based on 90% polyhalite grade.
Polyhalite contains four of the six essential macro-nutrients highlighted in green.

THE HARBOUR FACILITIES

THE HARBOUR FACILITIES WOULD BE LOCATED AT BRAN SANDS, WITH A CONVEYOR CONNECTION TO THE WILTON ESTATE.

The Tees Estuary is a well-established deep water port, which is ideally suited to providing shipping access to customers around the world. The proposed harbour facilities would enable York Potash to export the product to satisfy the global demand for high quality polyhalite, and as a result deliver significant regional and national economic benefits.

OVERVIEW

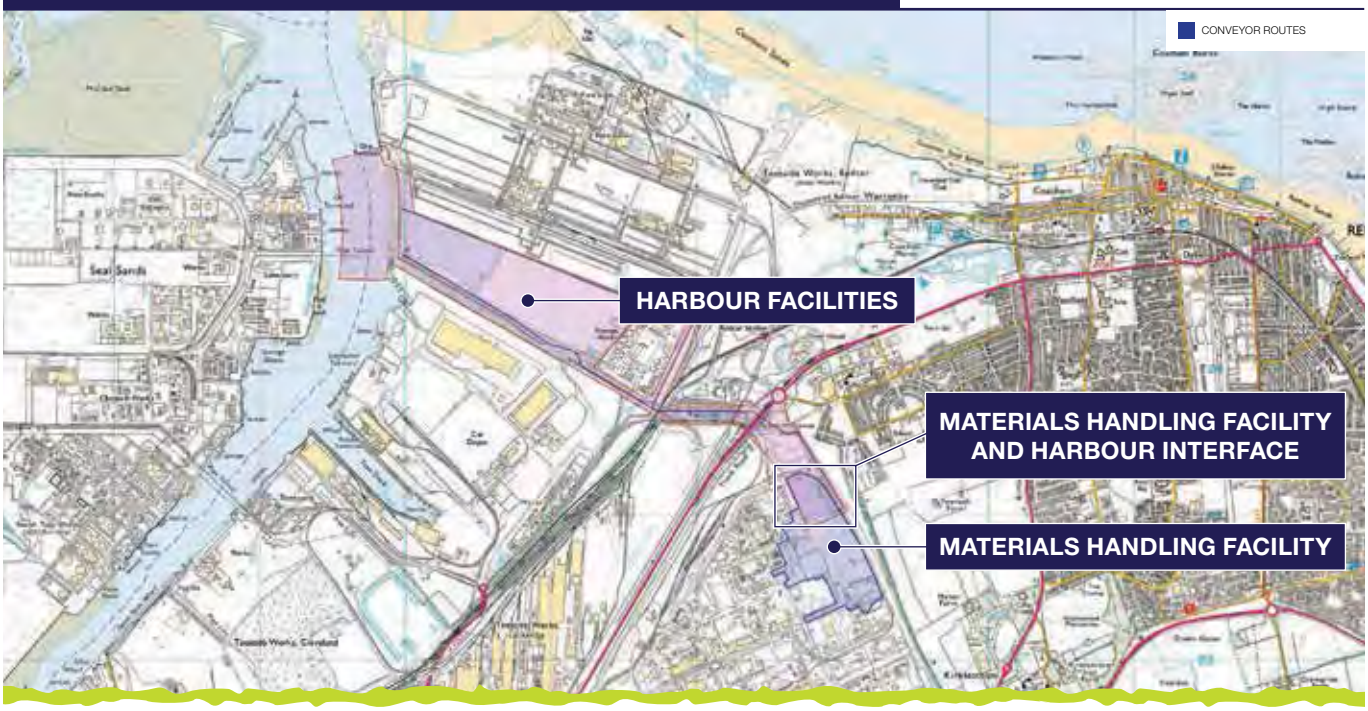
In summary, the proposed harbour facilities development would comprise of the following main elements:

- A conveyor system – linking the materials handling facility to the quay.
- Product storage facility – two surge bins, stationed at the quay, to provide product storage.
- Quay structure – providing docking for up to two ships and space for ship loading equipment.
- Associated infrastructure – including access and car parking, office space, a workshop and smaller ancillary buildings for plant and equipment.
- Dredging – allowing sufficient berth depth for the proposed ships.

Implementation and operation of the harbour facilities would be undertaken in two phases. Phase 1 would be the immediate operation of the facility with a throughput of 6.5 million tonnes per annum (mtpa) of polyhalite, utilising one new wharf and temporary usage of an existing quay at the site. Phase 2 would enable the facility to increase its operational capacity to 13mtpa through the addition of a second wharf.

OPERATIONS AT TEESSIDE

The materials handling facility would be located close to the proposed harbour facilities development which can be seen on the map (below).



CONVEYOR OVERVIEW

POLYHALITE WOULD ARRIVE AT THE HARBOUR FACILITY FROM THE MATERIALS HANDLING FACILITY (MHF) ALONG A CONVEYOR SYSTEM.

ROUTE FROM MATERIALS HANDLING FACILITY

The final design and detailed route are currently being refined. However, decisions on the overall concept and main alignment have been made and are described in the following pages.

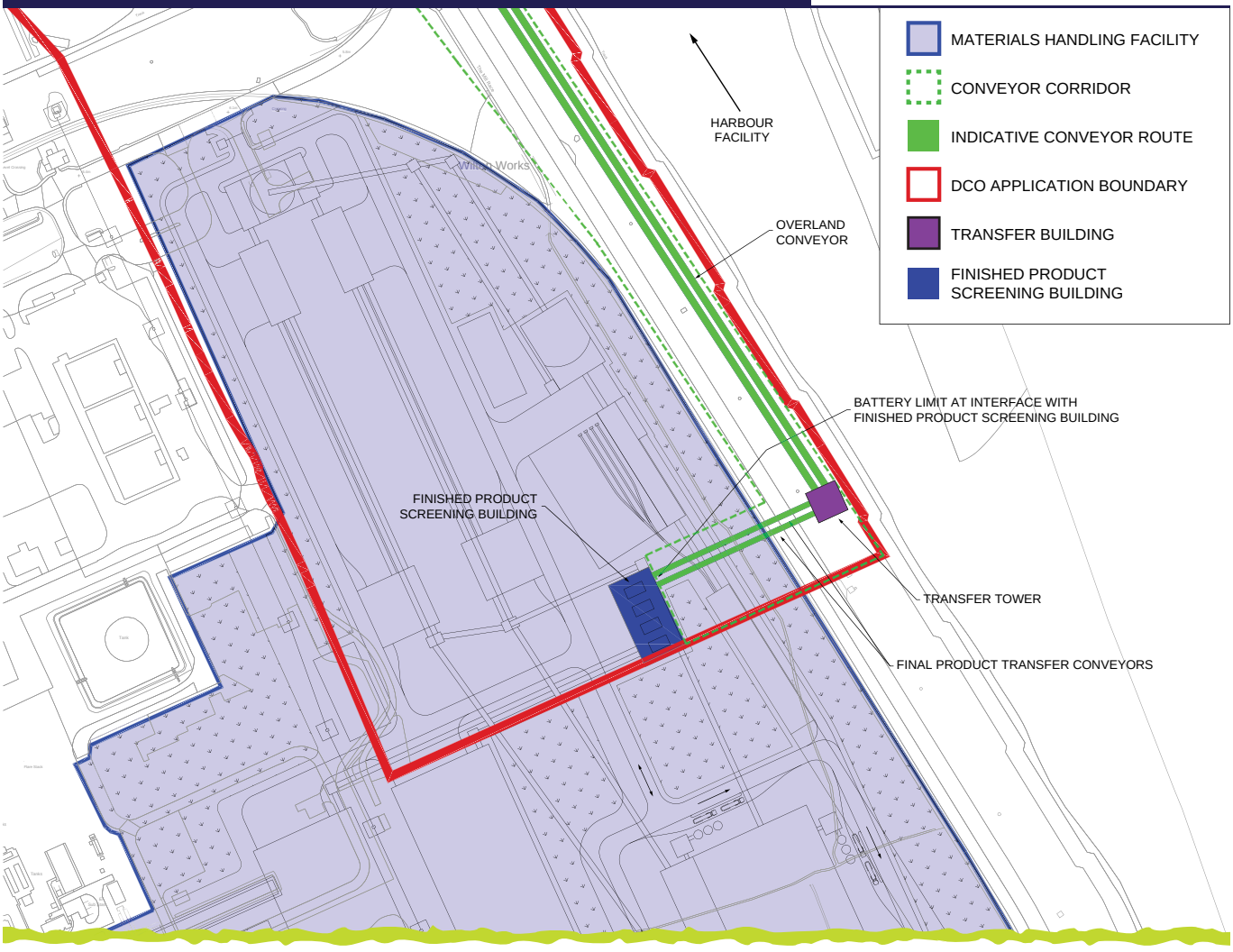
At the finished product screening building (see plan below), the granulated polyhalite would be inspected for a final time and then transferred to the quay on a conveyor system.

The conveyor comprises two parallel belts that would run along elevated conveyor bridges. The bridges would be enclosed until crossing the A1085 after which they would run largely on open trestles. Conveyor covers would be fitted to prevent dust escaping and to protect the product from rain.

The conveyor bridges would pass between the MHF and the quay at an elevated height passing over all existing infrastructure, with the exception of National Grid Power Lines, which would be underpassed.

At various stages, in order to facilitate a change in direction, the conveyor bridges pass through transfer towers. At transfer towers the polyhalite would be transferred from one conveyor to another within an enclosed high level structure.

MATERIALS HANDLING FACILITY AND HARBOUR INTERFACE



CONVEYOR ROUTE
DORMANSTOWN VIEW

ABOUT THE ROUTE

The route of the proposed conveyor has been designed to minimise the need for significant changes in direction. This is because the types of conveyors selected only operate in straight lines.

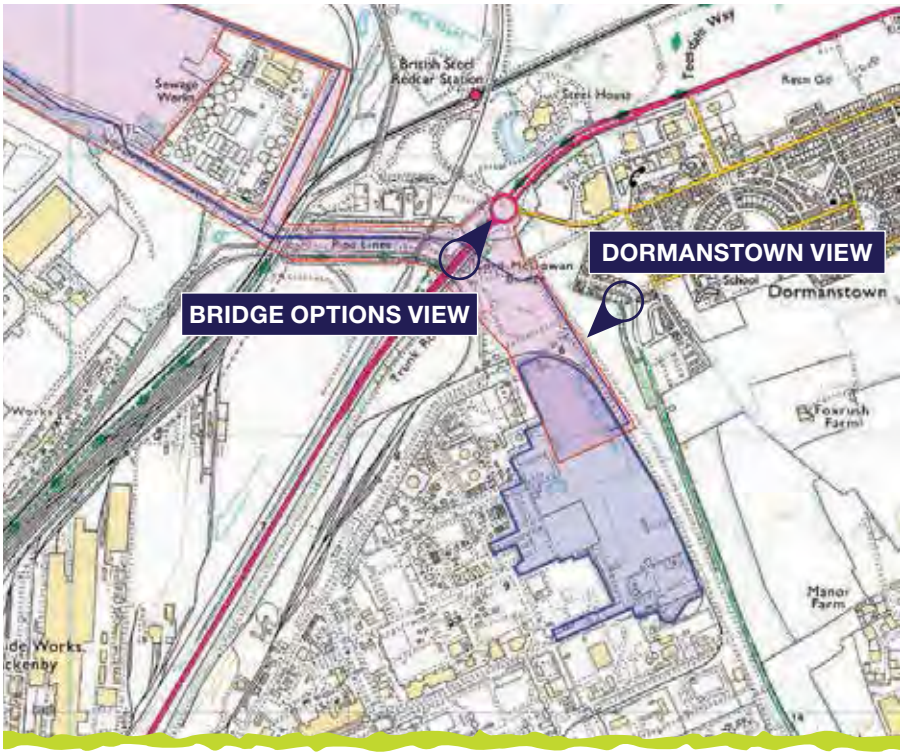
Once the polyhalite has been transferred from the MHF it will be transported in an enclosed section of conveyor bridge, at an initial height of approximately 10m, and run along the boundary of the MHF site in a broadly straight route passing to the west of Dormanstown.

The conveyor system would be contained within an enclosed conveyor bridge, and include measures to minimise any noise impacts where necessary.

The conveyor would have a galvanised metal finish and rise gradually to a suitable height for crossing the A1085 and other road and rail crossings.

CONVEYOR IMAGE

The artist's impression (right) shows an indicative image of the conveyor bridge at the eastern edge of the MHF and Wilton Estate. The photo used in the artist's impression is taken from Dormanstown, looking south-west, and the location is shown on the map above



VIEW FROM DORMANSTOWN

CONVEYOR ROUTE
BRIDGE DESIGN OPTIONS

The conveyor from the MHF to the Bran Sands harbour would start at a transfer tower located on the east side of Boundary Road East. The conveyor would run along the eastern edge of the MHF and would rise gradually and curve to the west to a height suitable for crossing over the A1085 and the hot metal rail bridge. In this section the conveyor would be fully enclosed in a conveyor bridge to contain noise and would be supported at regular intervals by steel trestles.

After the hot metal rail bridge, the conveyor would descend gradually to cross safely over Network Rail and under the National Grid power lines. It would continue all the way to the harbour where it would discharge to a surge bin.

The conveyor would be in a fully enclosed structure between the MHF transfer tower and the hot metal rail bridge. After the hot metal rail bridge the conveyor would run on a gantry supported by steel trestles except where it runs over roads where it would be fully enclosed. Where the conveyor is on an open gantry, it would have covers to protect the product from rain and prevent dust generation.

The Preliminary Environmental Report for the harbour facilities and the Project Description state that the maximum height of the conveyor would be 25m as a worst case scenario.

There would be two conveyors, one for each phase, and where possible they would be on the same supports and within the same enclosure.

The conveyor route needs to pass over the A1085, the main road into Redcar. The Company's architects have designed two options to create an attractive crossing structure. The artist's impressions of these are shown below.

BRIDGE OPTION 1 – SIMPLE

CROSS SECTION

BRIDGE OPTION 2 – TRUSS

CROSS SECTION

CONVEYOR ROUTE OPTIONS

After passing over the railway, the conveyor would enter the Bran Sands site and could take one of two routes – either along the northern or the southern boundary of the site. Either route may require a transfer tower (at a maximum height of 25 metres) after crossing the railway and would then travel to the quayside.

The southern route would travel in a north-westerly direction towards a transfer tower or a surge bin at the southern end of the quayside. The surge bin or transfer tower at this location would be a maximum height of 35 metres.

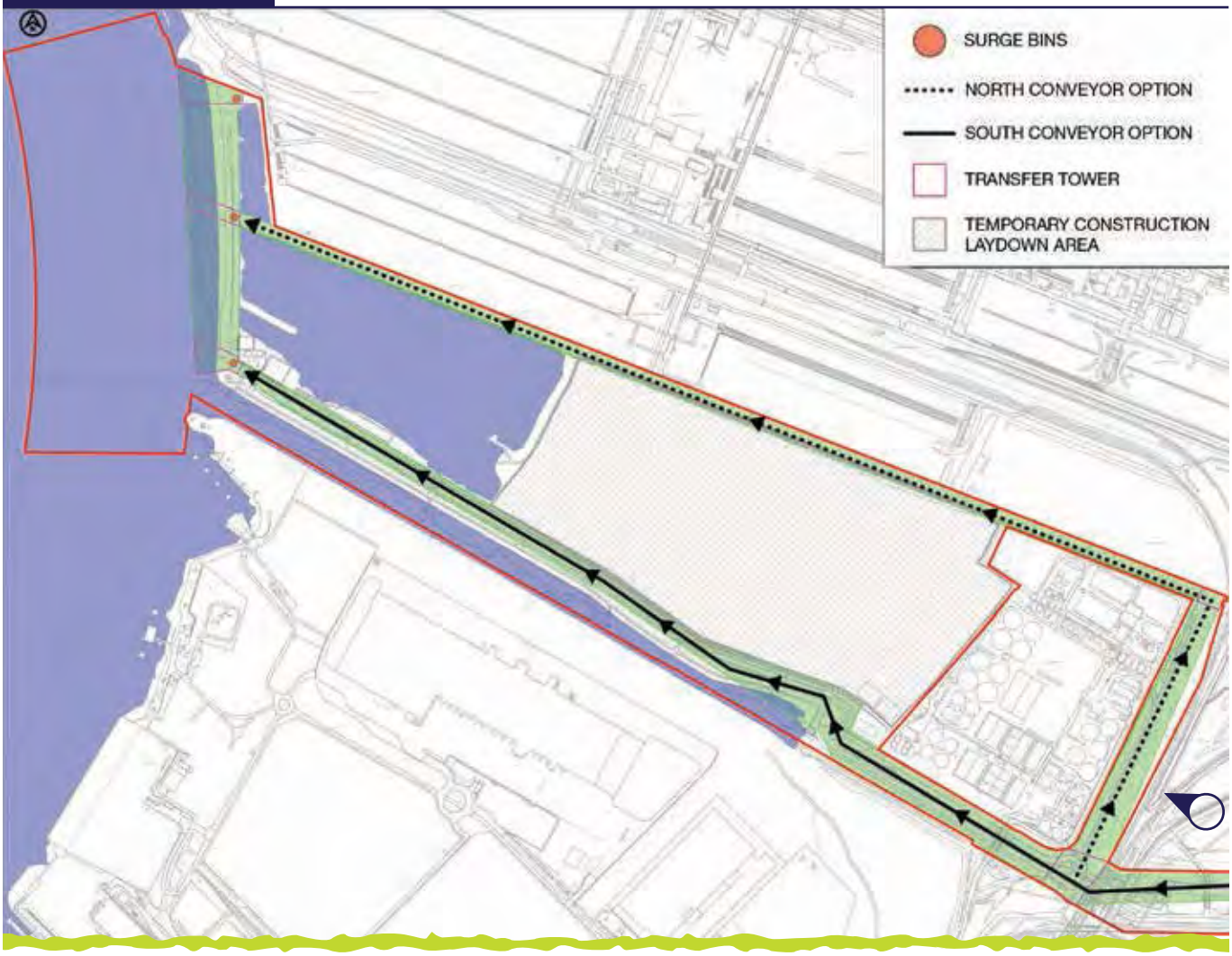
The northern route would depart from the transfer tower in a northerly direction to another transfer tower north-east of the Northumbria Water (NWL) sewage treatment works. From here, the conveyor would continue westward to a surge bin or transfer tower at either the centre of the port terminal or at the northern end.

The conveyor crossing over the Bran Sands lagoon 'finger' would require two supporting foundations within the lagoon. Otherwise, works carried out which could affect the lagoon would be kept to a minimum.

The transfer towers or surge bins would feed into a conveyor system which in turn would feed the ship loader system.

Aerial image taken from approximate location shown on map below

BRAN SANDS SITE



BUILDINGS AND STRUCTURES

BUILDINGS

Existing structures and buildings on the site would be kept except where there is a direct conflict with proposed works.

During the construction period, an area of approximately 200 metres x 150 metres would be required for the contractor's compound, associated storage and car parking for 70 spaces. This would be located to the south-east of the lagoon and would be cleared and restored once construction of the harbour facilities is complete.

When the harbour facilities are operational several permanent buildings would be required including an office, workshop, storage, and various smaller ancillary buildings housing plant and machinery.

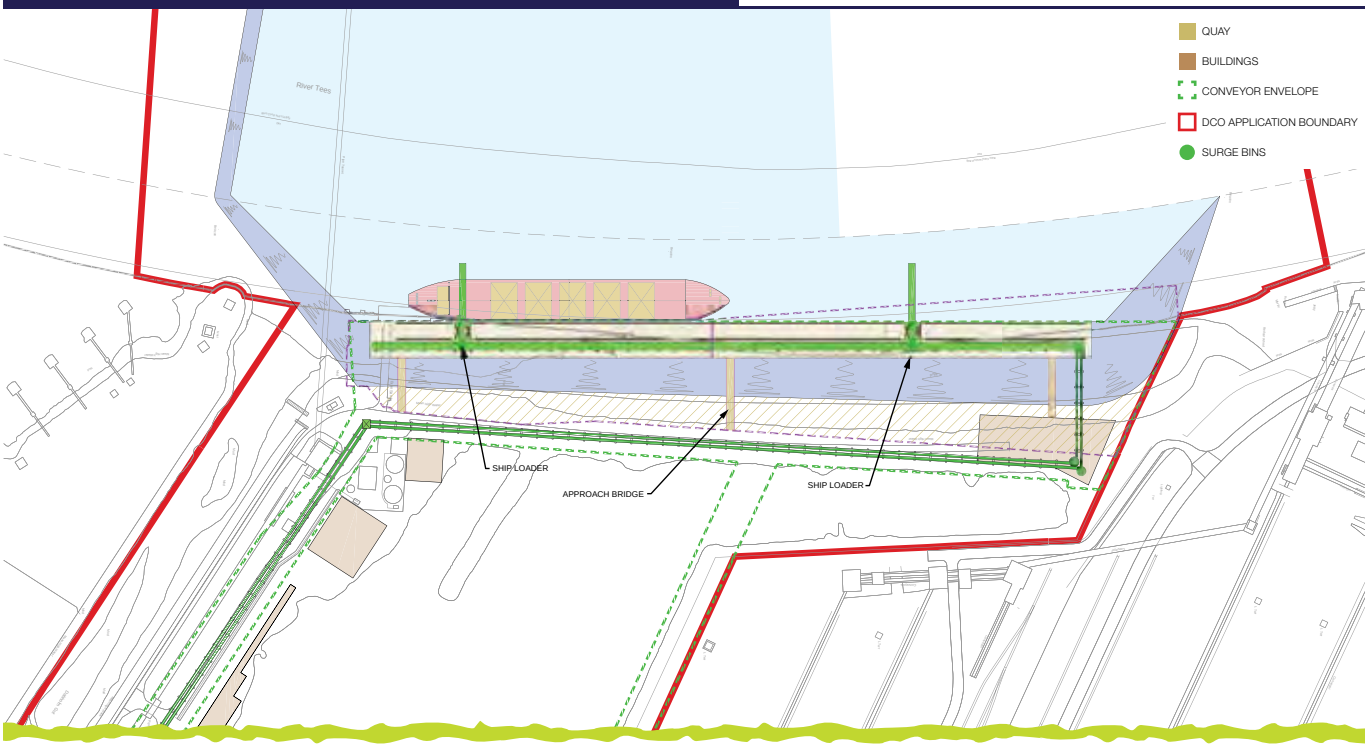
NWL TEMPORARY JETTY

Northumbria Water (NWL) previously operated a sludge jetty located to the north of the Dabholm Gut, which is no longer operational. In the first two years of operation this may be used on a temporary basis, with new equipment installed to allow for smaller boats to moor and the polyhalite transferred to the ships by a temporary ship loader or truck.

This option could either be pursued through a standard planning application to Redcar & Cleveland Borough Council and/or included in the DCO process.

View of current frontage where proposed quay will be constructed

OPEN QUAY OPTION AND BUILDING STRUCTURES



THE QUAY STRUCTURE

The proposed quay would consist of a wharf of a minimum of 540 metres in length and up to a maximum of 85 metres in width. This would allow for the docking of two ships at one time, as well as space for the ship loaders that would be used to transfer the polyhalite.

The quay deck level will be approximately 2m above the highest water level (8.45 metres 'Above Chart Datum'). The design has accounted for anticipated sea level rises.

Two possible options for the construction of the quay are under consideration – an open quay structure or a closed quay – as outlined in this section.

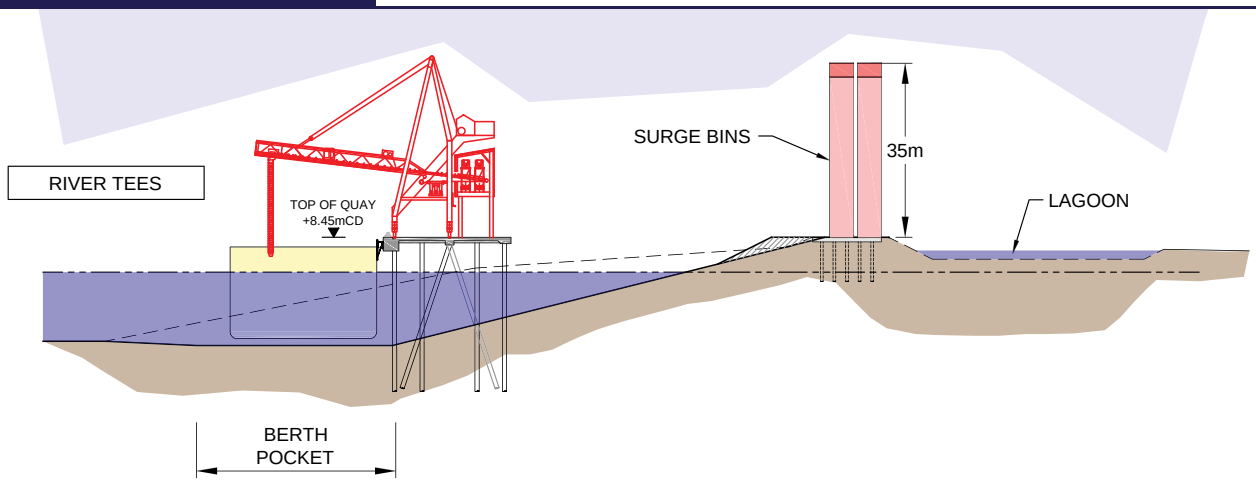
OPEN QUAY STRUCTURE:

This involves an open quay structure, whereby the quay platform would be a suspended structure located approximately 60m from the existing river bank. The platform could be accessed via one of three approach bridges. The effect being that the Tees would have free and open flow between the quay platform and the bank and would have the least impact on the flow of the river. This option would require an increased level of dredging in order to clear adequate space for the open quay structure.

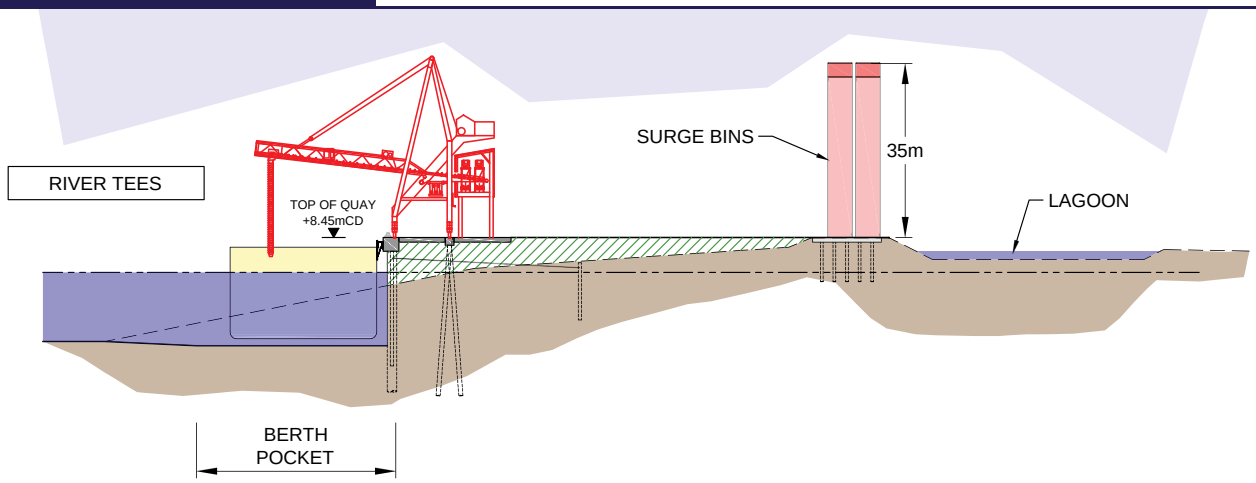
CLOSED QUAY STRUCTURE:

In a closed quay structure the space between the bank and the proposed location of the quay platform would be back filled. The quay platform would therefore be accessible via engineered hard standing. This proposal would result in less dredging of the Tees Estuary and add increased stability to the shoreline through the construction of a new, reinforced, riverbank.

OPEN QUAY STRUCTURE



CLOSED QUAY STRUCTURE



CONSTRUCTION AND DREDGING

CONSTRUCTION

Subject to all necessary consents, works to construct the proposed harbour facilities would commence in January 2017 with completion of Phase 1 expected in July 2018. Phase 2 would be completed, with the harbour running at full capacity, by 2024.

Construction and operation vehicle access to the harbour facilities would be via the A1085 trunk road. With the exception of internal road access, no new road infrastructure is proposed. There is also potential for some construction materials to be brought to the site on barges using the River Tees via an existing jetty.

DREDGING

To accommodate the quay and the boats it would be necessary to dredge an area of the estuary to provide berth pockets for mooring and an adequate entry channel. Dredging involves the removal of a layer of the river bed in order to create the necessary depth. As it stands the estuary is not deep enough to accommodate the proposed ships required and therefore this is a necessary element of the construction.

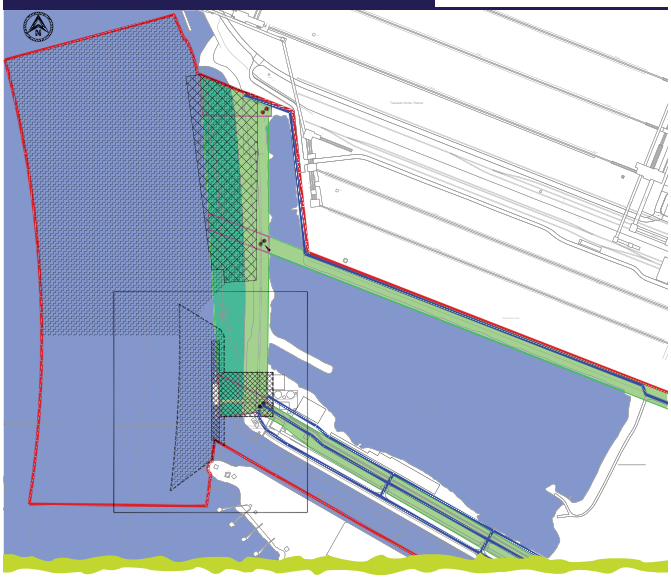
The material that is displaced in the dredging process would be removed from the area rather than moved to another part of the estuary, this process is known as capital dredging.

The necessary dredging would include the approach channel, allowing ships to enter the quay area safely. The dredging in this location would be to a depth that matches that of the remainder of the approach channel between the mouth of the estuary and the proposed quay location (14.1m below chart datum (bCD) (currently the approach channel is 10.4m bCD). At the docking area, along the mooring locations, berth pockets would be created at an additional depth (16m bCD).

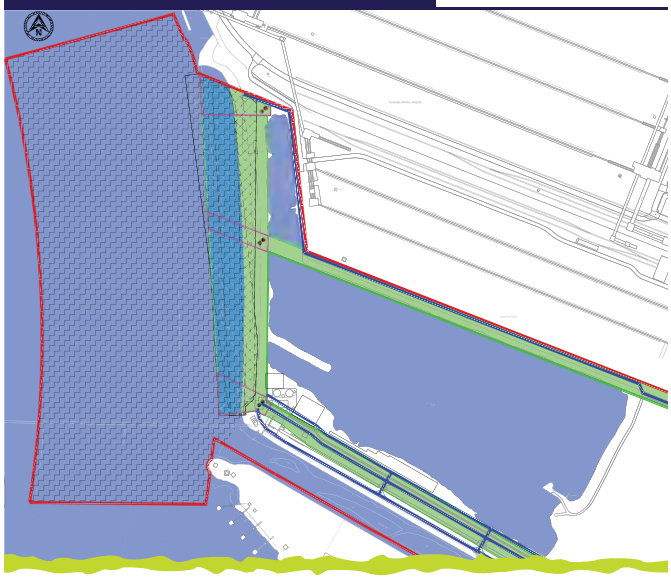
Dredging of the approach channel would take place in Phase 1 and Phase 2 as necessary. As described previously, the open quay structure (option 1) would require further dredging than the closed quay structure (option 2).

Most dredging would be carried out as part of the construction process, however some would be required as part of routine maintenance to prevent the build-up of river sediment in the quay berth.

PHASE 1



PHASE 2



DCO APPLICATION BOUNDARY DREDGING ENVELOPES CONVEYOR OPTIONS QUAY

ENVIRONMENTAL IMPACTS AND MITIGATION

The development is of a scale that gives rise to a requirement to undertake a formal Environmental Impact Assessment (EIA) and this is being prepared by an experienced team at one of the UK's leading environmental consultancies.

The EIA looks in detail at the potential impacts of the Project on the environment, both during construction and once the harbour is operational, and also identifies any measures that may be needed to minimise these effects.

A Construction Environmental Management Plan would be developed to ensure that all environmental impacts are managed effectively. As part of the EIA, an in-depth assessment has been undertaken into a wide range of environmental topics in consultation with key stakeholders and consultees. A summary of the key topics that are being investigated is provided below:-

1. Ecological issues – both in terms of the marine and coastal areas as well as areas on land
2. Water issues – including water quality and hydrology, coastal protection and flooding
3. Visual impacts – focusing on the effects from those who live, work and travel through the area
4. Transportation – relating to lorry and car movements on land and also navigational issues within the Tees
5. Air quality and noise & vibration – particularly focusing on the construction period including piling into the riverbed
6. Heritage and archaeology
7. Socio-economics and any effects on the use of the area for recreation or leisure purposes

As part of this consultation process, a Preliminary Environmental Report has been prepared which provides information identified to date in relation to the current conditions of the site and the possible effects of the harbour facilities development.

An Environmental Statement, reporting on the findings from the EIA, will be submitted with the DCO application to assist those responsible for making a decision on the development to understand the extent of any environmental effects and the strategy which York Potash is proposing to put in place to address these.

MORE INFORMATION

A copy of details of the proposals, preliminary environmental information, plans, maps and other draft documents showing the nature and location of the proposed development, may be inspected free of charge at the following locations and during the hours set out below.

VENUE	OPENING TIMES		
Redcar & Cleveland Borough Council offices Kirkleatham Street, Redcar, TS10 1RT	**Mon–Fri** 9am–5pm		
York Potash Ltd 7–10 Manor Court, Manor Garth, Scarborough, YO11 3TU	**Mon– Fri** 9am–5pm		
Redcar Library Kirkleatham Street, Redcar, Cleveland TS10 1RT	**Mon–Wed, Fri** 9am–6pm	**Thurs** 9am–5pm	**Sat** 9.30am–12.30pm
Tuned In Majuba Road, Redcar, TS10 5BJ	**Mon–Fri** 8.30am–8pm	**Sat** 8.30am–6pm	**Sun** 8.30am–4pm

The documents relating to the proposed application will be on display at the above locations from 11 September 2014 to 16 October 2014. Further details in relation to the Project and these documents can be found on the York Potash website www.yorkpotash.co.uk.

CONSULTATION PROCESS AND DOCUMENTATION

FORMAL CONSULTATION

Information on the formal consultation with people living in the vicinity of the proposed harbour facilities is set out in a Statement of Community Consultation (SOCC) which is available to download from the Project website www.yorkpotash.co.uk/consultation.

Formal consultation will also take place with prescribed consultees pursuant to s.42 of the Act.

COMPULSORY PURCHASE ORDER

It is currently anticipated that it may be necessary to utilise land that is in third party ownership or affected by third party rights. All parcels of land and rights affected are identified in the Book of Reference and on the Land Plans.

FURTHER INFORMATION

Publicly available documents, listed in the table (right), can all be downloaded from the Company website. If you would like any further information about the proposals, please do not hesitate to contact us.

For more information on where hard copies of these documents are publicly available, please see page 14.

PUBLICLY AVAILABLE CONSULTATION DOCUMENTS

Application Forms	
Plans/Drawings/Sections	• Land Plans • Works Plans • Access and Rights of Way Plan
Other plans necessary to describe proposed development	• Location Plan • Layout Plans (Temporary) • Layout Plans (Phase 1) • Layout Plans (Phase 2) • Interface with MHF • MHF Layout Plan • Flowchart • Conveyor Information
Draft Development Order and Associated Plans	• Draft Proposed Order • Explanatory Memorandum
Compulsory Acquisition Information	• Statement of Reasons • Book of Reference
Other Documents	• Preliminary Environmental Report • Summary of Proposals Document • Project Description

PROJECT TIMELINE

SEPTEMBER 2014	Planning application submitted for the mine and MTS Planning application submitted for the MHF
DECEMBER 2014	DCO application submitted for the harbour facilities
Q1 2015	Proposed mine construction starts
JANUARY 2017	Proposed harbour construction starts
2018	Target date for first production



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YORKPOTASH
A **Sirius Minerals** Project

Appendix 14

CD of harbour facilities DCO consultation material

THE YORK POTASH HARBOUR FACILITIES ORDER 201X

Consultation Documentation

YORKPOTASH
A Sirius Minerals Project

Nathaniel Lichfield & Partners
Planning. Design. Economics.

York Potash Project

Summary Project Description

Doc No: 7.3

Version as at:-
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Glossary

Access Drift

The sloping mine drive (tunnel) that provides sub-surface access for vehicles between surface facilities and mine shaft conveyance (lifts, etc) chambers

Arisings

Excavated material resulting from the construction of the mine shafts, access shafts and MTS tunnel

Berthing Area

A designated location in a harbour for mooring vessels

California Switches

Rail track providing a passing section

Combi-Pile Wall

A line of steel tubular king piles linked by pairs of steel sheet piles

Continuous Flight Auger Boring

A machine with a rotating helical shaft for boring into the ground

Continuous Mining

Mining in which a 'continuous mining machine' cuts or rips mineral from the face and loads it onto conveyors or shuttle cars in a continuous operation

Conveyor Transfer Station

A structure required to allow traditional trough conveyor systems to change direction

Decline Portal

A support structure at the interface between the sloping ramp and the underground opening that is required for machine access from surface to underground.

Drill and Blast

A method of excavating long tunnels/shafts through hard rock, where digging is not possible

Drive

For mining - A tunnel, mine roadway or drift

For plant and equipment - A motor and gearbox assembly that provides rotational power to turn mechanical equipment

Flexible Conveyor Train

A mobile belt conveyor system that can be manoeuvred into curved and/or straight lines to facilitate the removal of excavated material from tunnelling and continuous mining equipment

Gantry Crane

Overhead structure that supports a winch and lifting hook for the purposes of assembling mining equipment

Granulation

The process of being formed into grains, granules, or other small particles

Head Frame (and Head Frame Chamber)

A structural steel frame above a mine shaft (in this case, housed within a sub-surface chamber to reduce visual effects above ground) that supports winding rope sheaves and mine conveying equipment

Jetty Dolphins

A man-made marine structure to which ships mooring lines are secured. These are usually installed to provide a fixed structure when it would be impractical to extend the shore when ships mooring lines extend further than the length of the berth

Mining Chamber

Underground 'room' which may serve a variety of purposes

Open Quay Construction

Suspended deck structure comprising a reinforced concrete deck supported by piles driven into the shoreline

Ordnance Datum

A vertical datum used by an ordnance survey as the basis for deriving altitudes on maps

York Potash Project : Summary Project Description

Pit Bottom

The bottom of a shaft and all the equipment and roadways within the vicinity of the shaft collar, usually encompassing some 400 metres distance from the shaft centreline

Polyhalite

A particular form of potassium salt, comprising a mix of potassium, calcium magnesium and sulphur; it is predominantly found in marine deposits where sea water has been concentrated due to prolonged evaporation.

Potash

Any potassium compound, although the name is most commonly used for water-soluble salts like potassium chloride and potassium carbonate

Pump Return Tank

Facility for dealing with fluid used in the drilling process

Redcar Mudstone

Grey, fossiliferous mudstone and siltstone with subordinate thin beds of fossiliferous limestone below and fine-grained carbonate cemented sandstone above

Revetment

Sloping structure placed on banks in such a way as to absorb the energy of incoming water

Rock Bolt

A bar, usually steel, that is inserted into pre-drilled holes in rock and tensioned for the purpose of ground control. Rock bolts are classified according to the means by which they are secured or anchored in rock.

'Room and Pillar' Method

Mining system in which the mined material is extracted horizontally creating horizontal rooms and pillars. Pillars of untouched material are left to support the roof in the rooms

Schoma

A type of small diesel railway locomotive

Seam

An underground layer of a mineral

Shaft

A vertical excavation in rock for the purpose of providing access to an orebody; usually equipped with a hoist at the top, which lowers and raises a conveyance for handling workers and materials

Shiploader

A machine used for loading bulk solid materials into ships. It mainly consists of a boom, a belt conveyor, a tripper to elevate and transfer product from a source conveyor, and a mobile structure to support and travel the boom. It is usually mounted on rails and can travel the whole length of the ship. The boom can be luffed and slewed by separate drives so that it can fill all the ship holds

Shotcrete and Rock Bolt Lining

Tunnel lining formed of rock bolts (see above) and shotcrete (a mixture of cement, water and aggregate applied under pressure)

Shuttle Car

A vehicle on rubber tyres or continuous treads to transfer raw materials, such as coal and ore, from loading machines in trackless areas of a mine to the main transportation system

Skip

A guided container mounted within a carrying framework, having an aperture at the upper end to permit loading, and a hinged or sliding door at the lower end to permit discharge of the load. It is used in the shafts for hoisting the minerals (and can also be adapted for personnel riding).

Solid Quay Construction

A quay structure comprising a solid concrete piled wall supporting a reinforced concrete beam on which the waterside ship loader will be fixed. A ground bearing concrete slab will form the foundation for the conveying system and cover the remaining area of the quay

Spoil

Overburden, non-ore, or other waste material removed in mining, quarrying, dredging, or excavating

Stacker Conveyor

A machine used in bulk material handling. Its function is to pile bulk material such as limestone, ores and cereals on to a stockpile.

York Potash Project : Summary Project Description

Strata

A single bed of sedimentary rock, generally consisting of one kind of matter representing continuous deposition

Surge Bin

A storage facility for temporary storage, where there is a variable rate of flow or in cases of emergency or breakdown.

Swale

A low lying natural or man-made tract of land that can manage water runoff, filter pollutants, and increase rainwater infiltration

Tees Valley Enterprise Zone

An area of the Tees Valley launched in April 2012 covering over 420 hectares and containing a number of sites where businesses can benefit from tax relief and simplified planning regimes

Tie Rods

Slender structural unit used as a tie and usually load bearing

Trough Conveyor

A belt conveyor with the sides of the belt turned up to form a trough

Underground 'Winning and Working'

Winning comprises the operation of mining an ore. Working comprises the process of creating tunnels and caverns to assist in the winning process

Winder/Winding Hoist

An electrically driven winding engine for hoisting a cage or cages up a vertical mine shaft

Abbreviations

AOD

Above Ordnance Datum

AIM

Alternative Investment Market

bCD

below Chart Datum

BREEAM

Building Research Establishment Environmental Assessment Method

CEMP

Construction Environmental Management Plan

CFA

Continuous Flight Auger

DWT

Dead Weight Tonne

DCO

Development Consent Order

ha

Hectare

HGV

Heavy Goods Vehicle

kV

Kilovolt

m^3/day

Cubic Metres per Day

MHF

Materials Handling Facility

Mtpa

Million Tonnes Per Annum

MTS

Mineral Transport System

Mm^3

Million Cubic Metres

NSIP

Nationally Significant Infrastructure Project

NWL

Northumbria Water Ltd

NYMNPA

North York Moors National Park Authority

PINS

Planning Inspectorate

RCBC

Redcar and Cleveland Borough Council

ROM

Run of Mine

SBC

Scarborough Borough Council

TBM

Tunnel Boring Machine

WwTP

Wastewater Treatment Plant

YPL

York Potash Limited

1.0 Introduction

1.1 This document has been prepared on behalf of York Potash Limited ("YPL"). Its purpose is to provide a summary description of the York Potash Project and its component parts to assist interested parties in understanding the nature and form of the proposed development as it evolves from a process of detailed assessment, design work and to respond to ongoing consultation.

1.2 The York Potash Project involves the creation of a mine to enable the underground winning and working of Polyhalite along with the necessary infrastructure required for the subsequent distribution of the mineral. It comprises the following constituent parts:

1 The mine with surface infrastructure at Dove's Nest Farm;

2 A tunnel with conveyor (material transport system or MTS), that transports the Polyhalite from Dove's Nest Farm to the Wilton facility, at Teesside;

3 A materials handling facility ("MHF") at Wilton;

4 Harbour facilities at Teesside, linked to the MHF via a further conveyor system;

5 A construction worker Park & Ride south east of Whitby, with the option of providing construction worker accommodation

6 Expansion to the Park & Ride facility west of Whitby for use by mine workers; and,

7 Extended use of the Park & Ride facility south of Scarborough for use by construction and mine workers.

1.3 The information presented within this document seeks to describe the Project by providing a concise, non-technical narrative of the proposals, supplemented where appropriate by graphics. Information is also provided on the necessary town planning consents required to progress the implementation of the Project.

1.4 The document draws from and summarises a range of different documents, plans and assessments which describe the various components of the Project.

York Potash

1.5 YPL is a wholly owned subsidiary of Sirius Minerals Plc. It is a Potash development company listed on the AIM market of the London Stock Exchange. Its primary focus is the development of the York Potash project in North Yorkshire.

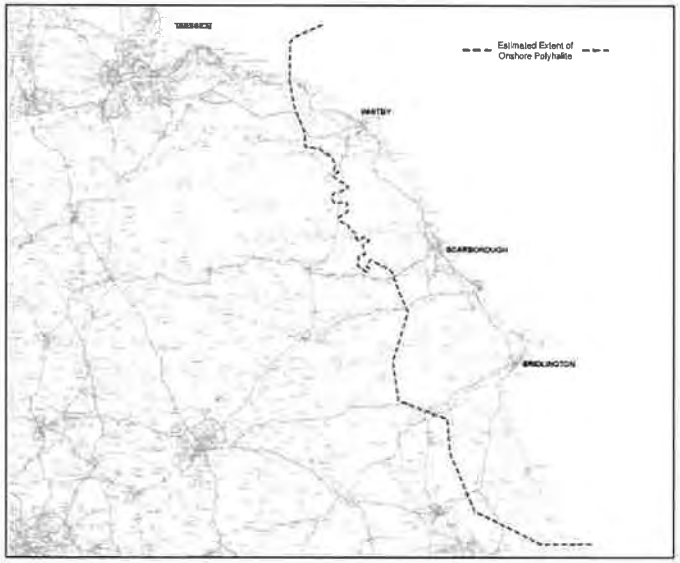
Background to the York Potash Project

1.6 Polyhalite (a form of Potash) is a naturally occurring mineral containing major plant nutrients – potassium, sulphur, magnesium and calcium. As such, it

comprises a valuable multi-nutrient fertiliser and its application by the farming industry, both within the UK and overseas, will assist in maintaining and improving crop yields and harvest. The overall growth in the world's population has led to a rising demand for food; and therefore for fertilisers to increase yields and food supply.

1.7 In terms of the availability of Polyhalite, in the UK the mineral is found onshore along a relatively small distance of coastline of around 140km in North Yorkshire (Figure 1.1). This constitutes the only known resource of onshore Polyhalite in this country. It is also present in large offshore areas beneath the North Sea extending towards northern Europe.

Figure 1.1 Estimated Extent of Onshore Polyhalite



1.8 The York Potash project seeks to win and work the Polyhalite. Due to a series of mining and environmental constraints, the resource is only accessible in a general area between Scarborough and Whitby.

1.9 The saleable product can take the form of granulated, powdered and/or chipped Polyhalite and could be used as a directly applied fertiliser or blended with other minerals to make different fertiliser products for use in agricultural practice.

1.10 YPL is aiming to establish a mining operation that, within six years of the first production of the mineral, is producing 13 million tonnes per annum ('Mtpa') of granulated Polyhalite. This will be primarily for export but some will also be available for use within the UK.

Structure

1.11 The document has been structured as follows:

1 Section 1.0 (this section) explains the background to, and the main objectives of the York Potash Project;

2 Section 2.0 identifies in broad terms the different elements of the overall Project, the purpose of each of these in the context of the wider proposal, and the different regimes to be used; and,

3 Section 3.0 to 9.0 provide a summary description of the separate Project elements and the interface between them.

2.0 # Overview of the Project

2.1 To achieve its overall objective, YPL has identified the following key developments that require consent:

1 A mine, including a surface access point ('Minehead') at Dove's Nest Farm and Haxby Plantation, Sneatonthorpe;

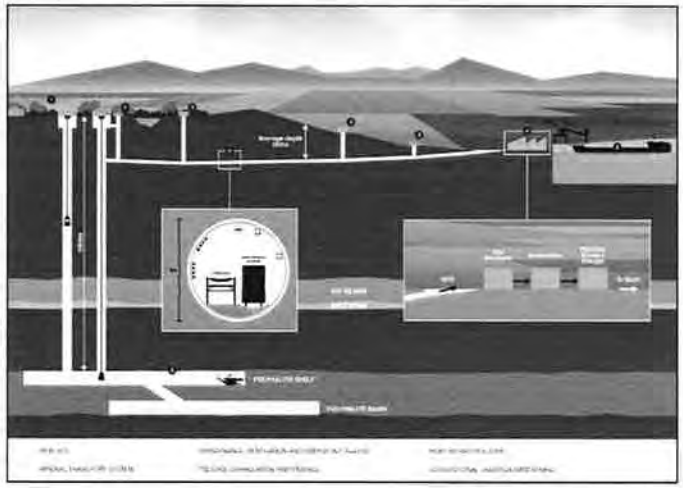
2 A Mineral Transport System ('MTS') - primarily comprising a 36.5km tunnel containing a series of linked conveyor belts that will transport the Polyhalite from an underground point beneath Dove's Nest Farm to Wilton, Teesside. In addition, three surface 'intermediary' sites along the route of the MTS to provide access for tunnel construction and on-going maintenance/emergency egress;

3 A Materials Handling Facility ('MHF') - a granulation and storage facility at Wilton (Teesside) that will receive and handle the Polyhalite transported via the MTS; and,

4 A Harbour Facility - proposed on land at Bran Sands, Wilton on the south bank of the River Tees Estuary.

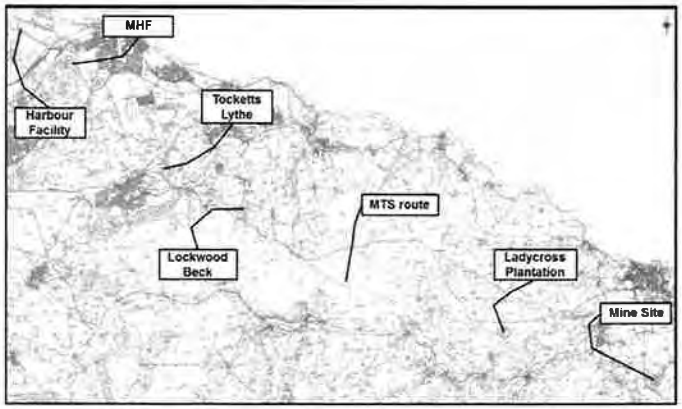
2.2 The main Project elements described above and their interrelationships are shown in Figure 2.1 below.

Figure 2.1 Overview of the York Potash Project



2.3 The location of each of these main elements of the York Potash Project is show in Figure 2.2 below.

Figure 2.2 Overview of the York Potash Project



2.4 Other developments associated with the Project include:

1 A temporary Park & Ride facility to transport construction workers to the mine construction site. This is proposed at land to the south of Stainsacre Lane, directly opposite the existing Whitby Industrial Estate, south east of Whitby. The option to provide a construction worker village at the site is also provided for;

2 Expansion of the Park & Ride facility west of Whitby - this would allocate car parking spaces for mine workers as part of the existing Cross Butts Park & Ride and allow for the provision of a bus connection directly to the mine at Dove's Nest Farm; and,

3 Extended use of the Park & Ride facility south of Scarborough - this would allocate car parking spaces for construction and mine workers as part of the existing A64 Seamer Road Park & Ride and allow for the provision of a bus connection directly to the mine at Dove's Nest Farm.

Development Phasing

2.5 The mine will be constructed to ensure that, on first operation (Year 0), it will be capable of a mineral throughput of 6.5 Mtpa. Mining operations will then ramp-up such that the throughput by Year 6 will be 13 Mtpa. For the purposes of assessment the operations have been defined as two 'Phases' with 'Phase 1' comprising a throughput of 6.5 Mtpa and 'Phase 2' comprising a throughput of 13 Mtpa.

2.6 The phased development of the mine will directly influence the infrastructure required to be in place to receive, handle and transfer the mineral at the MHF and Harbour Facility; at both facilities it is likely that the schemes will be constructed in two phases. The MTS and shaft sizes at the mine site have been designed to allow full production capacity from the outset and, therefore

only minor additional construction works will be required to allow an increase to 13 Mtpa.

2.7 The following general principles apply to the construction of the York Potash Project:

1 It has been assumed for the purposes of assessment that Month 1 of the site preparation/construction works for the Project would commence in March 2015;

2 The anticipated construction periods for Phase 1 in respect of each of the main components of the Project are:

i Mine - 42 months (plus 15 months initial site preparation/mobilisation works);

ii MTS - 40 months (of which 18 months will involve the sinking of access shafts and approximately 20 months for construction of the tunnel);

iii MHF - 29 months for the initial works with work due to commence in Month 10 (early 2016) to align with the construction of the mine and MTS; and,

iv Harbour Facilities - 19 months; and

3 Once operational, additional construction works will be required at the Mine (approximately 6 months), at the MHF (between 12 to 18 months) and at the Harbour (approximately 12 to 18 months) to expand the facilities to allow production up to 13 Mtpa (Phase 2).

2.8 Working hours for above ground construction workers are planned to be up to seven days per week daytime only, with weekend and night working available as contingency or where necessary. Underground work, such as the shaft sinking and tunnel works associated with the MTS, will occur on a 24 hour, seven day per week basis.

Sustainability

2.9 The company strives to achieve long term sustainable development; believes in the training and development of its staff; and seeks to support local communities. Its key objectives in achieving a sustainable development are as follows:

1 to ensure that at least 80% of the operational workforce will be employed from the local area and a skills strategy has been developed to assist in achieving this;

2 minimising the impact of the proposals at all times through responsible environmental management;

3 supporting community projects through a community fund that shares project revenue

4 mitigating traffic effects by appropriate routing of vehicles away from unsuitable local roads and by encouraging the use of Park & Ride facilities for those working at the mine and MTS sites; and

5 engaging in full and transparent pre-application consultation in advance of key planning submissions.

2.10 BREEAM pre-assessments are being carried out in respect of the final buildings proposed for most of the site which will include consideration of the potential for renewable energy to be utilised as part of the project.

Consenting Regimes

2.11 A mineral planning application in respect of the mine and MTS will be submitted to North York Moors National Park Authority ('NYMNPA') and Redcar and Cleveland Borough Council '('RCBC') (given that the route of the MTS crosses the administrative boundary between the NYMNPA and RCBC) pursuant to the Town and Country Planning Act (1990). A separate minerals related county matters application will be submitted for consideration by RCBC in respect of the MHF.

2.12 The Harbour Facility is classified as a Nationally Significant Infrastructure Project ('NSIP') under the Planning Act 2008. A separate application for a Development Consent Order (DCO) will therefore be submitted to the Planning Inspectorate 'PINS' for examination, with the final decision to grant a DCO being taken by the relevant Secretary of State.

2.13 The temporary construction worker Park & Ride and village will be the subject of a separate planning application (for temporary consent) submitted to Scarborough Borough Council ('SBC'). An application to vary the opening times for the Scarborough Park & Ride will also be submitted to SBC.

2.14 A further planning application for necessary works to the Whitby Park & Ride Facility associated with the Operational Park & Ride will be submitted to NYMNPA. This application will be prepared and submitted by North Yorkshire County Council.

2.15 Table 2.1 below sets out the applications to be submitted and the relevant determining authorities.

Table 2.1 York Potash Project: Applications Consenting Regimes

Project Element	Application Process	Determining Authority
Mine and MTS	Mineral Planning Application under Town and Country Planning Act (1990)	NYMNPA and RCBC
MHF	Mineral related County Matters Application under Town and Country Planning Act (1990)	RCBC
Harbour Facility	Development Consent Order under Planning Act	Secretary of State. Further information about the planning process can be found

Project Element	Application Process	Determining Authority
	(2008)	at http://infrastructure.planningportal.gov.uk
Construction Village and Construction Worker Park & Ride Facility	Planning Application under Town & Country Planning Act (1990)	Scarborough Borough Council
Scarborough Construction and Operations Park & Ride Facility	Application to develop without compliance with Planning Consent (s73)	Scarborough Borough Council
Whitby Operations Park & Ride Facility	Application under Town and Country Planning Act (1990) (to be submitted by North Yorkshire County Council)	NYMNPA

3.0

Mine

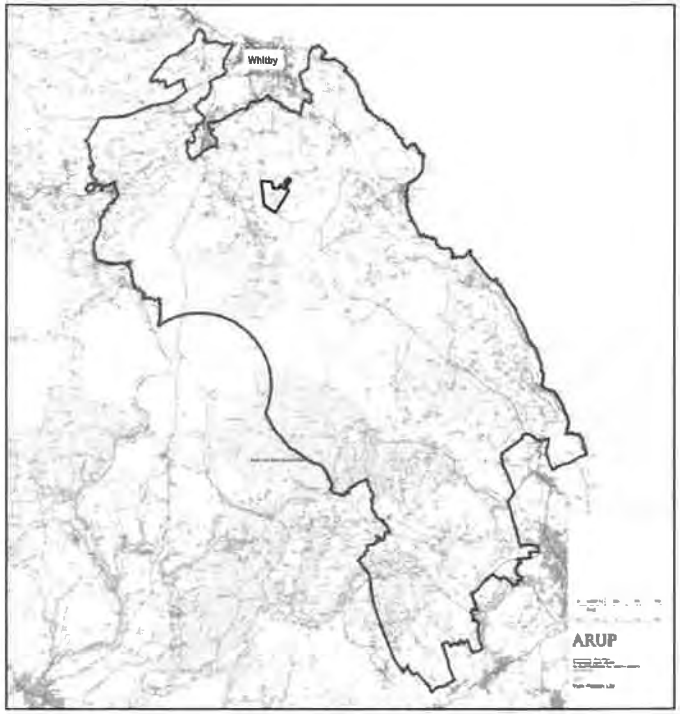
3.1 The Mine development comprises the winning and working of polyhalite minerals via an underground mine and associated facilities, access shafts to the mine and above ground infrastructure located at the Dove's Nest Farm site.

Site and Surroundings

3.2 The development boundary for the mine encompasses the area outlined in red in Figure 3.1 below. It includes areas to the east, south and west of Whitby (at the north of the site).

3.3 The surface development works are located at Dove's Nest Farm and Haxby Plantation (outlined in blue), which is approximately 4km south of the outskirts of Whitby and wholly within the boundary of the North York Moors National Park.

Figure 3.1 Extent of Mine Site Boundary



3.4 The Dove's Nest Farm site is currently used for a mix of farming and commercial forestry. Existing farm buildings are located immediately adjacent to the current main access from the B1416 and more centrally within the proposed surface development area.

3.5 The site is bound to the north and east by areas of farmland and woodland and, to the west and south by the route of the B1416 (which runs from Whitby to the north to a junction with the A171 Robin Hood's Bay Road approximately 2km to the south east of Dove's Nest Farm). Beyond the B1416 are areas of moorland (Ugglebarnby Moor and Sneaton Low Moor) both of which are designated as Special Areas of Conservation/Special Protection Area.

Figure 3.2 Extent of Dove's Nest Farm Site

3.6 Existing vehicular access to the site is directly from the B1416 to the west. A minor informal access exists directly into the commercial forestry area from the south and also directly from the B1416. The site is surrounded by tree and shrub screening. The highest parts of the site are to the west and south, sloping gently downwards towards the east.

3.7 The small hamlets of Littlebeck (approximately 1km to the west) and Sneatonthorpe (approximately 1km from the Dove's Nest Farm site boundary towards the north east) are the closest settlements to the site.

Description of Mine

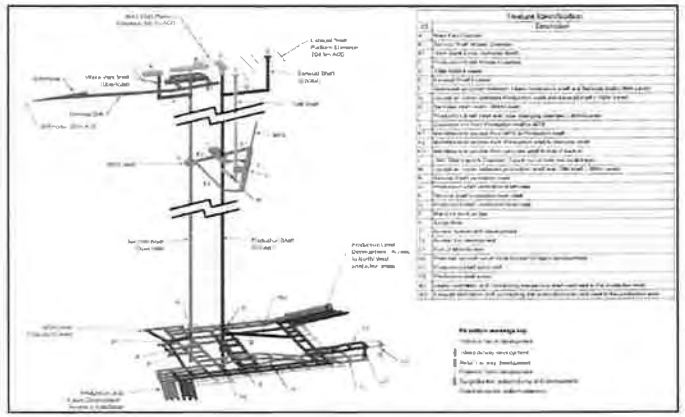
3.8 The description of the Mine provided below initially outlines the below ground aspect of the development, prior to consideration of the above ground infrastructure.

Below Ground Infrastructure

Access to Below Ground Infrastructure

3.9 The Polyhalite at Dove's Nest Farm is at a depth of about 1,520 metres below ground level.

Figure 3.3 Conceptual Arrangement of Below Ground Infrastructure



3.10 Access to the Polyhalite seams will be via two shafts. The northern production shaft and the southern services shaft comprising:-

1 the production shaft houses the hoisting systems and includes two winders operating a total of four skips and a double drum winder for personnel riding and inspection purposes; and

2 the men and materials or 'service' shaft provides for the transport of loads (personnel, equipment and materials) of up to 80 tonnes via a single large cage to the pit bottom and a double drum winder for personnel riding and inspection purposes.

3.11 Both shafts will also house utilities for mining activities including power, communication and water services. Each mine shaft will be concrete lined and will be approximately 9.5 metres in diameter. Each will require a head frame which will be located below ground in chambers of about 23 metres long, 17 metres wide and 45 metres deep.

3.12 Mine workers would normally be transported to the pit bottom via the man and materials shaft; with workers using the production shaft only for routine inspections, maintenance and emergency egress. Access to the underground head frame chamber of the men and materials/service shaft would be provided via an underground access drift that will slope down from a surface access point at the Welfare Building towards the chamber. Operators, equipment and

materials will be driven to the bottom of the headgear chamber in a shuttle bus which will run from the Welfare Building (described later).

3.13 Two additional ventilation shafts of approximately 9.5 metres in diameter will be required to provide intake and exhaust air to the mine workings.

3.14 A further shaft of approximately 9.5 metres in diameter will be sunk to a depth of 360 metres to provide ventilation exhaust for the mine site end of the MTS (see Section 4.0 of this document).

Mining

3.15 The shafts will sink directly to the Polyhalite seam. As a consequence, all excavated material resulting from pit bottom development is expected to be a saleable (i.e. no waste product is anticipated).

3.16 Around each shaft an area of the mineral would be left unworked in the Polyhalite seams that are equivalent to a radius from the shaft of approximately half the depth of the shaft. This generates an oval shape in the mineral through which only access tunnels are mined and bunkers are constructed. Retention of this mineral in situ creates a 'pillar of support' for the shafts which significantly reduces the potential for seismic interference with the shafts.

3.17 The mineral would be worked using the 'pillar and stall' method outside of a 'pillar of support'. This method comprises cutting tunnels of up to 12 metres wide and between 5 and 40 metres in height using continuous mining machine techniques. Pillars vary in size depending on the extraction height and will be left in place to provide local and regional support to the openings and overlying strata. Strata support such as rock-bolts will be installed, where required by local conditions, to provide enhanced stability within the mining chambers.

3.18 The extent to which the Polyhalite seam can be extracted will be determined by geotechnical analysis of rock characteristics to ensure that openings have long term stability. The mine layout would be established by a project mining plan which has been developed by expert mining consultants, international mining engineers and YPL mining operations personnel. Mine tunnels will be sized to allow the mine, equipment and conveyors to operate at 13 Mtpa, that being the planned maximum operating capacity of the mining operations.

Underground Mineral Handling

3.19 Mined mineral would be taken from the continuous miners onto shuttle cars/flexible conveyor trains, and then transferred to the mine's internal conveyor network. The mineral will be nominally sized at this point to under 150mm prior to being conveyed to the skip charging hoppers. No further crushing of the mineral will take place until it reaches Wilton MHF.

3.20 The mineral will be loaded into skips at the bottom of the production shaft and hoisted to the -360 metre level. Mineral would then be discharged from the skips to receiving hoppers and then controlled via a feeder to be loaded onto the MTS tunnel conveyor system and transported to the Wilton MHF. This

process will occur entirely underground - at no point will the Polyhalite reach surface level at Dove's Nest Farm.

Underground Support Facilities

3.21 General mine facilities and infrastructure located in the pit bottom area include staff amenities, workshops for mobile and fixed equipment maintenance, diesel fuel area, mine pump station, electrical sub-station and stores.

Above Ground Buildings and Infrastructure

3.22 The configuration of the proposed above-ground facilities and associated works at the mine site is illustrated on Figure 3.4 below.

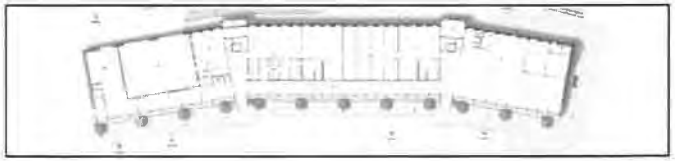
Figure 3.4 Site Layout Plan

3.23 A summary description of the main above ground development proposed at the site is provided below.

Welfare Building

3.24 A two-storey welfare building for mine workers is proposed at the southern area of the mine site. This would be 137.6 metres in length, 20.4 metres in width and 12.7 high. The building would provide a number of facilities, including a canteen; medical centre; meeting/conference rooms; and a workshop.

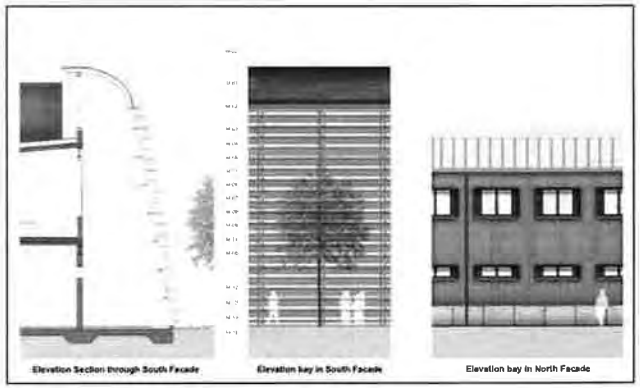
Figure 3.5 Welfare Building Ground Floor Plan



3.25 The western part of the building would provide a shuttle bus terminal, including four coach parking bays. This facility would be used to transport mine operatives to the mine shaft area via the access drift (described earlier in this section).

3.26 The building design would include a glazed southern façade incorporating timber louvres to moderate and control daylight entering the building and light emissions from the building during the evening periods. The building's east and west elevations would be predominantly clad with natural timber. The north elevation would also be clad with timber and include window openings. The building would be positioned on a concrete plinth. The roof would comprise a non-reflective material and include an overhang.

Figure 3.6 Examples of Elevational Treatment for Welfare Building



Gatehouse

3.27 A single-storey gatehouse will be located adjacent to the Welfare Building. This would monitor and control the access of vehicles entering the welfare compound and the mining operations beyond. Access will be via a controlled barrier/gate. The gatehouse will be 13 metres in length, 14 metres wide and 5 metres high. The building would be designed in a similar way to the Welfare Building - incorporating a glazed façade and louvres on the southern façade and timber cladding with window openings on the other elevations. The

building would also be set on a concrete plinth and have a non-reflective standing seam roof with an overhang.

Mine Site Buildings

3.28 The proposed development on the north part of the site would include seven mining-related buildings (including a building to house the maintenance access to the mine head end of the MTS).

3.29 The largest mine building (109.5 metres long x 52.7 metres wide x 21.2 metres maximum height) will house the winding hoist and associated equipment and will sit over the head frame chamber and shaft that will transport men and materials underground. A second building on this part of the site will accommodate a back-up generator, the intake and exhaust vent shafts and a sub-station.

3.30 The mine buildings would be single-storey, although the two shaft buildings would exceed the height of a typical single-storey building. All of the buildings would be timber clad, set on concrete plinths and have grey sheet metal roofs.

3.31 A vehicle access route into the mine buildings area would be provided from an internal road extending north from the welfare compound further south on the mine site.

Waste Water Treatment Plant and Drainage Strategy

3.32 A site Wastewater Treatment Plant (WwTP) will be provided close to the Welfare Building to treat water from the facilities within the building and that generated by underground workers. Wastewater generated by underground workers will be collected and transported to the surface in cassettes for treatment in the WwTP. It is estimated that a total wastewater volume of approximately 34m^3/day would be expected for 6.5 Mtpa production and approximately 68m^3/day would be expected for 13 Mtpa production. The WwTP will drain directly into Sneaton Thorpe Beck.

3.33 Surface Water Attenuation Ponds and Surface Water Wetlands will be provided to the north of the Welfare building and to the east of the landscaped bunds adjacent to the Mine buildings.

Vehicle Access

3.34 A new vehicle access is proposed into the site from the south directly from the B1416 with a maintenance access to the mine buildings provided via an access point provided to the west of the site (directly from the B1416).

Parking

3.35 Provision will be made for a limited number of parking spaces at the Mine. Of the 76 car parking spaces provided, five would be reserved for visitors leaving an allocation of 71 spaces for employees. Of these, eight spaces will be

reserved for disabled employees. A target of an average of three employees per parking space is proposed for the Mine car park.

3.36 The spaces would be located adjacent to the Welfare Building. The majority of staff are anticipated to arrive via the Park & Ride services (travel time from the Park & Ride at Cross Butts is estimated at eight minutes). A vehicle layby is provided at the front of the Welfare Building. The site also includes an emergency helicopter landing point.

Lighting

3.37 A detailed lighting strategy has been prepared to ensure that the required lighting provides safety for onsite workers and visitors, meeting standards, codes and good practice but also takes account of the site's sensitive location within the National Park.

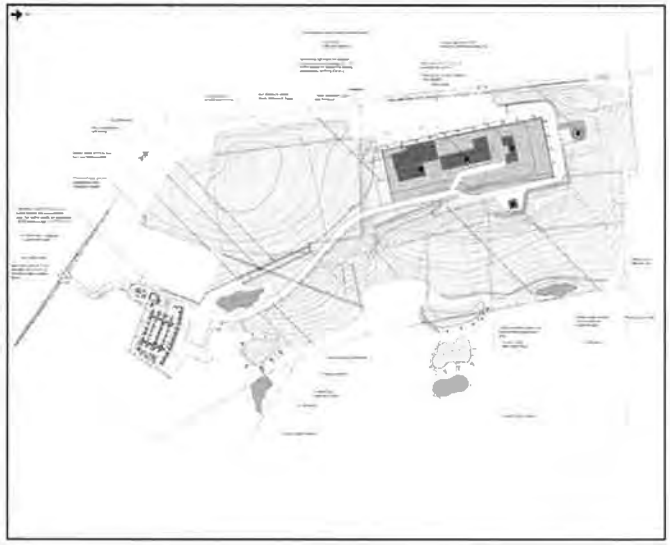
3.38 Permanent lighting proposed at the site would be provided along access and roadways, on perimeter fencing, in car park areas, and would be externally mounted on the Services Shaft Building and Welfare Building.

Landscaping and Earthworks

3.39 The construction of the mine shafts and surface works would generate 1.2 million m^3 of excavated material, with a further 0.5 million m^3 of top and sub-soils created through stripping the surface. A significant majority of this material would remain on-site and be used as part of the landscaping proposals. Approximately 0.15 million m^3 would be transported off-site.

3.40 A series of mounds would be created within the site using the spoil material generated during the construction period. These would be formed to create landscaped features as well as serving to create noise and light/visual barriers (see Figure 3.7 below).

Figure 3.7 Site Layout showing Earthwork Mounds



Construction Phase

3.41 The mine is expected to take a total of five years to construct. The construction works will operate on a 24 hour basis with the workforce rotating over three shifts per day.

3.42 Construction of the mine would be undertaken in the following stages of development:

1 Initial site preparation;

2 Sinking the mine shafts and establishing the underground infrastructure;

3 Building the necessary surface buildings; and

4 Landscaping the site.

3.43 Works will commence at Dove's Nest Farm with initial access and site preparation works in advance of the commencement of the main shafts sinking operations. The site preparation works are expected to take six to eight months with on-going infrastructure works continuing throughout the full construction phase of 58 months.

3.44 Shaft sinking would commence at month six and continue for a further 36 months. A hardstanding area would be constructed on the surface around the location of the shafts to support temporary winding head frames, plant and equipment. It is anticipated that these headframes would be 45 metres in

height and these would be in place for approximately 44 to 48 months. Shafts will be sunk using a conventional 'drill and blast' method; with pre-grouting used to prevent water ingress into the shafts. A further 21 months is planned during which time the pit bottom and initial mine developments would be developed.

3.45 Construction of the above ground development would commence with development of the Welfare Building/Mine Buildings at month 22 of the construction period. It is currently anticipated that this second phase of construction would take approximately 14 months to complete.

3.46 The existing access point of the site off the B1416 (to the west of the site) will be used as the construction access point for the duration of the construction period. The existing entrance would be closed as a permanent access on first operation and would be used for emergency vehicle access only during the operational phase of the mine.

3.47 Construction on the site will be managed and monitored in accordance with a Construction and Environmental Management Plan

Decommissioning

3.48 It is not intended to backfill the mineshafts or tunnels. Rather the shafts will be sealed by plugs and cappings at all relevant shafts. All buildings at the mine site will be cleared of any equipment and services and the land area then landscaped.

4.0 Mineral Transport System (MTS)

Site and Surroundings

4.1 The linear route of the MTS runs from Dove's Nest Farm to the western edge of the existing Wilton International Complex (located between Redcar and Middlesbrough) where it connects directly into the MHF (and which is considered in Section 6.0 of this Project Description Document). The vast majority of the route is underground but four surface features are relevant and are located at:-

1 The site of the MTS Portal, Wilton; and

2 The intermediary sites at:
- Tocketts Lythe, near Guisborough;
- Lockwood Beck Farm, near Moorsholm; and
- Ladycross Plantation, near Egton.

4.2 As described in Section 4.0, a shaft is also located within the Minehead site for the purposes of providing ventilation, exhaust and access to the MTS.

4.3 The MHF site (and the MTS Portal) is described in Section 6.0. The intermediary sites identified at (2) are described below.

Tocketts Lythe

4.4 The site is located to the north-east of Guisborough. The site is currently in agricultural use. To the north is a narrow, steep wooded valley following the route of a tributary of Skelton Beck (which joins to the north-west). Vehicular access is taken from the A173. The A171 also runs close to the southern boundary of the site.

4.5 The site slopes down from the south and south-west towards the north. The Tocketts Lythe plantation immediately abuts the south-western corner of the site and comprises a small area of planted woodland.

Figure 4.1 Aerial Image of Tocketts Lythe

4.6 The site is located in the administrative boundary of Redcar and Cleveland Borough Council.

Lockwood Beck Farm

4.7 The site is currently a mix of farmland and woodland. Lockwood Beck runs in a narrow wooded valley through the centre of the site and the eastern boundary is marked by an area of woodland. The gradients of the site generally fall from the south and west towards the north. Access to the site is from the A171 to the south and, beyond the road, is the Lockwood Beck Reservoir (used for angling). To the west runs Stanghowe Road which runs north towards to village Lingdale. Areas of moorland extend away from the site towards the south and south-west.

Figure 4.2 Aerial Image of Lockwood Beck

4.8 The site is located in the administrative boundary of Redcar and Cleveland Borough Council.

Ladycross Plantation

4.9 The site is located in two areas of grassland within the Ladycross Plantation. A footpath runs north-south through both cleared areas. Both areas are surrounded by planted trees. The A171 runs directly to the north of the Plantation with access to the site being taken from an access road running from a junction with the A171 to the north-east and running in a south-westerly direction towards the village of Egton - approximately 1km to the south of the site. Ladycross Plantation, and the site, slopes gently down from the north towards the south. The plantation is also home to an existing campsite, located to the north-east/east.

Figure 4.3 Aerial Image of Ladycross Plantation

4.10 The site is located within the administrative boundary of the NYMNPA.

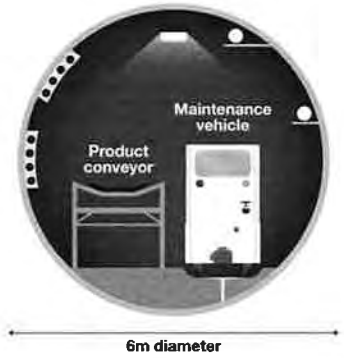
Description of the MTS

Below Ground Infrastructure

4.11 The MTS will include a single tunnel, approximately 36.5km in length. It will penetrate the surface at Wilton with a decline portal and run to the minehead site at Dove's Nest Farm.

4.12 The tunnel will have an internal finished diameter of approximately 5.7 metres. The diameter will increase to 6.5 metres for segmental lined sections (see below). The tunnel will accommodate a conveyor, maintenance train track and provision for cables including 2 x 66kV power supply cables:

Figure 4.4 Cross-section of Tunnel



4.13 The tunnel will intersect with the Minehead production shaft at Dove's Nest Farm at approximately 360 metres below ground level. Intermediate shafts will be installed along the route as follows:

1 at Tocketts Lythe (approximately 29.5km from Dove's Nest Farm).

2 at Lockwood Beck Farm (approximately 24km from Dove's Nest Farm); and

3 at Ladycross Plantation (approximately 8km from Dove's Nest Farm).

Figure 4.5 Indicative Cross-Section of MTS

4.14 Two types of tunnel lining are proposed:

1 Segmental lining or shotcrete and rock bolting (dependent on final geotechnical results) between Wilton and Tocketts Lythe; and

2 Shotcrete and Rock Bolt lining from Tocketts Lythe to Dove's Nest Farm where tunnel support and reinforcement will be necessary if the excavated tunnel face is not capable of self-support.

4.15 Four caverns will be constructed: one at the intersection with the Minehead main shaft (at depth 360 metres); and one at each of the intermediary sites at:

1 Tocketts Lythe - at approximate depth 120 metres;

2 Lockwood Beck Farm - at approximate depth 270 metres; and

3 Ladycross Plantation - at approximate depth 360 metres.

4.16 The caverns will serve two functions - first, and during construction, for the assembly of the tunnel boring machines ('TBM') and as a support station for the machine operation. Second, and during operation, they will provide a passing point for maintenance trains, a transfer point between conveyors and for housing the conveyor drive systems.

4.17 The size of the caverns is dictated by the space needed to assemble the TBMs. A worst case scenario has been assumed (which requires the use of a pair of gantry cranes) leading to each (horseshoe shape) cavern comprising 16 metres (height) x 14 metres (width) x 140 metres (length).

4.18 The conveyor belt will be approximately 1.4 metres in width.

4.19 For Phase 1 of the project (6.5 Mtpa), the selected conveyor system will operate at a duty of approximately 1,000tpa on a 1200 or 1400mm wide belt conveyor at between 3mps and 4mps. For Phase 2 of the project, when the planned output is 13Mtpa, additional drives will be installed to cater for the increased duty of approximately 2,000tph. The belt speed and width will remain at those selected for Phase 1 of the Project.

4.20 The conveyor will be transporting dry mineral.

4.21 The tunnel will accommodate a narrow gauge railway (Schoma or equivalent) to provide access to the proposed conveyors and tunnel for maintenance purposes. California switches will be installed at cavern locations to allow passing of individual trains. The diesel trains are assumed to have dimensions of 1.5 metres (width) by 1.8 metres (height). They will operate on a ballasted rail system with a 900mm rail gauge.

4.22 The tunnel will accommodate two 66kV High Voltage cables to transfer power from Wilton to the Minehead. Initially only one cable will be installed, a second cable may be installed at a later date. Power will be transformed down at the intermediate shaft sites to suit the MTS conveyor drive requirements.

Above Ground Infrastructure

Wilton Portal

4.23 The MTS Portal area at the MHF site will accommodate the following infrastructure:

1 Train shed with tracks and train maintenance (accommodating four trains and standby unit);

2 Store for conveyor drives (including, for example, components, consumerables, fuel stores and gantry crane for maintenance train loading)

3 Pump return tank and water treatment works for tunnel drainage;

4 Control room for the operation of mechanical and electrical systems within the tunnel;

5 Welfare facilities and administrative building;

6 Transformers and electrical substation compound;

7 Car parking and emergency services muster area; and,

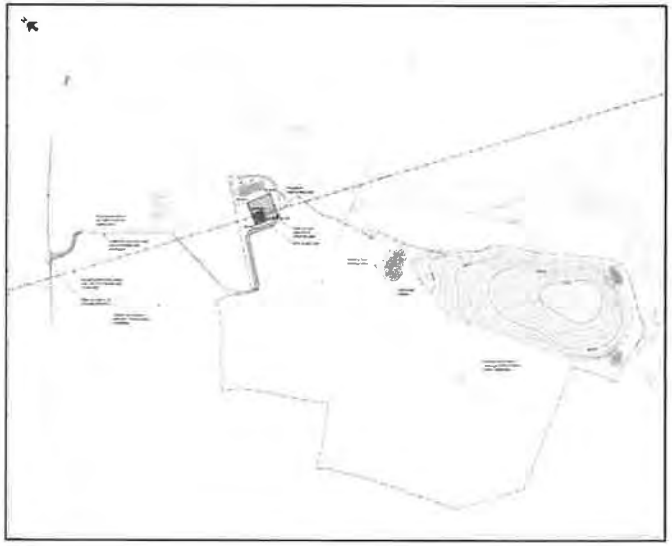
8 Site fencing and security station.

Tocketts Lythe

4.24 Vehicular access to the site will be from the A173 with existing farm tracks used to access the shaft working area (located to the north of the site in an area surrounded by existing woodland). The permanent above ground structures will comprise a shaft cover building of 21m x 21m x 8m high surrounded by hardstanding. The building will provide a safe and secure environment over the shaft and house a permanent pulley to be used in emergency situations only and in conjunction with a mobile winder. The building may also house electrical equipment feeding the MTS. A drainage pond/ swale will be located to the north of the shaft working area. The area will be surrounded by a post and wire agricultural fence and gate. Low level lighting to the main access point and shaft location only will be provided.

4.25 To the south-east and east of the site, a new mound of up to 109 metres (AOD) (between 6 and 16 metres above prevailing ground level) will be located to the south east and east of the site. Several ponds/ swales will be located around the base of the mound.

Figure 4.6 Operational Masterplan for Tocketts Lythe

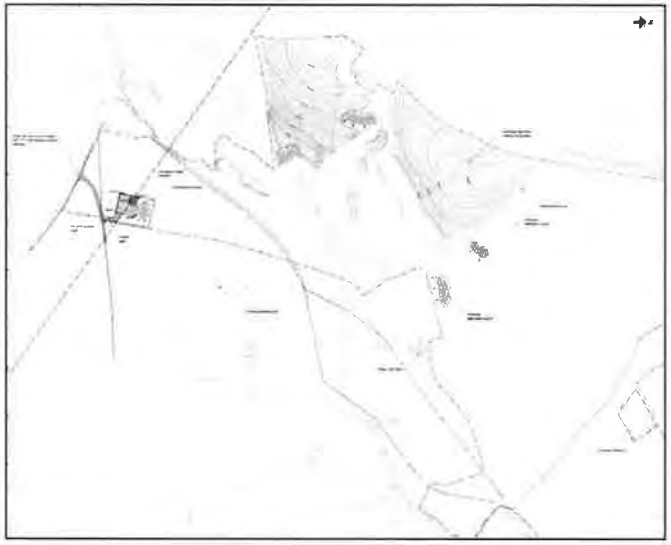


Lockwood Beck Farm

4.26 Vehicular access to the site will be from an upgraded junction between Swindale Lane and the A171, and a new access road from Swindale Lane. The permanent above ground structures, located in the south of the site, will comprise a shaft cover building 21m x 21m x 8m high surrounded by hardstanding. The building will provide a safe and secure environment over the shaft and house a permanent pulley to be used in emergency situations only and in conjunction with a mobile winder. The building may also have electrical equipment feeding the MTS. A drainage pond/ swale will be located within the shaft working area. The area will be surrounded by a dry stone wall. Low level lighting to the main access point and shaft location only will be provided.

4.27 To the north of the site, adjacent to Stanghowe Road, a new mound of up to 198 metres (AOD) (between 3 and 14 metres above prevailing ground level with the lower height adjacent to Stanghowe Road) will be located. To the south of the mound will be an area of spoil deposition.

Figure 4.7 Operational Masterplan for Lockwood Beck Farm



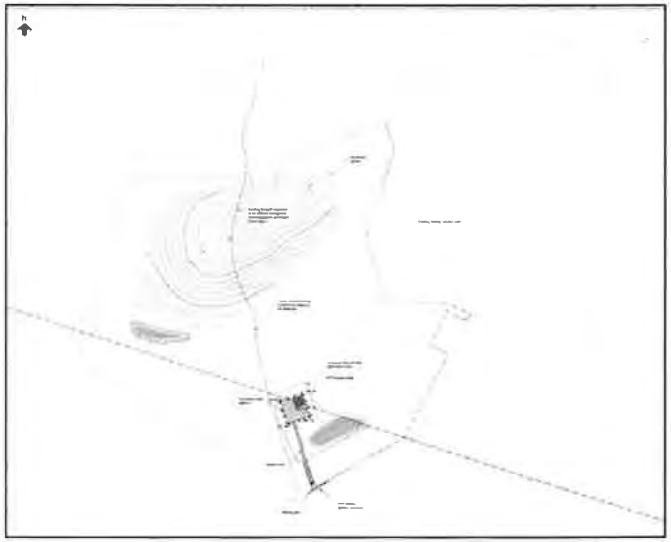
Ladycross Plantation

4.28 Vehicular access to the site will be from the access road which runs from the A171 (to the north); the access route will pass directly into the southern cleared area of Ladycross Plantation. The permanent above ground structures will comprise a shaft cover building 21m x 21m x 8m high surrounded by hardstanding. The building will provide a safe and secure environment over the shaft and house a permanent pulley to be used in emergency situation only and in conjunction with a mobile winder. The building may also house electrical equipment feeding the MTS. A pond/ swale will be located south of the shaft working area. Low level lighting to the main access point and shaft location only will be provided.

4.29 The existing footpath running through the two cleared areas will be restored post construction (see below).

4.30 In the northern cleared area of the Plantation, a new mound of up to 217 metres (AOD) (approximately 6 metres above prevailing ground level) will be located. Several ponds/ swales will be located around the base of the mound to collect surface run-off. The swales will discharge directly into existing watercourses.

Figure 4.8 Operational Masterplan for Ladycross Plantation



Dove's Nest Farm/ Minehead

4.31 The above ground facilities directly associated with the MTS will comprise:

1 A pump return tank and water treatment works;

2 A control room for the operation of mechanical and electrical systems within the tunnel; and

3 A transformer and electrical sub-station compound (to receive the proposed 66kV cable from the tunnel and step it down to 11kV for use in the mine).

4.32 The buildings accommodating these uses have been described in Section 3.0 of this report.

Construction Phase

4.33 The process of sinking the access shafts and driving the construction of the MTS (tunnelling process) is anticipated to take approximately 18 months, with a further three months required prior to the MTS being ready to transport the mineral.

4.34 The quantity of material anticipated to be excavated is expected to be approximately 1.2 to 1.4 million tonnes of, predominantly, Redcar Mudstone. This excavated material will be permanently stored within the boundaries of the

three intermediate shaft sites, at Doves Nest Farm and at Wilton as new mound features.

4.35 Tunnel boring machines will to be used to drive the tunnel from the Wilton Portal, from each of the intermediary sites and from Dove's Nest Farm. The five machines will operate concurrently for the majority of the tunnel construction duration.

4.36 Shaft sinking and tunnelling operations will be carried out using power from local generators.

4.37 The following operations are anticipated at each of the main surface sites (description of the works at Dove's Nest Farm site are described in Section 4.0):

Wilton Portal

4.38 See Section 5.0 of this document.

Tocketts Lythe

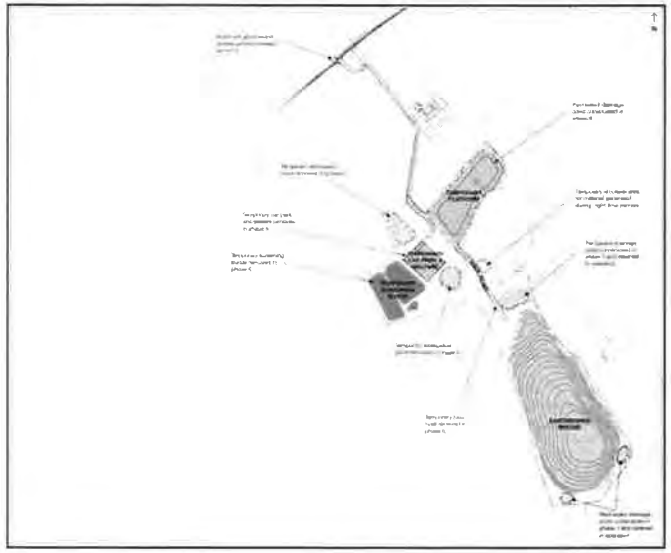
4.39 The existing farm access from the A173 will be closed up and a new access will be created to the south. A construction vehicle only route will be created (running parallel to, but to the south of, the retained farm track). The site will be fenced. Vehicular access from this temporary route onto the current farm track (and the existing farm buildings) will be provided immediately after the main access to the site. A temporary mound of material will be constructed to protect views from residents of neighbouring properties.

4.40 A gatehouse and wheel washing area will be located close to the new access point into the site from which a new temporary access road will run towards the south-west. The temporary access road will pass to the south of the wooded area with access routes to the north (and the location of the shaft); to the south of the main construction site office; and to the south/ south-east of the location of the spoil disposal area. The site office will include welfare/ administrative facilities and car parking. Temporary mounding will be provided to the south to protect views.

4.41 The shaft head will be fully clad and 45 metres in height.

4.42 The temporary construction area will include a concrete batching plant, changing/ shower facilities, water tanks and treatment facilities and power generation.

Figure 4.9 Construction Masterplan for Tocketts Lythe



Lockwood Beck

4.43 The existing junction between the A171 and Swindale Lane will be stopped up and relocated to the west and the site will be fenced. A car parking area will be located close to the new access, with a mound of material positioned to protect views from the south. A temporary construction route will be formed from the south towards the north of the site; with a gatehouse/ wheel washing facilities provided on land immediately adjoining this area.

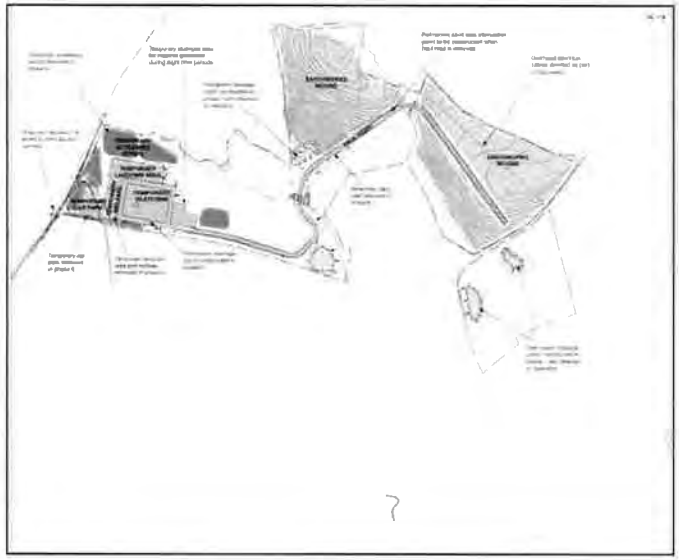
4.44 The shaft head will be fully clad and 45 metres in height.

4.45 The temporary construction area will include a concrete batching plant, changing/ shower facilities, water tanks, water treatment facilities and generator.

4.46 The shaft position and temporary construction area will be adjacent to the construction site offices/ welfare facilities and associated laydown area. Mounding will be provided around the perimeter of the facilities to protect views.

4.47 The temporary access route passes north through the site to the area for spoil deposition. At particularly exposed locations, temporary mounding will be provided to protect views.

Figure 4.10 Construction Masterplan for Lockwood Beck Farm



Ladycross Plantation

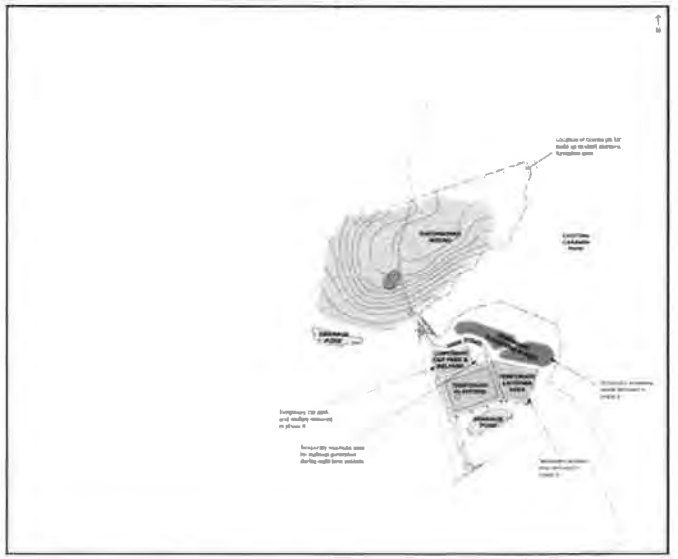
4.48 A new access from the south will be formed and the site will be fenced. The existing footpath across the site will be temporarily relocated around the perimeter of the site.

4.49 The shaft head will be fully clad and 45 metres in height. It will be located in the southern cleared area of Ladycross Plantation.

4.50 The temporary construction area will include a concrete batching plant, changing/ shower facilities, water tanks and treatment facilities and generator.

4.51 The temporary access route passes north to the northern cleared area of the Plantation (some trees will need to be removed to allow the construction of the route). Spoil deposition will occur in the northern cleared area.

Figure 4.11 Construction Masterplan for Ladycross Plantation



Decommissioning

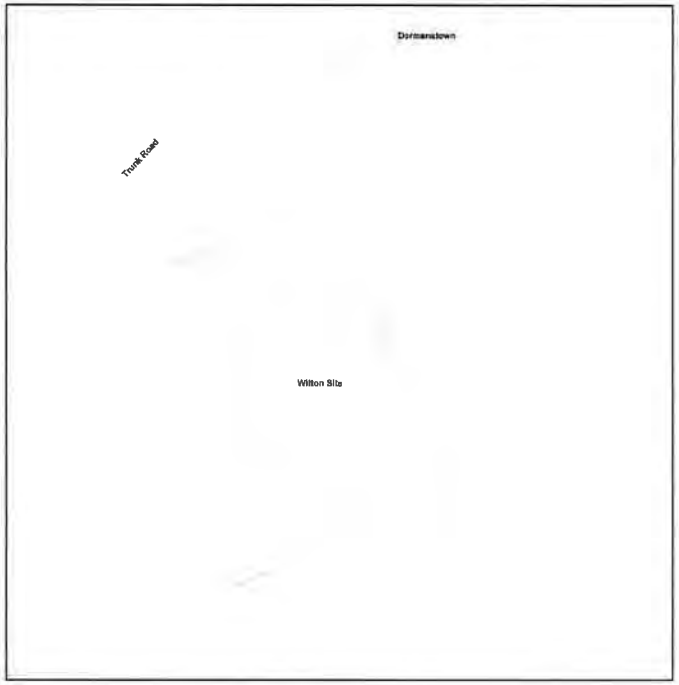
4.52 As with the mine shafts it is not intended to backfill either the tunnel or the intermediate shafts. The tunnel will be sealed from access at the mine by the plugs and cappings at all the relevant shafts. The intermediate shafts at Lady Cross, Lockwood Beck and Tocketts Lythe will be cleared or any equipment or services and then plugged and caped at the surface level. All buildings will be removed.

5.0 Materials Handling Facility (MHF)

Site and Surroundings

5.1 The site of the MHF is within the existing Wilton International Complex, in Wilton, approximately 8km from Middlesbrough and within the administrative boundary of RCBC

Figure 5.1 MHF Site Location Plan



5.2 The site area is 29.7ha in size, largely flat and featureless and is currently vacant. It is bound to the south and west by other parts of the Wilton International Complex and to the north and east by the link roads connecting the Complex to the road network. The area forms part of the Tees Valley Enterprise Zone, which is used predominately for manufacturing and is heavily industrialised.

5.3 The village of Kirkleatham is located further to the south east of the site. This is a designated Conservation Area. The open area of land separating Wilton International Complex and Redcar, extending north to the coast, is designated

as a Green Wedge, to delineate the urban areas and protect local amenity, wildlife and amenity interests.

5.4 The site of the proposed harbour facilities is located further to the north beyond the A1085 (trunk road) adjacent to the Tees Estuary.

Description of the MHF

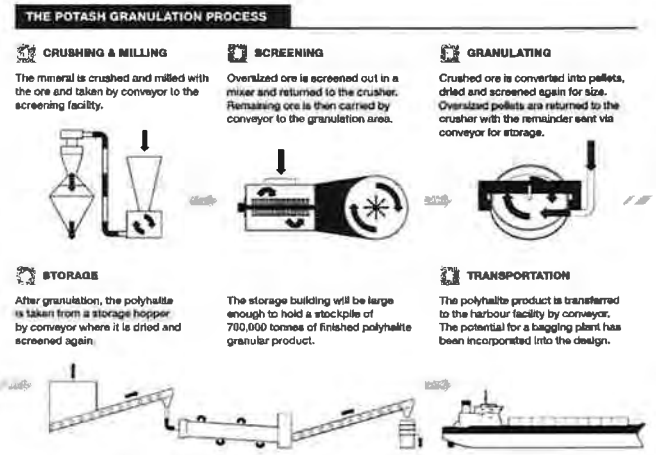
Purpose of Development

5.5 A MHF is required to handle materials received from Dove's Nest Farm via the Mineral Transport System (MTS) and prepare the mined Polyhalite for onwards transportation.

5.6 In summary, materials will arrive at the MHF site via the MTS tunnel portal, to the east of the site. From here, it will pass directly into grinding and granulation facilities. Following this, the Polyhalite will be transferred to a storage building prior to being either transferred directly to the Harbour Facilities; or, prepared for transport to locations in the UK through a bagging facility. It is currently anticipated that 150,000 tpa of the mineral will be transported from the site by road to other destinations in the UK.

5.7 The processes undertaken in the MHF are illustrated below:-

Figure 5.2 The Polyhalite Granulation Process



Site Layout

5.8 The MHF site will comprise the following elements:

1 MTS tunnel portal;

2 Process plant - comprising of crushing, classification and granulation buildings;

3 Finished product storage building;

4 Run of Mine ('ROM') Material Emergency Store;

5 Support infrastructure facilities; and,

6 Spoil disposal areas.

5.9 The proposed layout of the MHF is shown in Figure 5.3 below.

Figure 5.3 Proposed Layout of MHF

5.10 A summary description of the component parts of the MHF is provided below.

MTS Tunnel Portal

5.11 This element of the proposal is described in Section 4.0 as forming part of the MTS.

Handling Plant - Crushing and Screening

5.12 Once the material exits the MTS tunnel portal, it will be directed to a surge bin. Two conveyors will withdraw the crushed ore from the surge bins and feed it into two secondary crushers that will break the material down into a size appropriate for grinding. The grinding circuit consisting of grinding rollers and classifiers will reduce the ore to around 200 microns, suitable for granulation.

5.13 The buildings would be designed to accommodate the equipment required to handle the output from the mine at full production (i.e. to 13 Mtpa of material) but the equipment itself will be installed in two stages as production increases.

Handling Plant - Granulation

5.14 The ground material will pass via a conveyor system to disc granulators which turn the material into spherical shaped pellets. The pellets will be discharged from the disc granulators to dryers and then to wax coating machines. Vibrating screens will remove undersized and oversized material which will be sent back to the grinding circuit.

5.15 The granulation building would be approximately 50 metres in length, 20 metres wide and 30 metres high and would be fully clad for dust and noise mitigation.

Product Storage Buildings

5.16 The two product storage buildings are designed to hold a stockpile of 400,000 tonnes of finished polyhalite product and to be of clear span, with no internal supports. Stockpiles of the finished polyhalite product will be formed using a stacker conveyor running at a high level and for the full length of each building.

5.17 Each product storage building will house a reclaimer which loads granules onto the harbour facilities conveyor at a rate of around 3,500 tonnes per hour. There will be a set of screens to remove accumulated fines from the granules before the material leaves the site.

5.18 Each product storage building is proposed to be a 60 metre span steel lattice structure, which would be constructed using segmental lattice trusses and columns and covered with sheet cladding. The proposed building would be approximately 500 metres long and 40 metres high.

Run of Mine ('ROM') Material Emergency Store

5.19 A ROM store building is proposed to the north east of the MHF site and would be capable of storing the entire contents of the MTS tunnel portal conveyor belt in the event of an emergency situation. The building will contain a conveyor system which would be capable of returning material back to the main conveyor.

5.20 The ROM store building is proposed to be a steel-framed structure with concrete retaining walls and steel sheet cladding, approximately 35 metres in

length, 30 metres wide and approximately 21 metres high. The store would be fed by a belt conveyor from the MTS tunnel portal conveyor.

Support Infrastructure Facilities

5.21 The administration and site services area of the MHF would include an amenity building, workshop, laboratory, engineering sub-station, first air facilities, office building, control room, car park and laydown area.

Access and Car Park

5.22 Vehicular access to the site would be provided via the internal Wilton Complex road network, which exits onto the A1085.

Lighting

5.23 Permanent lighting will be required along the access roads and pedestrian access routes. Details of lighting have not been finalised but street lighting along main routes is likely to be proposed in the form of lighting columns and lighting fixed to permanent structures. Lighting will also be required where the loading/unloading of vehicles is required.

Construction Phase

Site Preparation

5.24 The site establishment and enabling works are scheduled for the first three to four months of a 27 month construction programme. This phase would include temporary works such as the erection of temporary fencing; site strip and temporary storage of topsoil; diversion of a watercourse; and ground remediation/improvements as required.

Main Site Works

5.25 The main site works will include:-

1 Continuous Flight Auger ('CFA') piling
2 Excavation and construction of tunnel portal
3 Construction or reinforced concrete bases and rafts
4 Construction of underground drains and other services
5 Erection of steelworks for structure and conveyors
6 Installation of equipment
7 Installation of piping and electrical/instrumentation cables and equipment
8 Cladding of structures
9 Construction of roads and hardstanding areas
10 Earthworks and spoils contouring

5.26 There are significant groundworks required across the site, particularly at the tunnel portal where a retaining structure is required to a maximum retained height of 18 metres and a cutting 360 metres long and 10 metres wide from the tunnel entrance. Other significant groundworks include formation of the shallow foundations, drainage, site road infrastructure and movement associated with spoil management.

5.27 It is estimated that fill from the 75km section of tunnel at the Wilton end will generate some 300,00m^3 of spoil. Excavated material from shallow foundations site infrastructure and pile arisings could generate a further 50,000m^3.

5.28 A spoil management strategy is to be prepared to enable excavated material, from the tunnel boring, foundations and any other earthworks carried out, to be utilised as fill across the site where possible. Landscaped and grassed mounds will be provided on the site to accommodate the excess spoil where appropriate and will reach a maximum height of 10 metres.

Programme

5.29 The construction programme has been determined such that much of the major works will run concurrently, albeit with staggered start times (which will facilitate some of the major activities, such as large concrete pours and steelworks erection). This strategy has facilitated the build programme to be restricted to 24 months (plus three months for commissioning).

Construction Traffic

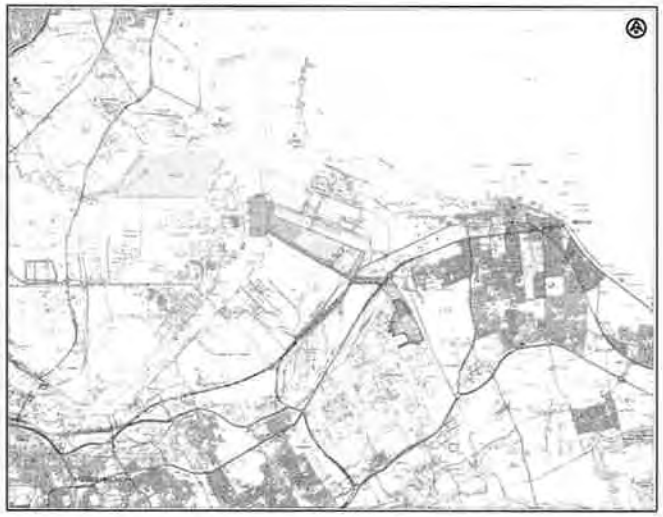
5.30 It is estimated that there will be a peak of 77 two-way HGV movements on the site per day during the busiest phase of construction. Most HGVs will access and egress the site via the site access road from the roundabout on the A1085 (Trunk Road). This is the East Gate at the Wilton Complex. Alternative site access points are available in three other locations if required, all of which join from the major road network. A contractor's car park for 101 cars would be provided at the site.

6.0 Harbour Facilities

Site and Surroundings

6.1 The site area of the proposed harbour facilities comprise approximately 25ha at Bran Sands adjacent to the Redcar Bulk Terminal Facility. The site fronts onto the south bank of the River Tees. The Tees lies between the towns of Stockton-on-Tees, Hartlepool, Redcar, Middlesbrough and Billingham and the area is a well-established deep-water port. A plan of the site and its surroundings, including its relationship to the proposed MHF, is provided in Figure 6.1 below.

Figure 6.1 Bran Sands Site Extent and Location



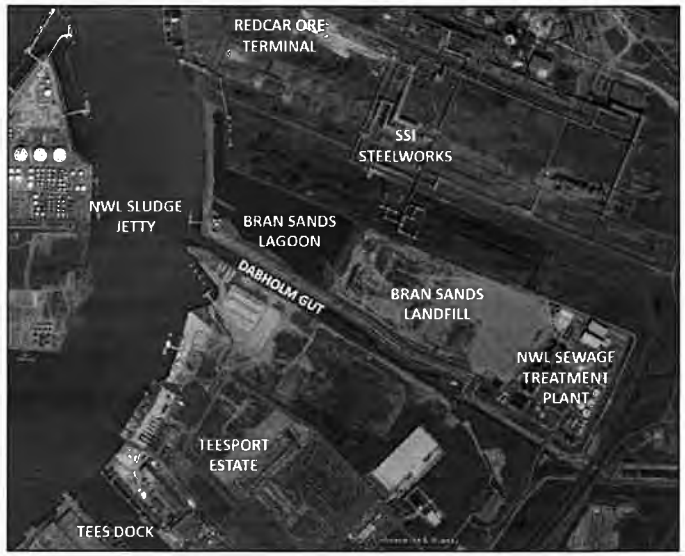
6.2 The majority of the site is undeveloped and comprises land formally operated by ICI for use as the Bran Sands landfill. This use ceased in 2007 at which time the waste facility was capped and the surface re-profiled. A pipe corridor runs along the South Western boundary currently leased to Sembcorp.

6.3 The Bran Sands Lagoon occupies an area on the west part of the site. A number of other water bodies are also present, including Dabholm Gut, a drainage channel on the southern boundary of the site into which the local area drains, which includes a small jetty and pumping station adjacent to the estuary. A small jetty and associated pumping station and storage tanks known as the Northumbria Water Ltd sludge facility occupies an area at the south-western end of the river frontage.

6.4 A small section of public footpath enters the site from the south and heads in a north-westerly direction before terminating south of the Dabholm Gut. There is also a footpath known as the Black Path running across the south west corner of the site.

6.5 The Tees Valley area has a longstanding industrial heritage and remains one of the UK's main manufacturing regions. The built areas surrounding the site are heavily industrialised. The Northumbria Water Ltd Treatment Plant is located directly adjacent to the site, the SSI Steel Works is to the north and the wider Teesport Industrial Estate further to the south. The location of these industrial areas relative to the site is shown in Figure 6.2 below.

Figure 6.2 Bran Sands Site - Neighbouring Industrial Uses



6.6 The nearest road access to the site is via the A1085 (truck road). An operational railway line that provides a passenger service between Middlesbrough and Saltburn runs from the south-west to the north-east. Both transport corridors run through the site to the east of the NWL Sewage Treatment Plant.

Description of Harbour Facilities

6.7 New Harbour Facilities are required as part of the Project to enable the export of polyhalite. The operations will follow a clearly defined process. Essentially, the granulated, finished polyhalite product will be transferred to the site via a conveyor system from the off-site MHF at Wilton to two surge bins adjacent to

a quay at the proposed new harbour facilities (three possible locations for these structures have been identified).

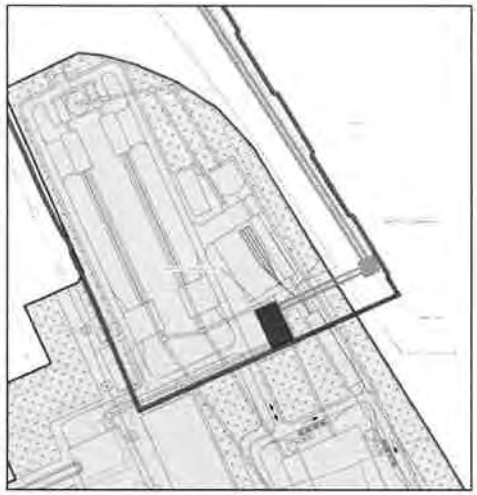
6.8 The polyhalite will then be transferred from the surge bins to a new quay and berthing area using a second conveyor system, where it will be loaded onto the vessels. This process from the start to end-points is illustrated in Figure 6.3 below. These component parts are explained in more detail in the following section.

Figure 6.3 Harbour Facilities Operations Process

Primary Conveyor System

6.9 The primary conveyor system will provide a direct link from the Finished Product Screening Building at the MHF to the Harbour Facility. It is proposed to consist of two parallel belt conveyors contained in both combined and separate elevated conveyor bridges (of approximately 10 metres wide and 4 metres in height).

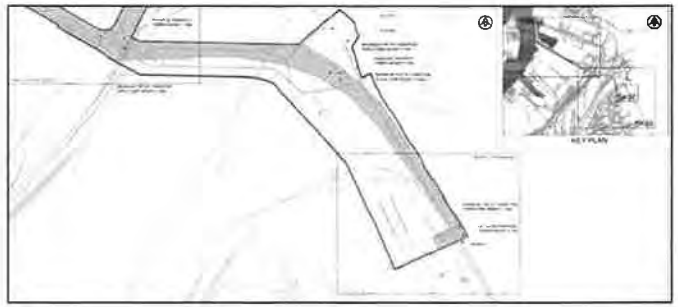
Figure 6.4 Illustration showing Primary Conveyor System connecting to the Finished Product Screening Building at the MHF



6.10 The final alignment of the conveyor system from the MHF is being refined. A main envelope has been established within which the conveyor will be located. Its final location within that corridor will be determined by the location of existing infrastructure.

6.11 On leaving the MHF, the conveyor system would depart from a transfer tower[1] (located to the east of the MHF) and head in a north-westerly direction contained within an enclosed conveyor bridge. The conveyor system would be inclined to a maximum height of 25 metres (to top of the conveyor system) to meet a further transfer station to the south of the A1085 (also at a maximum height of 25 metres).

Figure 6.5 Envelope for Route of Primary Conveyor (southern part of site)



6.12 The conveyor will pass over the A1085 within a bridge structure. Possible illustrations of this structure are provided below:-

Figure 6.6 Possible Designs for Conveyor Crossing over the A1085

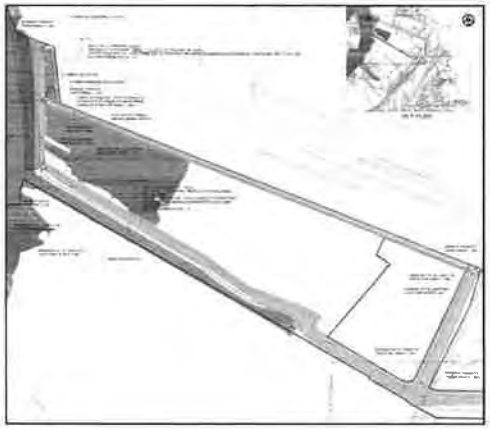
6.13 After the A1085 crossing, the conveyor is likely to switch to an open trestle structure and will continue to bend westwards and pass over the Hot Metal rail bridge, remaining at a maximum height of approximately 25 metres. It will run parallel to and to the north of existing pipe infrastructure and will pass under

[1] A transfer station is required where the conveyor needs to change direction and will be a maximum footprint of 8m x 8m. Its height will be determined by the height of the conveyor at the point where a change in direction is required.

National Grid power lines but pass over the rail bridges. Where the conveyor crosses the bridges, it will be fully enclosed.

6.14 The conveyor route envelope from the MHF to the port terminal splits at the south-eastern corner of the Bran Sands landfill site, resulting in an envelope which runs either along the northern and southern boundary of the landfill site.

Figure 6.7 Envelope for Route of Primary Conveyor (northern part of site)



6.15 Either route may require a transfer tower (at a maximum height of 25 metres) after the crossing of the National Rail railway bridge. The conveyor behind the transfer tower would subsequently decline to a maximum height of 22 metres until the conveyor reaches the next transfer tower at Bran Sands.

6.16 The southern route continues in a north-westerly direction towards a transfer tower or surge bin at the southern end of the port, at a maximum height of 22 metres for the majority of its length. The surge bin or transfer tower at this location would be a maximum height of 35 metres, meaning that the conveyor system would rise to a maximum height of 35 metres to feed into the transfer tower / surge bin from the top.

6.17 The northern route would depart from the transfer tower in a northerly direction to another transfer tower north-east of the NWL sewage treatment works. From this transfer tower, the conveyor envelope would continue westward to a surge bin (with a maximum height of 35m) or transfer tower (with a maximum height of 30m) in approximately the centre of the proposed port terminal and a transfer tower (with a maximum height of 25m) at the northern end of the port terminal. The conveyor crossing over the Bran Sands lagoon 'finger' would require two supporting foundations within the lagoon.

6.18 Works would be carried out which affect the lagoon (foundations and stabilisation works) will be kept to a minimum.

6.19 The transfer towers or surge bins would feed a conveyor system which in turn would feed the ship loader system. The ship loader conveyor system would consist of conveyor bridges, conveyor galleries and transfer towers (depending on the final design of the port terminal).

6.20 The maximum final width of the conveyor system will be 8 metres in width and will be delivered in two phases; the first conveyor will be constructed to allow operations up to 6.5Mtpa and a second conveyor will be constructed immediately adjacent to the first conveyor to allow operations up to 13Mtpa.

Surge Bins

6.21 The harbour facilities will include two concrete surge bins which are intended to manage the flow of the mineral product ahead of ship loading. The surge bins could be located in three possible locations immediately adjacent to the dock area. Each will measure 7.5m in diameter, will be up to 35m high and will be supported by reinforced concrete slabs measuring 15m x 15m.

Quay Structure Parameters and Operations

6.22 A new quay is required to facilitate the mooring of vessels in the estuary and to enable the loading of polyhalite onto the vessels. Once completed, this, along with the berthing area (described later), will combine to form a new marine terminal. Details of the quay are provided below.

(a) Quay length

6.23 The marine terminal within the Harbour Facility has been designed to accommodate maximum vessels of 85,000 Dead Weight Tonne (DWT) with an overall length of 244 metres. DWT is a measure of how much weight a ship is carrying or can safely carry. This will enable the use of the larger Panamax Cargo Bulk Carriers at the quay.

6.24 Two shiploaders will operate on the quay and will transfer the polyhalite onto the moored vessels. A shiploader is a machine used for loading bulk materials and comprises an extendable arm for transferring the product, a belt conveyor, a tipper to elevate and transfer product from the source conveyor, and a mobile structure to support the extendable arm. The shiploaders will be mounted on rails so they can move the whole length of the vessels.

6.25 Once completed, the marine terminal will have capacity to accommodate two vessels simultaneously, with these spaced 25 metres apart. Taking into account the space required to accommodate the ships and the ship loaders, the minimum quay length assumed is 540 metres.

(b) Quay width

6.26 The quay width is determined by the geometry of the equipment to be accommodated; mainly comprising the ship loader and the linked conveyor

system. Allowing for both items of equipment, as well as access, the quay width will be up to a maximum of 85 metres.

(c) Quay level

6.27 The quay deck level will be approximately 2m above the high water level (+8.45 Chart Datum). The design has accounted for anticipated sea level rises.

(d) Quay positioning

6.28 Typically, the quay would be positioned as far out into the river as possible to take advantage of deeper water near the river channel. However, PD Teesport define a river frontage line which constrains how far into the River Tees the quay may be located.

6.29 The positioning of the berth also needs to have regard to the predominant wind, wave and current to ensure that the potential effect on vessels is minimised. This typically means that the berth axis needs to be aligned with the direction of water flow.

6.30 Given the above, the proposed quay line will be orientated approximately parallel to the river.

(e) Quay type and specifications

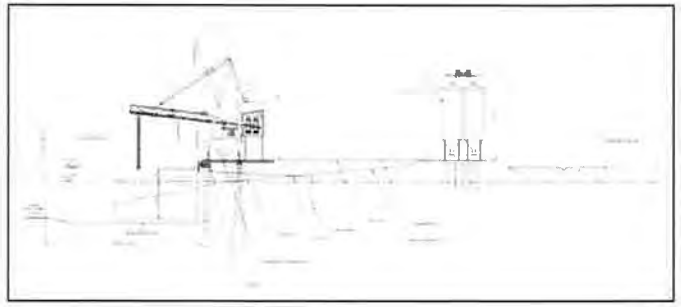
6.31 In the context of the key development parameters outlined above, YPL is currently considering two options for the quay construction (i) a solid construction, where the deck will be supported by a solid, earth-retaining structure, including reclaimed land; and (ii) an open construction, where the deck is supported on piles.

6.32 Each of the options is described below.

Option 1 - Solid Quay

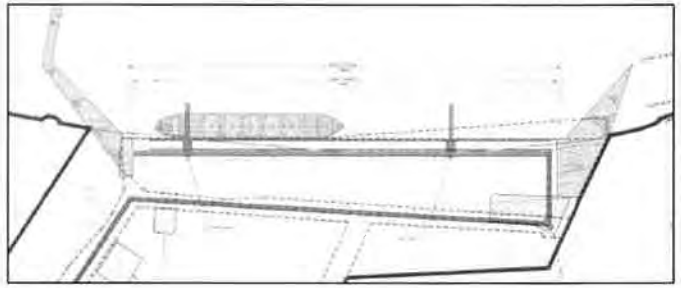
6.33 The solid quay structure would establish a combi-pile wall - a line of steel tubular king piles linked by pairs of steel sheet piles. The piles would connect via tie rods (a slender structural unit) to a steel sheet pile anchor wall approximately 30 to 40m behind the berth line. The piles would support a reinforced concrete cope beam on which the rails for the ship loaders will be fixed. A separate piled rail beam will be required parallel to the cope beam to support the landside shiploader rails. A ground bearing concrete slab will form the foundation for the conveying system and cover the remaining area of the quay. A section/elevation showing the proposed solid quay structure is shown in Figure 6.8 below.

Figure 6.8 Section/Elevation Showing Proposed Solid Quay Structure



6.34 The footprint of the solid quay structure once completed and operating at full capacity (Phase 2) would be up to 85 metres wide by up to 535 metres long. Access to the quay will be directly from the reclaimed area behind the quay wall. The general arrangement proposed for the solid quay structure is shown in Figure 6.9 below.

Figure 6.9 Proposed Layout of Solid Quay Structure



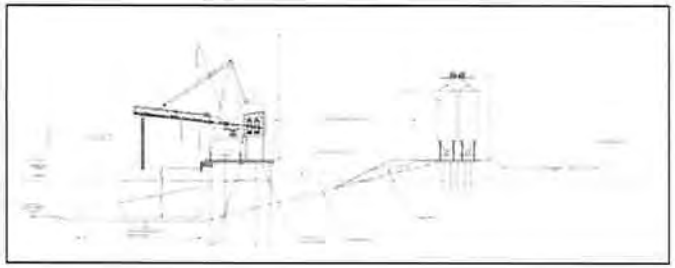
Option 2 - Open Quay

6.35 The open quay structure would comprise a suspended reinforced concrete deck supported by a maximum of 400 driven steel tubular piles (Phase 2) over a revetment. The piles would be approximately 0.9 metres in diameter.

6.36 The revetment would be installed on a re-graded slope either prior to the installation of piles or placed after they have been installed. The extent of intertidal area affected by the revetment will be minimised to that required to create a stable slope.

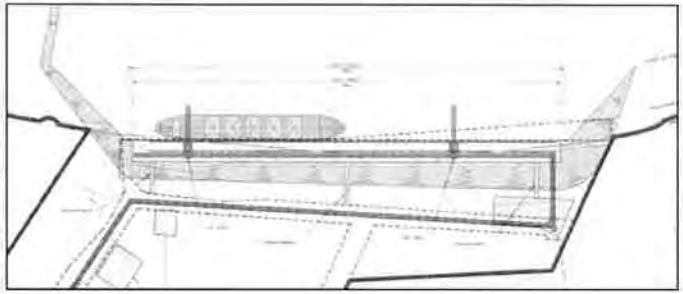
6.37 The section showing the proposed loading infrastructure in place for the open quay structure is shown in Figure 6.10 below.

Figure 6.10 Section/Elevation Showing Proposed Open Quay Structure



6.38 The footprint of the open quay structure once completed and operating at full capacity (Phase 2) would be up to 85 metres wide by up to 535 metres long. Access to the quay would be via approach bridge structures. The general arrangement is shown in Figure 6.11 below.

Figure 6.11 Proposed Layout for Open Quay Structure



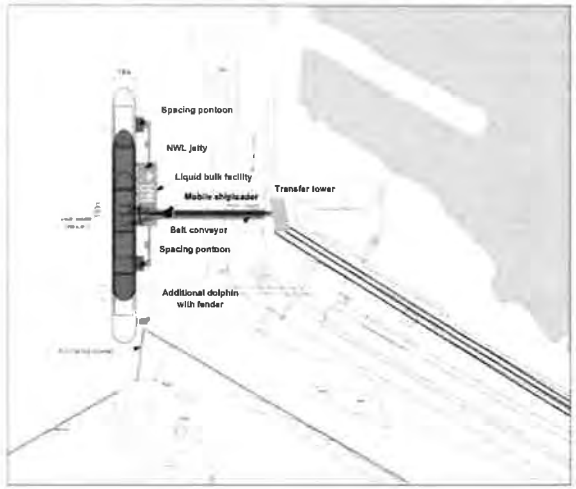
NWL Jetty

6.39 As described above, Northumbria Water ('NWL') previously operated a sludge jetty located to the north of the Dabholm Gut; this is no longer operational.

6.40 In the first two years of operation, it may be preferable for export of polyhalite to occur through a temporary operation utilising the NWL jetty. New temporary equipment would need to be installed to allow for small coasters/barges of up to 10,000 DWT to moor at this facility. An additional mooring dolphin may also be required to the south side of the NWL jetty.

6.41 The polyhalite would be transferred to the temporary export facility via conveyor with a transfer tower allowing for material to be passed onto the access bridge of the NWL jetty and loaded onto the vessels using a temporary ship loader; or alternatively utilising trucks. A potential way in which this operation may occur is shown in Figure 6.12 below:-

Figure 6.12 Possible layout of Temporary Ship Loading equipment at the NWL jetty



6.42 The NWL jetty would need to be removed prior to the Phase 2 operations to construct the southern-most quay as part of the YPL Harbour Facilities.

Creating the Berthing area

6.43 Dredging of parts of the River Tees will be required to create the berth pocket to enable vessels to be moored at the marine terminal for the purpose of loading the mineral product, and within the river approach channel to enable vessel access. Dredging works will also be required to create a stable slope beneath the quay should YPL decide to proceed with the open quay option.

6.44 The dredging would probably need to occur on a phased basis to align with the Phase 1 and Phase 2 works. The proposed extent of dredging at each phase is shown in Figures 6.13 and 6.14 below.

Figure 6.13 Extent of dredging at Phase 1

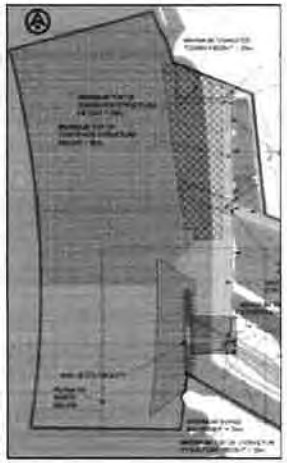
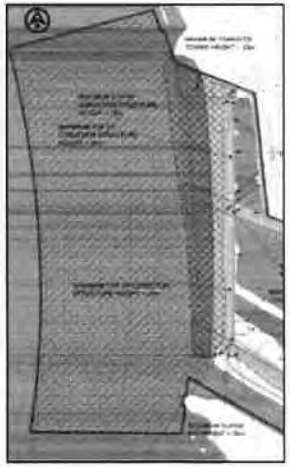


Figure 6.14 Extent of Dredging at Phase 2



6.45 The existing depth of the approach channel where dredging is proposed is 10.4m below Chart Datum (bCD). This would be deepened to 14.1m bCD to match the depth of the remainder of the approach channel downstream of this point to the mouth of the River Tees. The approach channel dredging will be the same for both the open quay structure and solid quay structure.

6.46 The existing level of the seabed within the footprint of the proposed berth pocket and between the proposed berth pocket and the shoreline varies between approximately 0.9m above CD and approximately 11.6m bCD. It is proposed to dredge to 16m bCD to create the berth pocket.

6.47 The total volume of material to be dredged will be approximately 1.15Mm^3 to create the berth pocket and stable slope beneath the quay for the open suspended deck option. For the solid quay structure, there is no requirement to create the stable slope. The dredge volume to create the berth pocket for this option would be approximately 700,000m^3. For both options, approximately 500,000m^3 of material would be dredged from the approach channel.

6.48 The maximum dredge volume will therefore be approximately 1.65Mm^3 for the open quay structure and 1.2Mm^3 for the solid quay structure. The proposed quantity of dredging, and the distinctions between the two quay options, are provided in Table 6.1 below.

Table 6.1 Proposed Dredging Quantities for the Navigational Approach

Dredging Works	Open Quay Structure	Solid Quay Structure
Approach Channel	0.5M m^3	0.5M m^3
Berth Pocket	1.15M m^3	0.7M m^3
Total	1.65M m^3	1.2M m^3

6.49 There will be a requirement for on-going maintenance dredging to retain the berth pocket and channels. This activity will supplement the existing maintenance dredging activities undertaken by PD Ports, with material disposed of at the existing disposal site within Tees Bay.

Vessel Usage

6.50 As described earlier in this section, the vessels using the marine terminal will be bulk carriers varying in size from 55,000DWT to 85,000 DWT. Table 6.2 provides a summary of the anticipated vessels numbers that will use the harbour facilities during the proposed two phases of development to meet the proposed mineral throughput.

Table 6.2 Harbour facilities Vessel Numbers

Vessel size (DWT)	Approximate Vessel Numbers	
	Phase 1	Phase 2
55,000	27	55
65,000	23	46
75,000	20	40
85,000	18	35

Access

6.51 Vehicle access to the site will be secured via the existing access from the A1085 roundabout that connects to an internal road link within the Bran Sands site.

Buildings

6.52 Existing structures/buildings on site will be retained (except where there is a direct conflict with proposed works). In terms of proposed structures/buildings:-

1 During the construction period, an area of approximately 200 metres x 150 metres will be required for the constructor's compound and associated storage and car parking (70 spaces). This will be located to the south-east of the lagoon. No works will require significant foundations/penetration of the land which is contaminated. The site will be cleared of the compound and car parking once construction of the harbour facilities is complete.

2 During the operation of the harbour facilities, permanent buildings will be located within two possible zones alongside car parking for 25 vehicles. It is anticipated that the buildings will comprise:-

- An Administration/Control building - single storey and approximately 200 sq m;
- A multi-bay portal Warehouse Storage Building - up to 6.5 metres in height and approximately 1000 sq m;
- A Workshop Building of up to 8 metres in height and approximately 1,350 sq m; and
- Ancillary Buildings for substations, communications etc - single storey and approximately 50 sq m.

Construction Phase

Phasing

6.53 The Harbour Facility will be undertaken in two phases - the first will provide the infrastructure required to handle 6.5 Mtpa of the mineral. This infrastructure will then be extended and supplemented where necessary at the second phase of development to meet the full mine production output (13 Mtpa).

6.54 The Phase 1 development works at the site are anticipated to take a minimum of 17 months to complete. It is currently anticipated that the Phase 2 works will also take 17 months to complete.

Access and Parking

6.55 Construction vehicle access to the site will be secured from the A1085 roundabout and then onto existing links to major roads in the area (A19, A1085, A66 and A174).

Disposal of dredged material

6.56 Dredged material could be used within the reclamation area for the solid quay structure depending on whether it is found to be geotechnically and chemically suitable for this use (and assuming this option is progressed instead of the open quay option).

6.57 Any dredged material that cannot be used within the construction works is likely to be deposited at offshore dredged material disposal sites, subject to the assessment of its chemical quality. Two active disposal sites have been identified as potential options for accepting dredged material: Tees Bay A (TY 160) and Tees Bay C (TY 150).

Decommissioning

6.58 The proposed harbour facilities represent a long-term commitment, and so there are currently no plans for decommissioning the scheme.

7.0 Construction Worker Park & Ride and Construction Village

Site and Surroundings

7.1 The site is approximately 2 hectares and is located 1.6km south west of Whitby town centre, opposite Whitby Business Park and south of Stainsacre Lane (A171). It is currently in agricultural use.

7.2 The site is bounded to the north by the A171/layby serving the A171; to the west by Eskdale School; to the east by an access road leading to the Waste Water Treatment Plant; and to the south by the Waste Water Treatment Plant itself.

7.3 Mature landscaping exists along the site's northern, southern and eastern boundaries.

7.4 Vehicular access to the site is from the south-eastern corner, via the service road to the Waste Water Treatment Plant.

7.5 The site is wholly within the administrative boundary of the Scarborough Borough Council

Figure 7.1 Broad Extent of land required for the Construction Village and Park & Ride

Description of Proposal

7.6 The proposal will comprise two components, namely:

1 A temporary construction worker Park & Ride

2 The option of a temporary construction village

7.7 The temporary construction worker Park & Ride is a fixed component of the scheme. The need for the construction village is dependent upon the preference of the contractor and the availability of alternative overnight accommodation in the area at the time of the development.

7.8 The Park & Ride element will serve construction workers going to and from the mine access construction site at Dove's Nest Farm. The workforce will be transported to and from the mine site by coach over the course of the day, which will typically involve four work shifts - 6.00am to 2.00pm, 2.00pm to 10.00pm, 10.00pm to 6.00am and two day shifts - 6.00am to 5.00pm and 7.00am to 7.00pm. The mine construction will take place seven days a week, with 140 workers required per shift. Christmas Day and New Year's Day will be non-working days.

7.9 Coaches would enter the site via the main gate to the south and travel to the bus stops located on the internal access road. Buses would then pull away and turn around at an internal roundabout before exiting the site. The number of buses required would be dependent on the provider chosen but it is anticipated that, a full capacity, six 52-seater buses would be used at any one time during worker shift changes. After taking the workers to the minehead along the approved traffic route, the buses would wait for workers from the previous shift before bringing them back to the Construction Village. These workers would then disembark at the designated bus stop before the buses leave the Construction Village and return to the depot until the next shift changeover.

7.10 The car parking will be provided in four areas at the site - the main northern car park providing 186 spaces. Two smaller car parking areas on the western boundary and central area will provide 30 and 24 parking spaces respectively.

7.11 Assuming it is required, the Construction Village has been designed to accommodate 400 construction workers and provide associated welfare facilities for use over the duration of the mine construction period. In addition to the car parking areas described above, it would comprise the following:

1 Two-storey, en-suite accommodation of modular construction provided in eight individual blocks towards the centre and south of the site.

2 Single-storey gatehouse with secure lifting access gate;

3 Messing, welfare and recreational facilities located centrally on the site;

4 Electric sub-station, foul water and waste management facilities;

5 Communal outdoor areas and,

6 Lighting to support 24 hour operations around welfare facilities and parking area.

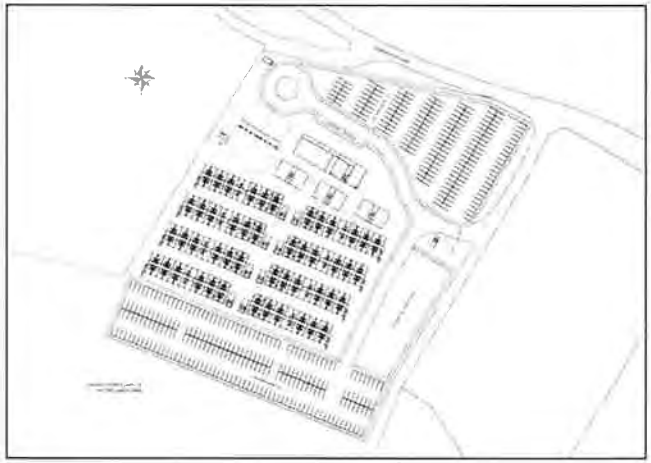
7.12 The proposed development would operate for a period of four years. It is anticipated that the numbers of workers using the site would increase from an initial figure of approximately 50 persons at the outset of the construction period to up to 400 workers at the end of the first year of construction. From the end of the first year onwards, the construction village, assuming it is

developed, would be fully occupied until the end of the third year of the mine construction, at which point the numbers of personnel will begin to decrease.

7.13 The catering facilities and the security gatehouse would operate on a 24-hour basis.

7.14 A site layout of the proposed Construction Village and Park & Ride is provided in Figure 7.2 below.

Figure 7.2 Site Layout Plan of Construction Village and Park & Ride



7.15 Security for the site will be controlled from the gatehouse and security staff will be present on the site 24 hours a day. CCTV will be in operation and this will be monitored from the gatehouse. External lighting around the accommodation blocks and in the car park will take the form of low level bollard lights. Street lighting columns will be provided along the internal road to match the specification of lighting columns approved separately as part of the road extension to Fairfield Way.

Access

7.16 Access into the site will be provided from the south from the service road to the Waste Water Treatment Plant. Vehicles will then pass through a security gatehouse and, beyond this, will use the new internal access route to be created as part of the development that will provide access to the Park & Ride and vehicle parking areas. The internal site road will include a coach turning area within the site.

Construction

7.17 The proposed development will take up to 24 weeks to construct.

8.0 # Operational Park & Ride Proposals (Whitby)

Site and Surrounds

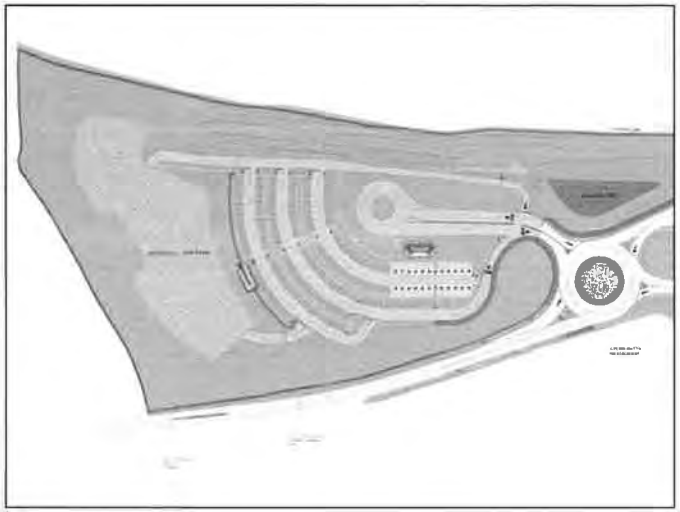
8.1 The site is located at the junction of the A171 Whitby Road with the B1460 Sandsend Road. It forms part of the existing Whitby Park & Ride facility that lies on the edge of (but within) the National Park overlooking Whitby, which is located further to the east. The Park & Ride opened in April 2014 and provides 450 car parking spaces, including 250 formal hard surfaced spaces with an un-surfaced overspill parking area for around 200 cars on the western end of the site.

8.2 The nearest built developments include Victoria Farm Garden Centre and Café to the east of the site across the B1640, and Cross Butts Farm/Hotel and Restaurant to the south east across the A171. The site is within the administrative boundary of the NYMNPA.

Description of Park & Ride Proposals

8.3 The proposal comprises up to an additional 120 car parking spaces within the existing Whitby Park & Ride facility in the northern part of the site (shown in red on Figure 8.1).

Figure 8.1 Site Layout Plan - Proposed Extension to Whitby Park & Ride



8.4 The York Potash use of the Whitby Park & Ride would operate independently from the public service currently provided at the site and would be open between 5.00am and 12.30am.

8.5 To facilitate the provision of additional car parking on the north boundary of the site, it will be necessary to remove some of the existing landscape mounding. York Potash is currently in discussions with North Yorkshire County Council to establish whether there is a need for compensatory planting to off-set the loss of this existing landscaping.

8.6 Vehicle access would be provided by the existing Park & Ride access road from the A171/B140 roundabout.

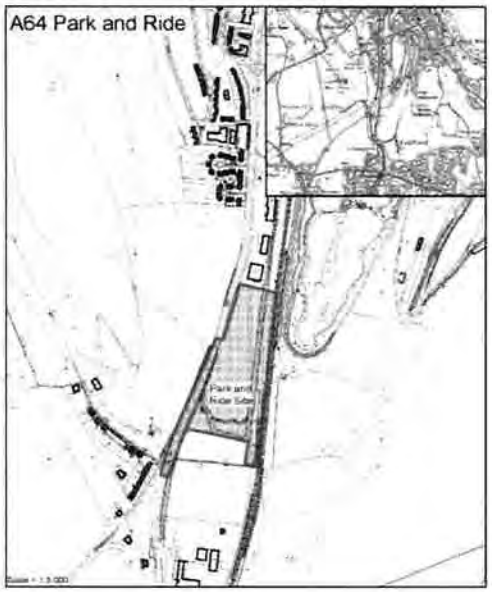
9.0 Construction and Operational Park & Ride Proposals (Scarborough)

Site and Surroundings

9.1 An existing Scarborough Park & Ride site is located on the A64 Seamer Road approximately 3km south of Scarborough Town Centre. The site is bound to the west by the A64 Seamer Road and to the east by the Scarborough to York railway line. To the east of the railway line is 'The Mere' which is designated as a Local Site of Importance for Nature Conservation. A number of car garages and showrooms are located to the north of the site, beyond which lies a parade of large retail outlets. An area of open space bounds the site to the south.

9.2 The site is within the administrative boundary of Scarborough Borough Council. Its location is show on Figure 9.1 below.

Figure 9.1 Site Location - Scarborough Park & Ride



9.3 The Park & Ride site is currently operated by North Yorkshire County Council. It provides 600 car parking spaces and a single-storey amenity building in the south of the site containing a kiosk, waiting room and public conveniences. A

turning circle is position in the south east corner of the site. The site also features lighting columns, security fencing and CCTV.

9.4 Access is provided via a priority controlled junction onto the A64 at the south of the site. Private cars using the site entre past the amenity building and turn northwards into the parking spaces. Buses entre the site via the same junction and then load/unload passengers at the amenity building. Buses then use the turning circle before leaving the site at the junction onto the A64. The facility operates 7 days per week between 5.00am and 12.30am.

Description of Park & Ride Proposals

9.5 To serve the needs of mine workers living in the Scarborough area or in areas further south during the operation of the mine, York Potash is proposing to lease car parking spaces at the site from NYCC.

9.6 Information provided by NYCC indicates that the maximum occupancy of the site during peak periods is around 350 car parking spaces. This leaves a surplus of approximately 250 car parking spaces. YPL intend to occupy 117 parking spaces during the construction period and 64 parking spaces during operation.

9.7 The use of the site by York Potash will require no physical works to the existing facility. The only change required to the existing operation will be to the opening hours, which will need to be extended to cover the 24 hour operation of the mine. More specifically, the entrance to the Park & Ride facility would need to be opened between 5.00am and 8.00pm, 1.00pm and 3.00pm, 5.00pm and 5.30pm and 9.00pm and 11.00pm to accommodate work shift changeover periods. At all other times there would be no specific use of the facility by York Potash.

9.8 This change in operating hours would need to be secured by amending the current planning permission for the Park & Ride Facility (Ref: C4/07/00054/CC) via a Section 73 planning permission.

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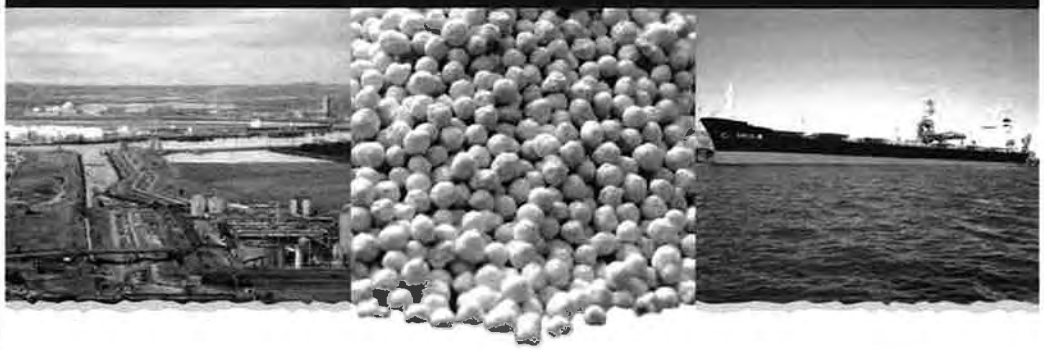
THE YORK POTASH PROJECT HARBOUR FACILITIES

Summary of Proposals Document

September 2014

Reg 5(2)(a)
Doc No: 7.2



YORKPOTASH
A Sirius Minerals Project

A GUIDE TO THIS DOCUMENT

THIS DOCUMENT IS A GUIDE TO THE PROPOSED HARBOUR FACILITIES IN TEESSIDE WHICH WOULD SERVE THE YORK POTASH PROJECT.

IT IS AN IMPORTANT PART OF THE CONSULTATION AND WE ENCOURAGE YOU TO READ IT AND OTHER TECHNICAL INFORMATION THAT IS AVAILABLE AND PROVIDE US WITH YOUR COMMENTS.

CONTENTS:

THE HARBOUR FACILITIES CONSULTATION

BACKGROUND

The proposed harbour facilities at Teesside are an integral part of the York Potash Project.

The harbour development is classified as a Nationally Significant Infrastructure Project (NSIP). This requires a Development Consent Order (DCO) from the Secretary of State for Transport before it can be developed. As part of the application for a DCO York Potash has to consult with a wide range of stakeholders, including local residents, to ensure they are given the opportunity to find out more, comment on and influence the proposals where appropriate.

WHAT WE ARE CONSULTING ON?

York Potash Ltd is asking for views on the proposed harbour facilities and associated infrastructure; its construction and the ongoing operation of the facilities and their overall impact.

Your views on any element of the proposals are encouraged at this stage and could help to shape further development of the harbour facilities going forward.

TELL US WHAT YOU THINK

The consultation includes both public events and more technical information available for people to view. The public exhibition schedule is detailed below. A range of draft technical reports is available at public locations and on the Company website www.yorkpotash.co.uk.

HAVE YOUR SAY NOW

York Potash is proposing a one-stage consultation process for the harbour facilities so it's important to have your say now.

PUBLIC EXHIBITION SCHEDULE

DATE/TIME	VENUE
Wed 17 Sept 2014 10am–5pm	**Dormanstown** Westfield Farm Community Centre, The Green, Redcar, Dormanstown TS10 5NA
Thurs 18 Sept 2014 12–6.30pm	**Redcar** Tuned In, Majuba Road, Redcar TS10 5BJ
Fri 26 Sept 2014 10am–5pm	**Redcar** Tuned In, Majuba Road, Redcar TS10 5BJ
Sat 27 Sept 2014 10am–2pm	**Dormanstown** Westfield Farm Community Centre, The Green, Redcar, Dormanstown TS10 5NA

YOUR VIEWS COUNT
PLEASE TAKE TIME TO COMPLETE THE FEEDBACK FORM ON OUR WEBSITE WWW.YORKPOTASH.CO.UK/CONSULTATION

OVERVIEW OF THE WIDER YORK POTASH PROPOSALS

THE YORK POTASH PROJECT AIMS TO BUILD THE FIRST POTASH MINE IN THE UK FOR OVER 40 YEARS – AN OPPORTUNITY FOR NORTH YORKSHIRE AND TEESSIDE THAT HAS LOCAL, NATIONAL AND GLOBAL SIGNIFICANCE.

The state-of-the-art mine would be the first in the world focused on the extraction of polyhalite. The Project would boost the local, regional and UK national economies.

It has the potential to create thousands of jobs, benefit local businesses, help improve skills in the region and contribute to people's prosperity for generations to come.

There are four main elements to the York Potash Project as outlined in the concept drawing and the brief description on this page.

MINE SITE

This would be situated approximately three miles south of Whitby and include two mine shafts from which the polyhalite would be extracted.

MINERAL TRANSPORT SYSTEM (MTS)

The MTS would transport the mined polyhalite from the mine site on an underground conveyor belt system in a tunnel to the materials handling facility at Wilton, Teesside.

MATERIALS HANDLING FACILITY (MHF)

This would consist of the plant and equipment necessary to granulate the polyhalite and create the final product.

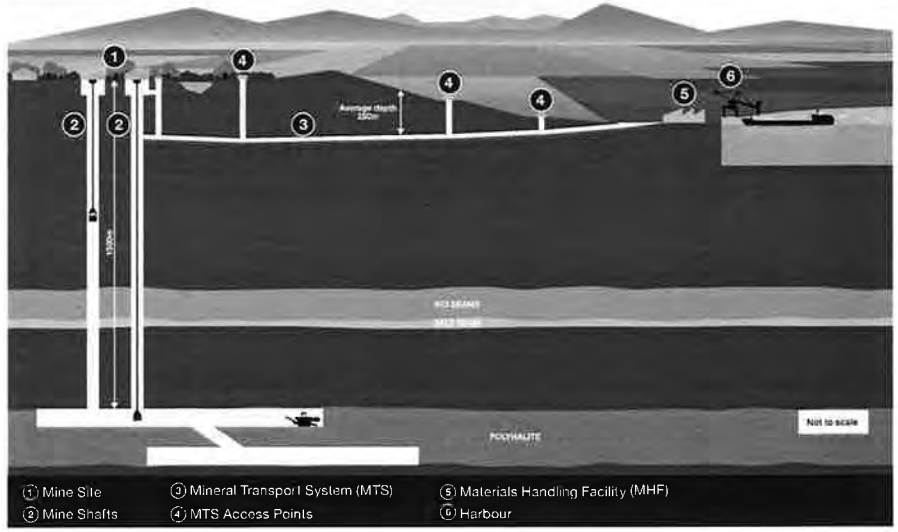
HARBOUR FACILITIES

This incorporates the conveyor system used to take the granulated polyhalite from the MHF, and the quayside infrastructure needed to enable the polyhalite to be exported by ship.

APPROVALS REQUIRED FOR THE YORK POTASH PROJECT

York Potash Ltd will be submitting two separate planning applications for the mine and MTS and for the MHF at the end of September 2014. As previously stated, the harbour facilities will require a Development Consent Order (DCO). This document focuses on the harbour facilities and has been written to support the consultation for the DCO application.

PROJECT OVERVIEW



POLYHALITE – FERTILIZER OF THE FUTURE

THE YORK POTASH PROJECT FOCUSES ON MINING THE LARGEST AND HIGHEST GRADE RESOURCE OF POLYHALITE FOUND ANYWHERE IN THE WORLD.

WHAT IS POLYHALITE?

Polyhalite is a type of potash, an essential ingredient in plant fertilizer. It contains a unique combination of four of the six essential nutrients plants need – potassium, magnesium, sulphur and calcium. It can be used directly on crops or combined with the other nutrients – nitrogen and phosphorus – to create other commonly used NPK fertilizer products.

Polyhalite core

Polyhalite has a low carbon footprint, no measurable effects on soil pH and is essentially chloride free. Its high total nutrient content delivers excellent nutrient availability and polyhalite has been certified for use in organic farming.

WHY IS IT NEEDED?

As the world population grows, demand for food increases. New wealthy economies are emerging and within them a growing middle-class which demands more protein rich and higher quality diets. Sustaining greater efficiency from grain production and arable land requires farmers and food producers to use balanced fertilization to increase yields.

The situation has become even more challenging as there is increasingly less farm land available to grow the required crops, necessary for both food supply and to support biofuel technology.

Potash, and polyhalite in particular, can play a major role in more efficient and productive agricultural techniques.

GLOBAL MARKET

Since it began marketing polyhalite, York Potash has already signed major sales agreements with leading commercial organisations in North America, Central America and China and has commitments from many other regions including Europe, Africa, the Americas and Asia.

The proposed harbour facilities at Teesside would allow the Company to be able to export polyhalite around the world, generating up to £1.2 billion in export revenue annually at full production. This would reduce the UK's balance of trade deficit by 4%.

POLYHALITE

19 **K**	POTASSIUM (14% K_2O)	16 **S**	SULPHUR (19% S)
12 **Mg**	MAGNESIUM (6% MgO)	20 **Ca**	CALCIUM (17% CaO)
7 **N**	NITROGEN	15 **P**	PHOSPHORUS

SUITABLE FOR ORGANIC USE WITH NO CHEMICAL PROCESSING REQUIRED

ORGANIC FARMERS & GROWERS — Organic Certification UKO

SOIL ASSOCIATION ORGANIC STANDARD

Poly4 is the trademark name for polyhalite products from the York Potash Project.

Notes: (1) Based on 90% polyhalite grade.
Polyhalite contains four of the six essential macro-nutrients highlighted in green.

THE HARBOUR FACILITIES

THE HARBOUR FACILITIES WOULD BE LOCATED AT BRAN SANDS, WITH A CONVEYOR CONNECTION TO THE WILTON ESTATE.

The Tees Estuary is a well-established deep water port, which is ideally suited to providing shipping access to customers around the world. The proposed harbour facilities would enable York Potash to export the product to satisfy the global demand for high quality polyhalite, and as a result deliver significant regional and national economic benefits.

OVERVIEW

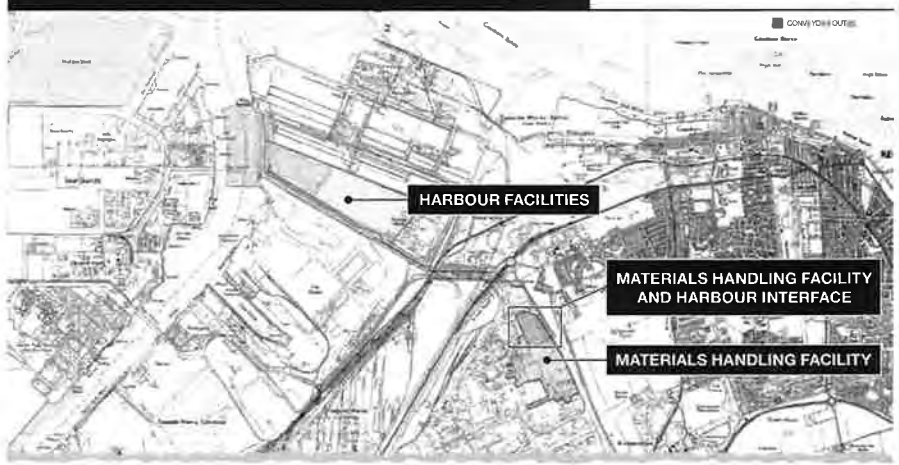
In summary, the proposed harbour facilities development would comprise of the following main elements:

- A conveyor system – linking the materials handling facility to the quay.
- Product storage facility – two surge bins, stationed at the quay, to provide product storage.
- Quay structure – providing docking for up to two ships and space for ship loading equipment.
- Associated infrastructure – including access and car parking, office space, a workshop and smaller ancillary buildings for plant and equipment.
- Dredging – allowing sufficient berth depth for the proposed ships.

Implementation and operation of the harbour facilities would be undertaken in two phases. Phase 1 would be the immediate operation of the facility with a throughput of 6.5 million tonnes per annum (mtpa) of polyhalite, utilising one new wharf and temporary usage of an existing quay at the site. Phase 2 would enable the facility to increase its operational capacity to 13mtpa through the addition of a second wharf.

OPERATIONS AT TEESSIDE

The materials handling facility would be located close to the proposed harbour facilities development which can be seen on the map (below).



CONVEYOR OVERVIEW

POLYHALITE WOULD ARRIVE AT THE HARBOUR FACILITY FROM THE MATERIALS HANDLING FACILITY (MHF) ALONG A CONVEYOR SYSTEM.

ROUTE FROM MATERIALS HANDLING FACILITY

The final design and detailed route are currently being refined. However, decisions on the overall concept and main alignment have been made and are described in the following pages.

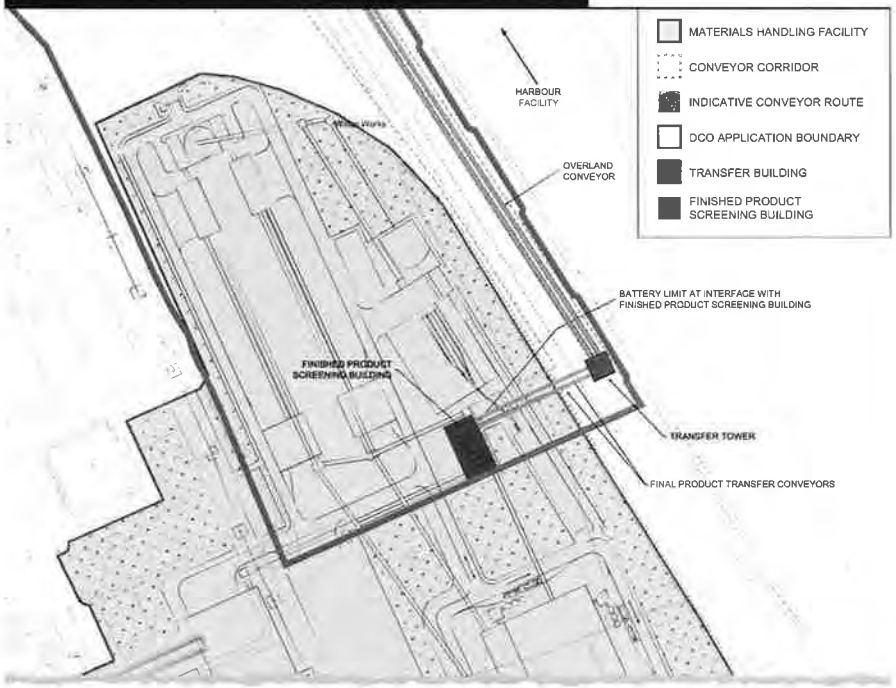
At the finished product screening building (see plan below), the granulated polyhalite would be inspected for a final time and then transferred to the quay on a conveyor system.

The conveyor comprises two parallel belts that would run along elevated conveyor bridges. The bridges would be enclosed until crossing the A1085 after which they would run largely on open trestles. Conveyor covers would be fitted to prevent dust escaping and to protect the product from rain.

The conveyor bridges would pass between the MHF and the quay at an elevated height passing over all existing infrastructure, with the exception of National Grid Power Lines, which would be underpassed.

At various stages, in order to facilitate a change in direction, the conveyor bridges pass through transfer towers. At transfer towers the polyhalite would be transferred from one conveyor to another within an enclosed high level structure.

MATERIALS HANDLING FACILITY AND HARBOUR INTERFACE



CONVEYOR ROUTE DORMANSTOWN VIEW

ABOUT THE ROUTE

The route of the proposed conveyor has been designed to minimise the need for significant changes in direction. This is because the types of conveyors selected only operate in straight lines.

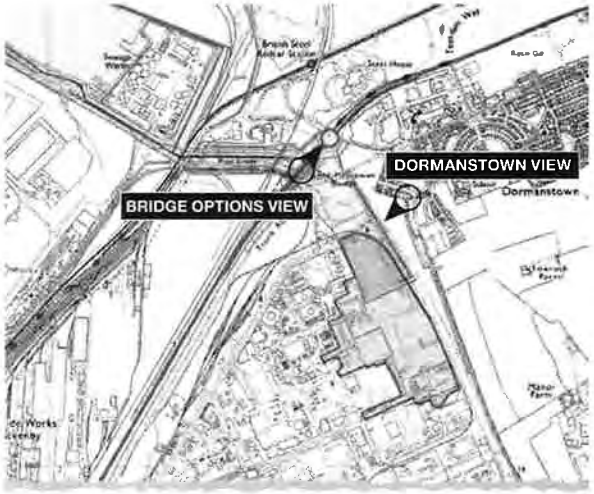
Once the polyhalite has been transferred from the MHF it will be transported in an enclosed section of conveyor bridge, at an initial height of approximately 10m, and run along the boundary of the MHF site in a broadly straight route passing to the west of Dormanstown.

The conveyor system would be contained within an enclosed conveyor bridge, and include measures to minimise any noise impacts where necessary.

The conveyor would have a galvanised metal finish and rise gradually to a suitable height for crossing the A1085 and other road and rail crossings.

CONVEYOR IMAGE

The artist's impression (right) shows an indicative image of the conveyor bridge at the eastern edge of the MHF and Wilton Estate. The photo used in the artist's impression is taken from Dormanstown, looking south-west, and the location is shown on the map above.



VIEW FROM DORMANSTOWN

CONVEYOR ROUTE
BRIDGE DESIGN OPTIONS

The conveyor from the MHF to the Bran Sands harbour would start at a transfer tower located on the east side of Boundary Road East. The conveyor would run along the eastern edge of the MHF and would rise gradually and curve to the west to a height suitable for crossing over the A1085 and the hot metal rail bridge. In this section the conveyor would be fully enclosed in a conveyor bridge to contain noise and would be supported at regular intervals by steel trestles.

After the hot metal rail bridge, the conveyor would descend gradually to cross safely over Network Rail and under the National Grid power lines. It would continue all the way to the harbour where it would discharge to a surge bin.

The conveyor would be in a fully enclosed structure between the MHF transfer tower and the hot metal rail bridge. After the hot metal rail bridge the conveyor would run on a gantry supported by steel trestles except where it runs over roads where it would be fully enclosed. Where the conveyor is on an open gantry, it would have covers to protect the product from rain and prevent dust generation.

The Preliminary Environmental Report for the harbour facilities and the Project Description state that the maximum height of the conveyor would be 25m as a worst case scenario.

There would be two conveyors, one for each phase, and where possible they would be on the same supports and within the same enclosure.

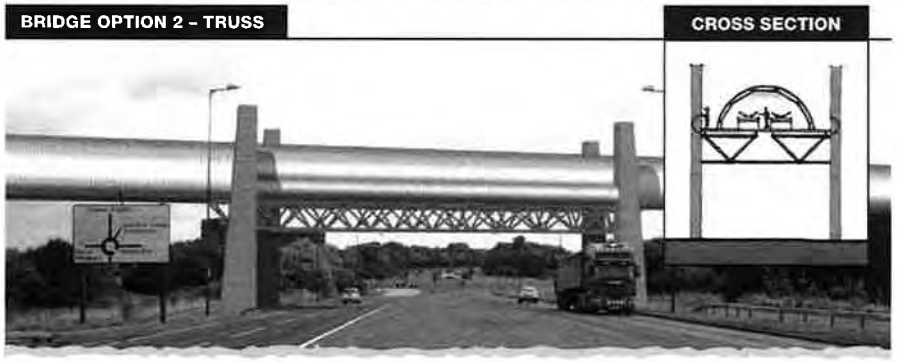
The conveyor route needs to pass over the A1085, the main road into Redcar. The Company's architects have designed two options to create an attractive crossing structure. The artist's impressions of these are shown below.

BRIDGE OPTION 1 – SIMPLE

CROSS SECTION

BRIDGE OPTION 2 – TRUSS

CROSS SECTION



CONVEYOR ROUTE
OPTIONS

After passing over the railway, the conveyor would enter the Bran Sands site and could take one of two routes – either along the northern or the southern boundary of the site. Either route may require a transfer tower (at a maximum height of 25 metres) after crossing the railway and would then travel to the quayside.

The southern route would travel in a north-westerly direction towards a transfer tower or a surge bin at the southern end of the quayside. The surge bin or transfer tower at this location would be a maximum height of 35 metres.

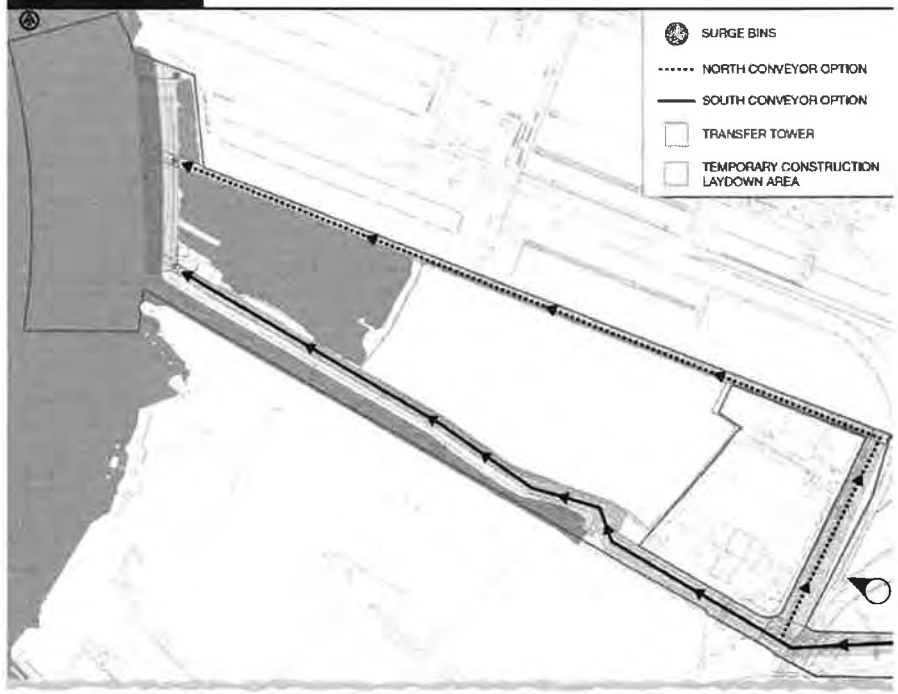
The northern route would depart from the transfer tower in a northerly direction to another transfer tower north-east of the Northumbria Water (NWL) sewage treatment works. From here, the conveyor would continue westward to a surge bin or transfer tower at either the centre of the port terminal or at the northern end.

The conveyor crossing over the Bran Sands lagoon 'finger' would require two supporting foundations within the lagoon. Otherwise, works carried out which could affect the lagoon would be kept to a minimum.

The transfer towers or surge bins would feed into a conveyor system which in turn would feed the ship loader system.

Aerial image taken from approximate location shown on map below

BRAN SANDS SITE



BUILDINGS AND STRUCTURES

BUILDINGS

Existing structures and buildings on the site would be kept except where there is a direct conflict with proposed works.

During the construction period, an area of approximately 200 metres x 150 metres would be required for the contractor's compound, associated storage and car parking for 70 spaces. This would be located to the south-east of the lagoon and would be cleared and restored once construction of the harbour facilities is complete.

When the harbour facilities are operational several permanent buildings would be required including an office, workshop, storage, and various smaller ancillary buildings housing plant and machinery.

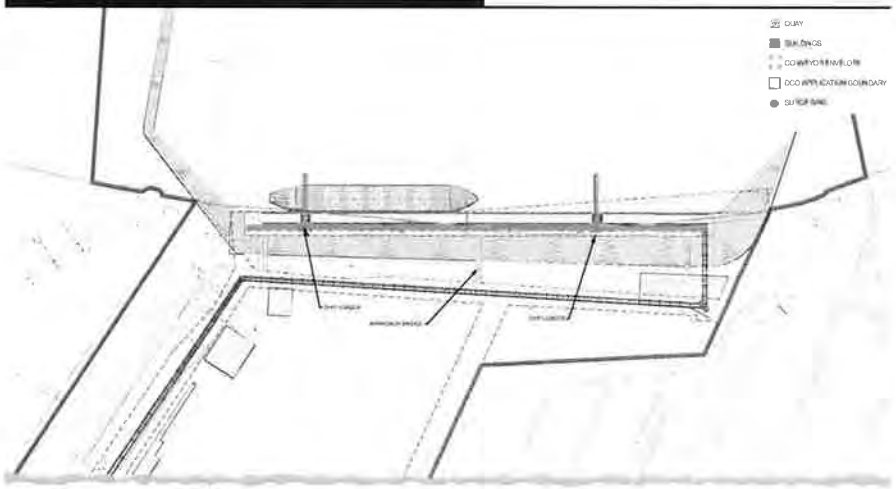
NWL TEMPORARY JETTY

Northumbria Water (NWL) previously operated a sludge jetty located to the north of the Dabholm Gut, which is no longer operational. In the first two years of operation this may be used on a temporary basis, with new equipment installed to allow for smaller boats to moor and the polyhalite transferred to the ships by a temporary ship loader or truck.

This option could either be pursued through a standard planning application to Redcar & Cleveland Borough Council and/or included in the DCO process.

View of current frontage where proposed quay will be constructed

OPEN QUAY OPTION AND BUILDING STRUCTURES



THE QUAY STRUCTURE

The proposed quay would consist of a wharf of a minimum of 540 metres in length and up to a maximum of 85 metres in width. This would allow for the docking of two ships at one time, as well as space for the ship loaders that would be used to transfer the polyhalite

The quay deck level will be approximately 2m above the highest water level (8.45 metres 'Above Chart Datum'). The design has accounted for anticipated sea level rises.

Two possible options for the construction of the quay are under consideration – an open quay structure or a closed quay – as outlined in this section.

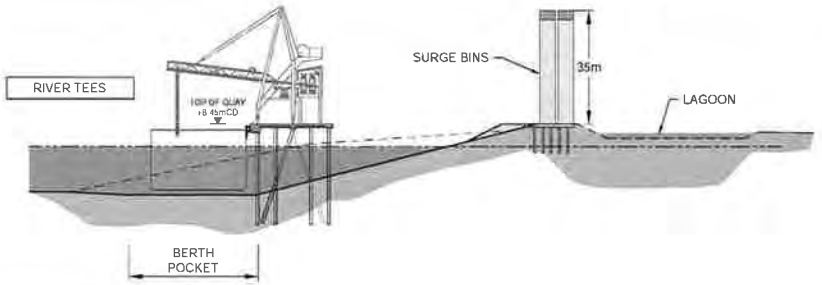
OPEN QUAY STRUCTURE:

This involves an open quay structure, whereby the quay platform would be a suspended structure located approximately 60m from the existing river bank. The platform could be accessed via one of three approach bridges. The effect being that the Tees would have free and open flow between the quay platform and the bank and would have the least impact on the flow of the river. This option would require an increased level of dredging in order to clear adequate space for the open quay structure.

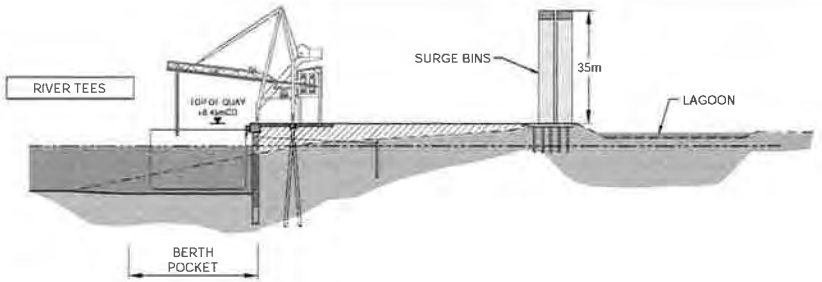
CLOSED QUAY STRUCTURE:

In a closed quay structure the space between the bank and the proposed location of the quay platform would be back filled. The quay platform would therefore be accessible via engineered hard standing. This proposal would result in less dredging of the Tees Estuary and add increased stability to the shoreline through the construction of a new, reinforced, riverbank.

OPEN QUAY STRUCTURE



CLOSED QUAY STRUCTURE



CONSTRUCTION AND DREDGING

CONSTRUCTION

Subject to all necessary consents, works to construct the proposed harbour facilities would commence in January 2017 with completion of Phase 1 expected in July 2018. Phase 2 would be completed, with the harbour running at full capacity, by 2024.

Construction and operation vehicle access to the harbour facilities would be via the A1085 trunk road. With the exception of internal road access, no new road infrastructure is proposed. There is also potential for some construction materials to be brought to the site on barges using the River Tees via an existing jetty.

DREDGING

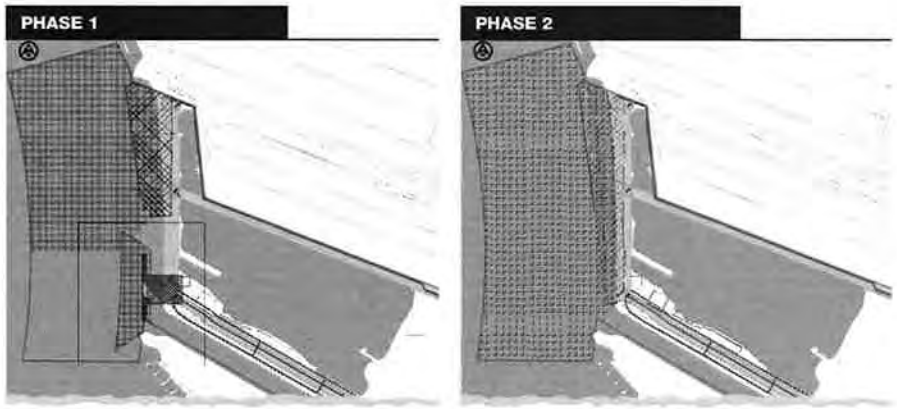
To accommodate the quay and the boats it would be necessary to dredge an area of the estuary to provide berth pockets for mooring and an adequate entry channel. Dredging involves the removal of a layer of the river bed in order to create the necessary depth. As it stands the estuary is not deep enough to accommodate the proposed ships required and therefore this is a necessary element of the construction.

The material that is displaced in the dredging process would be removed from the area rather than moved to another part of the estuary, this process is known as capital dredging.

The necessary dredging would include the approach channel, allowing ships to enter the quay area safely. The dredging in this location would be to a depth that matches that of the remainder of the approach channel between the mouth of the estuary and the proposed quay location (14.1m below chart datum (bCD) (currently the approach channel is 10.4m bCD). At the docking area, along the mooring locations, berth pockets would be created at an additional depth (16m bCD).

Dredging of the approach channel would take place in Phase 1 and Phase 2 as necessary. As described previously, the open quay structure (option 1) would require further dredging than the closed quay structure (option 2).

Most dredging would be carried out as part of the construction process, however some would be required as part of routine maintenance to prevent the build-up of river sediment in the quay berth.



ENVIRONMENTAL IMPACTS AND MITIGATION

The development is of a scale that gives rise to a requirement to undertake a formal Environmental Impact Assessment (EIA) and this is being prepared by an experienced team at one of the UK's leading environmental consultancies.

The EIA looks in detail at the potential impacts of the Project on the environment, both during construction and once the harbour is operational, and also identifies any measures that may be needed to minimise these effects.

A Construction Environmental Management Plan would be developed to ensure that all environmental impacts are managed effectively. As part of the EIA, an in-depth assessment has been undertaken into a wide range of environmental topics in consultation with key stakeholders and consultees. A summary of the key topics that are being investigated is provided below:-

1. Ecological issues – both in terms of the marine and coastal areas as well as areas on land
2. Water issues – including water quality and hydrology, coastal protection and flooding
3. Visual impacts – focusing on the effects from those who live, work and travel through the area
4. Transportation – relating to lorry and car movements on land and also navigational issues within the Tees
5. Air quality and noise & vibration – particularly focusing on the construction period including piling into the riverbed
6. Heritage and archaeology
7. Socio-economics and any effects on the use of the area for recreation or leisure purposes

As part of this consultation process, a Preliminary Environmental Report has been prepared which provides information identified to date in relation to the current conditions of the site and the possible effects of the harbour facilities development.

An Environmental Statement, reporting on the findings from the EIA, will be submitted with the DCO application to assist those responsible for making a decision on the development to understand the extent of any environmental effects and the strategy which York Potash is proposing to put in place to address these.

MORE INFORMATION

A copy of details of the proposals, preliminary environmental information, plans, maps and other draft documents showing the nature and location of the proposed development, may be inspected free of charge at the following locations and during the hours set out below.

VENUE	OPENING TIMES		
Redcar & Cleveland Borough Council offices Kirkleatham Street, Redcar, TS10 1RT	**Mon–Fri** 9am–5pm		
York Potash Ltd 7–10 Manor Court, Manor Garth, Scarborough, YO11 3TU	**Mon– Fri** 9am–5pm		
Redcar Library Kirkleatham Street, Redcar, Cleveland TS10 1RT	**Mon–Wed, Fri** 9am–6pm	**Thurs** 9am–5pm	**Sat** 9.30am–12.30pm
Tuned In Majuba Road, Redcar, TS10 5BJ	**Mon–Fri** 8.30am–8pm	**Sat** 8.30am–6pm	**Sun** 8.30am–4pm

The documents relating to the proposed application will be on display at the above locations from 11 September 2014 to 16 October 2014. Further details in relation to the Project and these documents can be found on the York Potash website www.yorkpotash.co.uk.

CONSULTATION PROCESS AND DOCUMENTATION

FORMAL CONSULTATION

Information on the formal consultation with people living in the vicinity of the proposed harbour facilities is set out in a Statement of Community Consultation (SOCC) which is available to download from the Project website www.yorkpotash.co.uk/consultation.

Formal consultation will also take place with prescribed consultees pursuant to s.42 of the Act.

COMPULSORY PURCHASE ORDER

It is currently anticipated that it may be necessary to utilise land that is in third party ownership or affected by third party rights. All parcels of land and rights affected are identified in the Book of Reference and on the Land Plans.

FURTHER INFORMATION

Publicly available documents, listed in the table (right), can all be downloaded from the Company website. If you would like any further information about the proposals, please do not hesitate to contact us.

For more information on where hard copies of these documents are publicly available, please see page 14.

PUBLICLY AVAILABLE CONSULTATION DOCUMENTS

Application Forms	
Plans/Drawings/Sections	• Land Plans • Works Plans • Access and Rights of Way Plan
Other plans necessary to describe proposed development	• Location Plan • Layout Plans (Temporary) • Layout Plans (Phase 1) • Layout Plans (Phase 2) • Interface with MHF • MHF Layout Plan • Flowchart • Conveyor Information
Draft Development Order and Associated Plans	• Draft Proposed Order • Explanatory Memorandum
Compulsory Acquisition Information	• Statement of Reasons • Book of Reference
Other Documents	• Preliminary Environmental Report • Summary of Proposals Document • Project Description

PROJECT TIMELINE

SEPTEMBER 2014	Planning application submitted for the mine and MTS Planning application submitted for the MHF
DECEMBER 2014	DCO application submitted for the harbour facilities
Q1 2015	Proposed mine construction starts
JANUARY 2017	Proposed harbour construction starts
2019	Target date for first production

York Potash Ltd
7–10 Manor Court
Manor Garth
Scarborough
YO11 3TU

T: 24-hour community helpline 0845 543 8964
E: info@yorkpotash.co.uk

www.yorkpotash.co.uk

YORKPOTASH
A Sirius Minerals Project

DRG No. PB1586-SK90

NOTES

KEY

ORDER LIMITS

MATERIALS HANDLING FACILITY

DRAFT FOR CONSULTATION

REV	DATE	DESCRIPTION	BY	CHK	APP
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REVISIONS

YORKPOTASH

PROJECT: YORK POTASH

TITLE:
THE YORK POTASH
HARBOUR FACILITIES ORDER 201X
LOCATION PLAN
REGULATION 5 (2)(o)
DOCUMENT 3.1

Royal HaskoningDHV
Enhancing Society Together

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THE YORK POTASH HARBOUR FACILITIES ORDER 201X

Development Consent Order

Regulation Number:	5(2)(b)
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Author:	Marrons Shakespeares 1 Meridian South Meridian Business Park Leicester LE19 1WY
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YORKPOTASH
A Sirius Minerals Project

STATUTORY INSTRUMENTS

201[ ] No. 0000

INFRASTRUCTURE PLANNING

HARBOUR, DOCKS, PIERS AND FERRIES

The York Potash Harbour Facilities Order 201X

Made - - - - *[ ]*

Coming into force - - *[ ]*

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PREAMBLE

An application has been made to the Secretary of State in accordance with the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009(**a**) for and order under sections 37, 114, 115, 120 and 122 of the Planning Act 2008 (**b**) (the 2008 Act").

The development which is the subject of the application is a nationally significant infrastructure project within the terms of section 24 of the 2008 Act.

[ ] was appointed by the Secretary of State in accordance with Chapter 2 of Part 6 of the 2008 Act. [ ] examined the application in accordance with Chapter 4 of Part 6 of the 2008 Act, and the Infrastructure Planning (Examination Procedure) Rules 2010(**c**).

[ ] has considered the presentations made and not withdrawn and the application, together with accompanying documents, and has submitted a report to the Secretary of State in accordance with section 74 of the 2008 Act.

The Secretary of State, having considered the representations made and not withdrawn, and the report of [ ], has decided in the application and consent for ancillary works [with modifications which, in the opinion of the Secretary of State, do not make any substantial change to the proposals comprised in the application].

The Secretary of State, in exercise of the powers conferred by sections 114, 115, 120 and 122 of, and paragraphs 1 to 3, 10 to 12, 14 to 17, 24, 26, 30A to 32, 32B to 34, 36, and 37 of Part 1 of Schedule 5 to, the 2008 Act, makes the following Order—

PART 1

PRELIMINARY

Citation

1. This Order may be cited as The York Potash Harbour Facilities Order 201X and will come into force on [ ] 201X.

Interpretation

2.—(1) In this Order—

"the 1847 Act" means the Harbours, Docks and Piers Clauses Act 1847(**d**);

"the 1961 Act" means the Land Compensation Act 1961(**e**);

"the 1965 Act" means the Compulsory Purchase Act 1965(**f**);

(**a**) S.I. 2009/2264, as amended by S.I. 2010/439, S.I. 2010/602, S.I. 2012/2654, S.I. 2012/635, S I. 2012/2732, and S.I. 2013/522.

(**b**) 2008 c29 as amended by Localism Act 2011 (c.20), the Marine and Coastal Access Act 2009 (c.23), the Growth and Infrastructure Act 2013.

(**c**) S.I.2010/103, as amended by S.I.2012/635

(**d**) 1847 (10 & 11 Vict) c. 27. Sections 24, 94 and 95 were repealed by the Statute Law (Repeals) Act 1993 (c. 50); section 26 was repealed by section 56(4) of, and Schedule 11 to, the Courts Act 1971 (c. 23); section 28 was amended by section 141 of, and Schedule 11 to, the Post Office Act 1969 (c. 48); by sections 37 and 46 of the Criminal Justice Act 1982 (c.48);; section 91 was repealed by the Statute Law Revision Act 1894 (c. 56); section 93 was repealed by the Statute Law Revision Act 1875 (c. 66); and section 96 was repealed by the Perjury Act 1911 (c. 6), section 17. There are other amendments to the 1847 Act which are not relevant to this Order.

(**e**) 1961 c.33. Section 2 was repealed by article 5(1), (2) to, and paragraphs 36 and 38 of Schedule 1 to, S.I. 2009/1307. There are other amendments to the 1961 Act which are not relevant to this Order.

(**f**) 1965 c.56. Section 3 was amended by section 70 of, and paragraph 3 of Schedule 15 to, the Planning and Compensation Act 1991 (c.34). Section 4 was amended by section 3 of, and Part 1 of Schedule 1 to, the Housing (Consequential

"the 1966 Act" means the Tees and Hartlepools Port Authority Act 1966; (g)

"the 1980 Act" means the Highways Act 1980(h);

"the 1984 Act" means the Road Traffic Regulation Act 1984(i)

"the 1990 Act" means the Town and Country Planning Act 1990(j);

"the 1991 Act" means the New Roads and Street Works Act 1991(k);

"the 2008 Act" means the Planning Act 2008;

"the access and rights of way plans" means the plans certified as the access and rights of way plans by the Secretary of State for the purposes of this Order (Documents 2.3A-C);

"address" includes any number or address used for the purposes of electronic transmission;

"area of jurisdiction" means the area within the harbour limits ;

"area of seaward construction activity" means the area of the sea within the Order limits;

"associated companies" has the same meaning as in section 256 Companies Act 2006;

"authorised development" means the nationally significant infrastructure project and associated development described in Schedule 1 (authorised development) and any other development authorised by this Order, which is development within the meaning of section 32 of the 2008 Act and any works carried out pursuant to the requirements;

"the berthing pocket" means the area bounded by co-ordinates [ ] and shown on the works plans;

"the book of reference" means the book of reference certified by the Secretary of State as the book of reference for the purposes of this Order;

"building" includes any structure or erection or any part of a building, structure or erection;

"carriageway" has the same meaning as in the 1980 Act;

"compulsory acquisition notice" means a notice served in accordance with section 134 (notice of authorisation of compulsory acquisition) of the 2008 Act;

Provisions) Act 1985 (c.71). Section 5 was amended by sections 67 and 80 of, and Part 2 of Schedule 18 to, the Planning and Compensation Act 1991 (c.34). Section 11(1) and sections 30, 31 and 32 were amended by section 34(1) of, and Schedule 4 to, the Acquisition of Land Act 1981 (c.67) and by section 14 of, and paragraph 12(1) of Schedule 5 to, the Church of England (Miscellaneous Provisions) Measure 2006 (2006 No.1). Section 12 was amended by section 56(2) of, and Part 1 to Schedule 9 to, the Courts Act 1971 (c.23). Section 13 was amended by section 62(3) and 139 of and paragraphs 27, 28(1), (2) and (3) of Schedule 13 and Part 3 of Schedule 23 to, the Tribunals, Courts and Enforcement Act 2007 (c.15). Section 20 was amended by section 70 of, and paragraph 4 of Schedule 15 to, the Planning and Compensation Act 1991 (c.34) and by article 5 of, and paragraphs 59 and 70 of Schedule 1 to, the Transfer of Tribunal Functions (Lands Tribunal and Miscellaneous Amendments) Order 2009. Sections 9, 25 and 29 were amended by the Statute Law (Repeals) Act 1973 (c.39). Section 25 was also amended by Section 59(5) of, and paragraphs 4(1) and (3) of Part 2 of Schedule 11 of, the Constitutional Reform Act 2005. Section 31 was also amended by section 70 of, and paragraph 19 of Schedule 15 to, the Planning and Compensation Act 1991 (c 34) and by section 14 of, and paragraph 12(2) of Schedule 5 to, the Church of England (Miscellaneous Provisions) Measure 2006 (2006 No.1). There are other amendments to the 1965 Act which are not relevant to this Order.

(g) **[to be completed]**

(h) 1980 C.66. Section 1(1) was amended by section 21(2) of the New Roads and Street Works Act 1991 (c.22); sections 1(2), (3) and (4) were amended by sections 8 and 102 of, and paragraph (1) of Schedule 4 and Schedule 17to, the Local Government Act 1985 (c.51); section 1 (2A) was inserted by, and section 1(3) was amended by, section 259 (1), (2) and (3) of the Greater London Authority Act 1999 (c.29); sections 1 (3A) and 1(5) were inserted by section 22(1) of, and paragraph 1 of Schedule 7 to the Local Government (Wales) Act 1994 (c.19). Section 36(2) was amended by section 4(1) of, and paragraphs 47 (a) and (b) of Schedule 2 to, the Housing (Consequential Provisions) Act 1985 (c.71), by S.I. 2006/1177, by section 4 of and paragraph 45(3) of Schedule 2 to, the Planning (Consequential Provisions) Act 1990 (c.11), by section 64(1) (2) and (3) and Section 68 and Part 1 of Schedule 4 of the Transport and Works Act (c.42) and by section 57 of, and paragraph 5 of Part 1 of Schedule 6 to, the Countryside and Rights of Way Act 2000 (c.37); section 36(3A) was inserted by section 64(4) of the Transport and Works Act 1992 and was amended by S.I. 2006/1177; section 36(6) was amended by section 8 of, and paragraph 7 of Schedule 4 to, the Local Government Act 1985 (c.51); and section 36(7) was inserted by section 22(1) of, and paragraph 4 of Schedule 7 to, the Local Government (Wales) Act 1994 (c.19). Section 329 was amended by section 112(4) of, and Schedule 18 to, the Electricity Act 1989 (c.29) and by section 190(3), of, and Part 1 of Schedule 27 to, the Water Act 1989 (c.15). There are other amendments to the 1980 Act which are not relevant to this Order.

(i) 1984 c.27 **[to be considered]**

(j) 1990 c.8. There are amendments to the 1990 Act which are not relevant to this Order.**[other relevant amendments to be considered]**

(k) 1991 c.22. Section 48(3A) was inserted by section 124 of the Local Transport Act 2008 (c.26). Sections 79(4), 80(4) and 83(3) were amended by section 40 of, and Schedule 1 to, the Traffic Management Act 2004 (c.18).

"the dockmaster" means the dockmaster appointed by the Harbour Authority under this Order;

"harbour" means the authorised development within the limits of the harbour, and includes any works, land, buildings, ancillary works, plant, property and conveniences connected with it, as from time to time existing within the limits of the harbour;

"the harbour authority" means the undertaker in its capacity as harbour authority established by article 7 (jurisdiction of the harbour authority), or the extent of any transfer under article 13(1)(a) (consent to transfer benefit of order), and transferee;

"harbour limits" means the boundary line shown on [ ];

"the harbour master" means the harbour master appointed by the Tees and Hartlepools Port Authority and includes the harbour master's deputies and assistants;

"highway" and "highway authority" have the same meaning as in the 1980 Act;

"lagoon" means the lagoon shown on [**plan**];

"the land plans" means the plans certified as the land plans by the Secretary of State for the purposes of this Order (Document 2.1A-C);

"level of high water" means the level of mean high-water springs;

"limits of deviation" means the limits of deviation shown or described on the works plans;

"local planning authority" means Redcar and Cleveland Borough Council;

"maintain" includes to inspect, repair, adjust, alter, remove, clear, refurbish, reconstruct, decommission, demolish, replace or improve and any derivative of "maintain" is to be construed accordingly;

"materials handling facility" means the facility to be located at Wilton International being the subject of a planning application under the 1990 Act;

"MMO" means the Marine Management Organisation created under the Marine and Coastal Act 2009 or any successor to its functions;

"Order land" means the land shown on the land plans which is within the boundary of the land required for or affected by the proposed development, and described in the book of reference;

"the Order limits" means the limits shown on the works plans as the limits within which the authorised development and works may be carried out ;

"owner", in relation to land, has the same meaning as in section 7 of the Acquisition of Land Act 1981(l);

"PD Ports" means PD Ports Limited, company reference number 05083373, whose registered office is situate at 17 – 27 Queens Square Middlesborough TS2 1AH;

"the quay limits" means the area bounded by co-ordinates [ ] and shown on sheets [ ] of the works plans;

"requirement" means the requirement set out in the relevant paragraph of Schedule 2;

"statutory undertaker" means any person falling within the definition of statutory undertaker in section 127(8) of the 2008 Act;

"street" means a street within the meaning of section 48 of the 1991 Act, together with land on the verge of a street or between two carriageways, and includes part of a street;

"street authority", in relation to a street, has the same meaning as in Part 3 of the 1991 Act;

"the Tees and Hartlepools Port Authority" means PD Ports in its role as harbour authority for the River Tees;

"tidal work" means so much of any work or operation authorised by this Order as is on, under or over tidal waters or tidal lands below the level of high water;

(l) 1981 c.67. Section 7 was amended by section 70 of, and paragraph 9 of Schedule 15 to, the Planning and Compensation Act 1991 (c.34). There are other amendments to the 1981 Act which are not relevant to this Order.

"the tribunal" means the Lands Chamber of the Upper Tribunal;

"Trinity House" means the Corporation of Trinity House of Deptford Strond;

"the undertaker" means York Potash Limited (Company Registration Number 08270855) and its associated companies;

"vessel" means every description of vessel or water-borne structure, however propelled, moved or constructed, and includes displacement and non-displacement craft, personal watercraft, a seaplane on the surface of the water, a hydrofoil vessel, a hovercraft or any other amphibious vehicle and any other thing constructed or adapted for movement through, in, on or over or placement in water and which is at the time in, on or over water;

"watercourse" includes all rivers, streams, ditches, drains, canals, cuts, culverts, dykes, sluices, sewers and passages through which water flows except a public sewer or public drain;

"works area" means the area of land shown on the works plans within which a numbered work is to be carried out; and

"the works plans" means the plans certified as the works plans by the Secretary of State for the purposes of this Order (Documents 2.2A-C).

(2) References in this Order to rights over land include references to rights to do, or to place and maintain, anything in, on or under land or in the air-space above its surface.

(3) All distances, directions and lengths referred to in this Order are approximate and distances between points on a work comprised in the authorised development will be taken to be measured along that work.

(4) References in this Order to numbered works are references to the works as numbered in Schedule 1 (authorised development) and to numbered requirements are to the numbered requirements as numbered in Schedule 2 (requirements).

(5) All areas described in square metres in the book of reference are approximate.

Incorporation of the 1847 Act

3.—(1) With the exception of sections 6 to 23, 25, the proviso to section 28, section 31, the proviso to section 32, sections 35, 36, 38, 39, 42, 43, 45, 48 to 50, 53 to 55, 59 to 64, 66 to 69, 71 to 73, 76 and 79 to 90, 92, 97, 98 and 102, the 1847 Act is incorporated in this Order subject to the modifications stated in paragraph (2).

(2) In construing the 1847 Act as so incorporated—

(a) the expression "the special Act" means this Order;

(b) the expressions "the Promoters of the undertaking" and "the undertakers" means the undertaker;

(c) the expressions "the harbour, dock or pier" means the authorised development within the area of jurisdiction;

(d) the expressions "limits" and prescribed limits" means the area of jurisdiction;

(e) the expression "near the pier" does not extend beyond the area of jurisdiction;

(f) the expression "the harbour master", in relation to the authorised development means the harbour master as defined in article 2(1) (interpretation);

(g) the definition of "vessel" in article 2(1) is to be substituted for the definition in section 3 (interpretation in this and the Special Act) of the 1847 Act; and

(h) any requirement to comply with a notice or direction given by the harbour master is to be construed as including a requirement that, in complying with such notice or direction, a person who is subject to the notice or direction must also comply with any relevant notice or direction given by PD Ports or the harbour master in the exercise by either or both of them of any function conferred by or under any enactment (including this Order).

Application and modification of legislative provisions

4.—(1) Where an application is made to the local planning authority for any consent, agreement or approval required by a requirement, the following provisions apply, so far as they relate to a consent, agreement or approval of a local planning authority required by a condition imposed on a grant of planning permission, as if the requirement was a condition imposed on the grant of planning permission—

(a) sections 78 and 79 of the 1990 Act (right of appeal in relation to planning decisions);

(b) any orders, rules or regulations which make provision in relation to a consent, agreement or approval of a local planning authority required by a condition imposed on the grant of planning permission.

(2) For the purposes of paragraph (1), a provision relates to a consent, agreement or approval of a local planning authority required by a condition imposed on a grant of planning permission in so far as it makes provision in relation to an application for such a consent, agreement or approval, or the grant or refusal of such an application, or a failure to give notice of a decision on such an application.

(3) [to be completed]

PART 2

PRINCIPAL POWERS

Development consent etc. granted by the Order

5. —(1) The undertaker is granted development consent for the authorised development, to be carried out subject to the provisions of this Order within the Order limits and subject to the requirements.

(2) It does not constitute a breach of the terms of this Order, if, following the coming into force of this Order, any development, or any part of a development, is carried out or used within the Order limits under planning permission granted, on application, under the 1990 Act.

Limits of deviation

6. In carrying out the authorised development the undertaker may –

(a) deviate laterally from the lines or situations of the authorised development shown on the works plans to the extent of the limits of deviation; and

(b) in respect of any boundary between the areas of two works numbers deviate laterally by 20 metres either side of the boundary as noted on the works plans.

Jurisdiction of the harbour authority

7. —(1) Regardless of the functions of PD Ports exercisable within its limits, the undertaker is to be the harbour authority for the area of jurisdiction.

(2) Regardless of any provision of the 1847 Act as incorporated by article 3 (incorporation of the 1847 Act), the area within which the harbour authority and the dockmaster may exercise their functions under this Order is to be the area of jurisdiction.

(3) The jurisdiction of the harbour authority over vessels within the area of jurisdiction does not extend to—

(a) any vessel unless it is at anchor or otherwise moored or is causing an obstruction within the area of jurisdiction; or

(b) signalling or any other activity connected with the movement of the vessel.

(4) Where any person referred to in paragraph 5(a) considers that there is an actual or anticipated conflict between—

(a) the exercise of any function of any person mentioned in paragraph 5(a); and

(b) the exercise of any function of any person mentioned in paragraph 5(b),

then that person may give notice to the relevant person in paragraph 5(b).

(5) The persons referred to in paragraph (4) above—

(a) PD Ports and the harbour master; and

(b) the harbour authority and the dockmaster.

(6) The notice referred to in paragraph (4) must set out any requirements concerning the exercise of the relevant function by the relevant person mentioned in paragraph (5)(b).

(7) The requirements referred to in paragraph (6) may—

(a) make general provisions in relation to the exercise of functions over time; or

(b) make specific provision about the exercise of a particular function or functions on a particular occasion.

(8) If—

(a) a notice sets out requirements falling within paragraph 7(a) it must be made in writing; and

(b) a notice set out requirements falling within paragraph 7(b) it may be made in writing or in any other manner considered appropriate by the person giving the notice.

(9) On receipt of a notice given under paragraph (4), the recipient of the notice must comply with the notice.

(10) Except where expressly provided elsewhere in this Order, no person mentioned in paragraph (5)(b) is obliged to seek any permission or otherwise notify any person mentioned in paragraph (5)(a) prior to exercising any function.

Maintenance of authorised development

8. Subject to the requirements the undertaker may at any time maintain the authorised development.

Provision of works

9. —(1) The undertaker may from time to time within the Order limits provide and operate such harbour facilities, together with works ancillary to those facilities, as may be necessary or convenient for the construction of the authorised development or the operation of the undertaking, and for this purpose the undertaker may construct and maintain roads, railway lines, buildings, sheds, offices, workshops, depots, walls, foundations, fences, gates, tanks, pumps, conduits, pipes, drains, wires, mains, cables, electrical substations, signals, conveyors, cranes, container handling equipment, lifts, hoists, lighting columns, weighbridges, stairs, ladders, stages, platforms, catwalks, equipment, machinery and appliances and such other works and conveniences as may be necessary or expedient.

(2) Without limitation on the scope of paragraph (1) the undertaker may within the Order limits carry out and maintain such other works as may be necessary or convenient for the purposes of, or in connection with or in consequence of, the construction, maintenance or use of the authorised development, including—

(a) works for the for the accommodation or convenience of vessels (including but not limited to berthing heads, mooring posts, ladders, buoys, bollards, dolphins, fenders, rubbing strips and fender panels, fender units and pontoons);

(b) works to divert, remove or replace apparatus, including mains, sewers, drains, pipes, conduits, cables, electrical substations and electrical lines; and

(c) landscaping and other works to mitigate any adverse effect of the construction, maintenance and operation of the works or to benefit or protect any person or premises affected by the construction, maintenance and operation of the works.

(3) Article 3 of, and Part 17 in Schedule 2 to, the Town and Country Planning (General Permitted Development) Order 1995(**m**) apply as if this Order were a grant of planning permission.

Benefit of Order

10. Subject to article 11 (consent to transfer benefit or Order), the provisions of this Order have effect solely for the benefit of the undertaker.

Consent to transfer benefit of Order

11. —(1) The undertaker may, with the consent of the Secretary of State—

(a) transfer to another person ("the transferee") any or all of the benefit of the provisions of this Order and such related rights as may be agreed between the undertaker and the transferee; or

(b) grant to another person ("the lessee") for a period agreed between the undertaker and the lessee any or all of the benefit of the provisions of this Order and such related rights as may be so agreed.

(2) The powers of paragraph (1)(a) may only be exercised by the undertaker or a transferee.

(3) A lessee ('the granting lessee') may not make a grant under paragraph (1)(b)—

(a) for a longer period than the period of the grant to the granting lessee; or

(b) conferring any benefit or rights that is not conferred by the grant to the granting lessee.

(4) Where an agreement has been made in accordance with paragraph (1), references in this Order to the undertaker, except in paragraph (3), include references to the transferee or the lessee.

(5) The exercise by a person of any benefits or rights conferred in accordance with any transfer or grant under paragraph (1) is subject to the same restrictions, liabilities and obligations as would apply under this Order if those benefits or rights were exercised by the undertaker.

(6) Before giving consent under this article, the Secretary of State must consult the harbour master and such other parties as the Secretary of State thinks appropriate.

PART 3

STREETS

Street works

12.—(1) The undertaker may, for the purposes of the authorised development, enter on any of the streets specified in Schedule 3 (streets subject to street works) within the Order limits and may—

(a) break up or open the street, or any sewer, drain or tunnel under it;

(b) tunnel or bore under the street;

(c) place apparatus in the street;

(d) maintain apparatus in the street or change its position; and

(e) execute any works required for or incidental to any works referred to in sub-paragraphs (a), (b), (c) and (d).

(2) The authority given by paragraph (1) is a statutory right for the purposes of sections 48(3) (streets, street works and undertakers) and 51(1) (prohibition of unauthorised street works) of the 1991 Act.

(**m**) S.I. 1995/418 as amended by S.I 1999/293, S.I. 2003/2155 and S.I.2011/1824

(3) The provisions of sections 54 to 106 of the 1991 Act apply to any street works carried out under paragraph (1).

(4) In this article "apparatus" has the same meaning as in Part 3 of the 1991 Act.

Temporary stopping up of streets

13.—(1) The undertaker, during and for the purposes of carrying out the authorised development, may temporarily stop up, alter or divert any street and may for any reasonable time—

(a) divert the traffic from the street; and

(b) subject to paragraph (2), prevent all persons from passing along the street.

(2) The undertaker shall provide reasonable access for pedestrians and, where reasonably practicable, going to or from premises abutting a street affected by the temporary stopping up, alteration or diversion of a street under this article if there would otherwise be no such access.

(3) Without limitation on the scope of paragraph (1), the undertaker may temporarily stop up, alter or divert the streets specified in columns (1) and (2) of Schedule 4 (streets to be temporarily stopped up) to the extent specified, by reference to the letters shown on the rights of way plan, in column (3) of that Schedule.

(4) The undertaker must not temporarily stop up, alter or divert—

(a) any street specified as mentioned in paragraph (3) without first consulting the street authority; and

(b) any other street without the consent of the street authority which may attach reasonable conditions to any consent.

(5) Any person who suffers loss by the suspension of any private right of way under this article may be entitled to compensation to be determined, in case of dispute, under Part 1 of the 1961 Act.

Access to works

14. —(1) The undertaker may, for the purposes of the authorised development—

(a) form and lay out means of access to a public highway, or improve existing means of access to a public highway, in the locations specified in columns (1) and (2) of Schedule 5 (access to works); and

(b) with the approval of the highway authority, form and lay out such other means of access to a public highway or improve existing means of access to a public highway, at such locations within the Order limits as the undertaker reasonably requires for the purposes of the authorised development.

(2) If the highway authority which receives an application for approval under paragraph (1)(b) fails to notify the undertaker of its decision before the end of the period of 28 days beginning with the date on which the application was made, it is deemed to have granted approval.

Agreements with highway authority

15.—(1) A highway authority and the undertaker may enter into agreements with respect to—

(a) the strengthening, improvement, repair or reconstruction of any street under the powers conferred by this Order;

(b) any stopping up, alteration or diversion of a street as part of or to facilitate the authorised development; or

(c) the carrying out in the street of any of the works referred to in article [12](1) (street works).

(2) Such an agreement may, without limitation on the scope of paragraph (1)—

(a) make provision for the highway authority to carry out any function under this Order which relates to the street in question;

(b) include an agreement between the undertaker and highway authority specifying a reasonable time for the completion of the works; and

(c) contain such terms as to payment and otherwise as the parties consider appropriate.

PART 4

SUPPLEMENTAL POWERS

Discharge of water

16.—(1) The undertaker may use any watercourse or any public sewer or drain for the drainage of water in connection with the carrying out or maintenance of the authorised development and for that purpose may lay down, take up and alter pipes and may, on any land within the Order limits, make openings into, and connections with, the watercourse, public sewer or drain.

(2) Any dispute arising from the making of connections to or the use of a public sewer or drain by the undertaker pursuant to paragraph (1) will be determined as if it were a dispute under section 106 of the Water Industry Act 1991(**n**) (right to communicate with public sewers).

(3) The undertaker may not discharge any water into any watercourse, public sewer or drain except with the consent of the person to whom it belongs; and such consent may be given subject to such terms and conditions as that person may reasonably impose, but can not be unreasonably withheld.

(4) The undertaker may not make any opening into any public sewer or drain except—

(a) in accordance with plans approved by the person to whom the sewer or drain belongs, but such approval shall not be unreasonably withheld; and

(b) where that person has been given the opportunity to supervise the making of the opening.

(5) The undertaker may not, in carrying out or maintaining works under the powers conferred by this article, damage or interfere with the bed or banks of any watercourse forming part of a main river.

(6) The undertaker will take such steps as are reasonably practicable to secure that any water discharged into a watercourse or public sewer or drain pursuant to this article is as free as may be practicable from gravel, soil or other solid substance, oil or matter in suspension.

(7) Nothing in this article overrides the requirement for an environmental permit under regulation 12(1)(b) of the Environmental Permitting (England and Wales) Regulations 2010(**o**) (requirement for an environmental permit).

(8) In this article—

(a) "public sewer or drain" means a sewer or drain which belongs to the Environment Agency, a harbour authority within the meaning of section 57 of the Harbours Act 1964(**p**), an internal drainage board, a joint planning board, a local authority, or a sewerage undertaker; and

(b) other expressions, excluding watercourse, used both in this article and in the Water Resources Act 1991(**q**) have the same meaning as in that Act.

(**n**) 1991 c.56. Section 106 was amended by sections 36(2) and 99 of the Water Act 2003 (c.37). There are other amendments to section 106 which are not relevant to this Order.

(**o**) S.I. 2010/675, to which there are amendments not relevant to this Order.

(**p**) 1964 c.40. Paragraph 9B was inserted into Schedule 2 by the Transport and Works Act 1992 (c. 42), section 63(1) and Schedule 3, paragraph 9(1) and (5). There are other amendments to the 1954 Act which are not relevant to this Order.

(**q**) 1991 c.57.

Protective work to buildings

17.—(1) Subject to the following provisions of this article, the undertaker may at its own expense carry out such protective works to any building lying within the Order limits as the undertaker considers necessary or expedient.

(2) Protective works may be carried out—

(a) at any time before or during the carrying out in the vicinity of the building of any part of the authorised development; or

(b) after the completion of that part of the authorised development in the vicinity of the building at any time up to the end of the period of 5 years beginning with the day on which that part of the authorised development is first opened for use.

(3) For the purpose of determining how the functions under this article are to be exercised the undertaker may enter and survey any building falling within paragraph (1) and any land within its curtilage.

(4) For the purpose of carrying out protective works under this article to a building the undertaker may (subject to paragraphs (5) and (6))—

(a) enter the building and any land within its curtilage; and

(b) where the works cannot be carried out reasonably conveniently without entering land which is adjacent to the building but outside its curtilage, enter the adjacent land (but not any building erected on it).

(5) Before exercising—

(a) a right under paragraph (1) to carry out protective works to a building;

(b) a right under paragraph (3) to enter a building and land within its curtilage;

(c) a right under paragraph (4)(a) to enter a building and land within its curtilage; or

(d) a right under paragraph (4)(b) to enter land.

the undertaker must, except in the case of emergency, serve on the owners and occupiers of the building or land not less than 14 days' notice of its intention to exercise that right and, in a case falling within sub-paragraph (a) or (c), specifying the protective works proposed to be carried out.

(6) Where a notice is served under paragraph (5)(a), (c) or (d), the owner or occupier of the building or land concerned may, by serving a counter-notice within the period of 10 days beginning with the day on which the notice was served, require the question whether it is necessary or expedient to carry out the protective works or to enter the building or land to be referred to arbitration under article 40 (arbitration).

(7) The undertaker must compensate the owners and occupiers of any building or land in relation to which rights under this article have been exercised for any loss or damage arising to them by reason of the exercise of those rights.

(8) Where—

(a) protective works are carried out under this article to a building; and

(b) within the period of 5 years beginning with the day on which the part of the authorised development carried out in the vicinity of the building is first opened for use it appears that the protective works are inadequate to protect the building against damage caused by the carrying out or use of that part of the authorised development,

the undertaker must compensate the owners and occupiers of the building for any loss or damage sustained by them.

(9) Nothing in this article relieves the undertaker from any liability to pay compensation under section 152 of the 2008 Act (compensation in case where no right to claim in nuisance).

(10) Any compensation payable under paragraph (7) or (8) is to be determined, in case of dispute, under Part 1 of the 1961 Act (determination of questions of disputed compensation).

(11) In this article "protective works" in relation to a building means—

(a) underpinning, strengthening and any other works the purpose of which is to prevent damage which may be caused to the building by the carrying out, maintenance or use of the authorised development;

(b) any works the purpose of which is to remedy any damage which has been caused to the building by the carrying out, maintenance or use of the authorised development.

Authority to survey and investigate the land

18.—(1) The undertaker may for the purposes of this Order enter on any land shown within the Order limits and—

(a) survey or investigate the land;

(b) without limitation on the scope of sub-paragraph (a), make trial holes in such positions on the land as the undertaker thinks fit to investigate the nature of the surface layer and subsoil and remove soil samples;

(c) without limitation on the scope of sub-paragraph (a), carry out ecological or archaeological investigations on such land; and

(d) place on, leave on and remove from the land apparatus for use in connection with the survey and investigations of land and making of trial holes.

(2) No land may be entered or equipment placed or left on or removed from the land under paragraph (1) unless at least 14 days' notice has been served on every owner and occupier of the land.

(3) Any person entering land under this article on behalf of the undertaker—

(a) will, if so required upon entering the land, produce written evidence of their authority to do so; and

(b) may take with them such vehicles and equipment as are necessary to carry out the survey or investigation or to make the trial holes.

(4) No trial holes may be made under this article—

(a) in land located within the highway boundary without the consent of the highway authority; or

(b) in a private street without the consent of the street authority,

but such consent can not be unreasonably withheld.

(5) The undertaker must compensate the owners and occupiers of the land for any loss or damage arising by reason of the exercise of the authority conferred by this article, such compensation to be determined, in case of dispute, under Part 1 (determination of questions of disputed compensation) of the 1961 Act.

(6) Nothing in this article overrides any requirement to obtain permits or consents under the Conservation of Habitats and Species Regulations 2010(**r**) or the Wildlife and Countryside Act 1981(**s**).

Tidal works not to be executed without approval of Secretary of State

19.—(1) Unless its construction has commenced within [5] years of the coming into force of this Order, no tidal work is to be constructed, altered or relaid except in accordance with plans and sections approved by the Secretary of State and subject to any conditions and restrictions imposed by the Secretary of State before that work is begun.

(2) If a tidal work is constructed, altered or relaid in contravention of paragraph (1) or of any condition or restriction imposed under that paragraph—

(r) S.I. 2010/490, as amended by S.I. 2011/625 and S.I. 2012/1927
(s) 1981 c. 69.

(a) the Secretary of State may by notice in writing require the undertaker at its own expense to remove the tidal work or any part of it and restore the site to its former condition; and, if on the expiration of 30 days beginning with the date when the notice is served on the undertaker it has failed to take reasonable steps to comply with the requirements of the notice, the Secretary of State may take whatever steps the Secretary of State considers appropriate to achieve the result required by the notice; or

(b) if it appears to the Secretary of State urgently necessary so to do, the Secretary of State may remove the tidal work, or part of it, and restore the site to its former condition,

and any expenditure incurred by the Secretary of State in doing so is recoverable from the undertaker.

Abatement of works abandoned or decayed

20.—(1) Where a tidal work is abandoned, or allowed to fall into decay, the Secretary of State may by notice in writing require the undertaker at its own expense either to repair and restore that work or any part, or to remove that work and restore the site to its former condition, to such an extent and within such limits as the Secretary of State thinks proper.

(2) Where a work consisting partly of a tidal work and partly of works on or over land above the level of high water is abandoned or allowed to fall into decay and that part of the work on or over land above the level of high water is in such condition as to interfere or to cause reasonable apprehension that it may interfere with the right of navigation or other public rights over the foreshore, the Secretary of State may include that part of the work, or any portion of it, in any notice under this article.

(3) If the undertaker fails to comply in any respect with a notice served under this article within the period of 30 days beginning with the date of service of the notice, the Secretary of State may take whatever steps the Secretary of State considers appropriate to achieve the result required by the notice; and any expenditure incurred by the Secretary of State in doing so is recoverable from the undertaker.

Survey of tidal works

21. If the Secretary of State considers it expedient to do so, the Secretary of State may order a survey and examination of a tidal work or of the site on which it is proposed to construct the work, and any expenditure incurred by the Secretary of State in any such survey and examination is recoverable from the undertaker.

Lights on tidal works etc. during construction

22.—(1) The undertaker must, at or near—

(a) a tidal work, including any temporary work; or

(b) any plant, equipment or other obstruction placed, in connection with any authorised development or any work authorised by article 9 (provision of works), within the area of seaward construction activity,

during the whole time of the construction, alteration or relaying, exhibit every night from sunset to sunrise such lights, if any, and take such other steps for the prevention of danger to navigation as the Secretary of State and the Tees and Hartlepools Port Authority or, failing agreement between them, the Secretary of State may from time to time direct.

(2) If the undertaker fails to comply in any respect with any requirements of a direction given under this article, it is guilty of an offence and liable on summary conviction to a fine not exceeding level 3 on the standard scale.

Provision against danger to navigation

23.—(1) In case of damage to, or destruction or decay of, a tidal work or any part of it, the undertaker must as soon as reasonably practicable notify the Tees and Hartlespools Port Authority and Trinity House and must lay down such buoys, exhibit such lights and take such other steps for preventing danger to navigation as Trinity House and the Tees and Hartlepools Port Authority or, failing agreement between them, the Tees and Hartlepools Port Authority may from time to time direct.

(2) If the undertaker fails to notify the Tees and Hartlepools Port Authority or Trinity House as required by this article or to comply in any respect with any requirements of a direction given under this article, it is guilty of an offence and liable on summary conviction to a fine not exceeding level 3 on the standard scale.

Permanent lights on tidal works

24.—(1) After the completion of a tidal work the undertaker must at the outer extremity of it exhibit every night from sunset to sunrise such lights, if any, and take such other steps, if any, for the prevention of danger to navigation as the Tees and Hartlepools Port Authority may from time to time direct.

(2) If the undertaker fails to comply in any respect with any requirements of a direction given under this article, it is guilty of an offence and liable on summary conviction to a fine not exceeding level 3 on the standard scale.

Power to appropriate

25.—(1) Regardless of anything in section 33 (harbour, dock, and pier to be free to the public on payment of rates) of the 1847 Act or any other enactment, the undertaker may from time to time set apart and appropriate any part of the harbour for the exclusive or preferential use and accommodation of any trade, person, vessel or goods or any class of trader, vessel or goods, subject to the payment of such charges and to such terms, conditions and regulations as the undertaker may think fit.

(2) No person or vessel may make use of any part of the harbour so set apart or appropriated without the consent of the harbour master, and—

(a) the harbour master may order any person or vessel making use of the harbour without such consent to leave or be removed; and

(b) the provisions of section 58 of the 1847 Act (powers of harbour master as to mooring of vessels in harbour), as incorporated by this Order, extend and apply with the necessary modifications to any such vessel.

PART 5

POWERS OF ACQUISITION

Compulsory acquisition of land and rights

26.—(1) The undertaker may acquire compulsorily the land and existing rights and create and acquire compulsorily the new rights described in the book of reference and shown on the land plans.

(2) Subject to the provisions of this article, all private rights over land subject to the compulsory acquisition of rights under the Order are extinguished in so far as their continuance would be inconsistent with the carrying out and use of the authorised development.

(a) as from the date of the acquisition of the right or the benefit of the restrictive covenant by the undertaker, whether compulsorily or by agreement; or

(b) on the date of entry

whichever is the earliest

(3) Where the undertaker acquires an existing right or creates a new right in, on, over or under land under paragraph (1) the undertaker cannot be required to acquire a greater interest in that land

(4) Any person who suffers loss by the extinguishment or suspension of any private right of way under this article is entitled to compensation to be determined, in case of dispute, under Part 1 of the 1961 Act.

(5) No interest in Crown land may be acquired and no authorised development may be carried out on Crown land pursuant to this Order unless the appropriate Crown authority consents to the acquisition of that Crown land to enable the authorised development.

(6) This article is subject to article 32 (temporary use of land for carrying out the authorised development).

Power to override easements and other rights

27.—(1) Any authorised activity undertaken by the undertaker which takes place on land within the Order limits (whether the activity is undertaken by the undertaker or by any person deriving title under it) is authorised by this Order if it is done in accordance with the terms of this Order, regardless of whether it involves—

(a) an interference with an interest or right to which this article applies; or

(b) a breach of a restriction as to the user of the land arising by virtue of a contract.

(2) In this article "authorised activity" means—

(a) the erection, construction or carrying out, or maintenance of any building or works on land;

(b) the erection, construction or maintenance or anything in, on, over or under land; or

(c) the use of any land.

(3) The interests and rights to which this article applies are any easement, liberty, privilege, right or advantage annexed to land and adversely affecting other land, including any natural right to support.

(4) Nothing in this article authorises interference with any right of way or right of laying down, erecting, continuing or maintaining apparatus on, under or over land which is—

(a) a right vested in or belonging to statutory undertakers for the purpose of the carrying on of their undertaking, or

(b) a right conferred by or in accordance with the electronic communications code on the operator of an electronic communications code network.

(5) Where any interest or right to which this article applies is interfered with or any restriction breached by any authorised activity in accordance with the terms of this article the interest or right is extinguished, abrogated or discharged at the time that the interference or breach in respect of the authorised activity in question commences.

(6) In respect of any interference, breach, extinguishment, abrogation or discharge under this article, compensation—

(a) is payable under section 7 or 10 of the 1965 Act; and

(b) is to be assessed in the same manner and subject to the same rules as in the case of other compensation under those sections in respect of injurious affection where—

(i) the compensation is to be estimated in connection with a purchase under those acts; or

(ii) the injury arises from the execution of works on or use of land acquired under those acts.

(7) Nothing in this article is to be construed as authorising any act or omission on the part of any person which is actionable at the suit of any person on any grounds other than such an interference or breach as is mentioned in paragraph (1) of this article.

(8) Nothing in this article is to be construed as restricting the entitlement of any person to compensation.

(9) Where a person deriving title under the undertaker by whom the land in question was acquired or appropriated—

(a) is liable to pay compensation; and

(b) fails to discharge that liability.

the liability is enforceable against the undertaker.

Compulsory acquisition of land – incorporation of the mineral code

28. Parts 2 and 3 of Schedule 2 to the Acquisition of Land Act 1981(t) (minerals) are incorporated in this Order subject to the modification that for "the acquiring authority" substitute "the undertaker".

Time limit for exercise of authority to acquire land and rights compulsorily

29. —(1) After the end of the period of 5 years beginning on the day on which the Order is made—

(a) no notice to treat may be served under Part 1 of the 1965 Act; and

(b) no declaration may be executed under section 4 of the Compulsory Purchase (Vesting Declarations) Act 1981 as applied by article 30 (application of the Compulsory Purchase (Vesting Declarations) Act 1981)(u).

(2) The authority conferred by article 32 (temporary use of land for carrying out the authorised development) ceases at the end of the period referred to in paragraph (1), save that nothing in this paragraph shall prevent the undertaker remaining in possession of the land after the end of that period, if the land was entered and possession taken before the end of that period.

Application of the Compulsory Purchase (Vesting Declarations) Act 1981

30.—(1) The Compulsory Purchase (Vesting Declarations) Act 1981(v) applies as if this Order was a compulsory purchase order.

(2) The Compulsory Purchase (Vesting Declarations) Act 1981, as so applied by paragraph (1) has effect with the following modifications.

(3) In section 3 (preliminary notices) for subsection (1) there will be substituted—

(t) 1981 c. 67. Section 7 was amended by section 70 of, and paragraph 9 of Schedule 15 to, the Planning and Compensation Act 1991 (c. 34). There are no other amendments to the 1981 Act which are not relevant to this Order.

(u) 1981 c.66. Sections 2(3), 6(2) and 11(6) were amended by section 4 of, and paragraph 52 of Schedule 2 to, the Planning (Consequential Provisions) Act 1990 (c.11). Section 15 was amended by sections 56 and 321(1) of, and Schedules 8 and 16 to, the Housing and Regeneration Act 2008 (c.17). Paragraph 1 of Schedule 2 was amended by section 76 of, and Part 2 of Schedule 9 to, the Housing Act 1988 (c.50); section 161(4) of, and Schedule 19 to, the Leasehold Reform, Housing and Urban Development Act 1993 (c.28); and sections 56 and 321(1) of, and Schedule 8 to, the Housing and Regeneration Act 2008. Paragraph 3 of Schedule 2 was amended by section 76 of, and Schedule 9 to, the Housing Act 1988 and section 56 of, and Schedule 8 to, the Housing and Regeneration Act 2008. Paragraph 2 of Schedule 3 was repealed by section 277 of, and Schedule 9 to, the Inheritance Tax Act 1984 (c.51). There are amendments to the 1981 Act which are not relevant to this Order.

(v) 1981 c.66. Sections 2(3), 6(2) and 11(6) were amended by section 4 of, and paragraph 52 of Schedule 2 to, the Planning (Consequential Provisions) Act 1990 (c.11). Section 15 was amended by sections 56 and 321(1) of, and Schedules 8 and 16 to, the Housing and Regeneration Act 2008 (c.17). Paragraph 1 of Schedule 2 was amended by section 76 of, and Part 2 of Schedule 9 to, the Housing Act 1988 (c.50); section 161(4) of, and Schedule 19 to, the Leasehold Reform, Housing and Urban Development Act 1993 (c.28); and sections 56 and 321(1) of, and Schedule 8 to, the Housing and Regeneration Act 2008. Paragraph 3 of Schedule 2 was amended by section 76 of, and Schedule 9 to, the Housing Act 1988 and section 56 of, and Schedule 8 to, the Housing and Regeneration Act 2008. Paragraph 2 of Schedule 3 was repealed by section 277 of, and Schedule 9 to, the Inheritance Tax Act 1984 (c.51). There are amendments to the 1981 Act which are not relevant to this Order.

"(1) Before making a declaration under section 4 with respect to any land which is subject to a compulsory purchase order the acquiring authority shall include the particulars specified in subsection (3) in a notice which is –

(a) given to every person with a relevant interest in the land with respect to which the declaration is to be made (other than a mortgagee who is not in possession); and

(b) published in a local newspaper circulating in the area in which the land is situated"

(4) In that section, in subsection (2), for "(1)(b)" there will be substituted "(1)" and after "given" there shall be inserted "and published".

(5) In that section, for subsections(5) and (6) there will be substituted—

"(5) For the purposes of this section, a person has a relevant interest in land if-

(a) that person is for the time being entitled to dispose of the fee simple of the land, whether in possession or in reversion; or

(b) that person holds, or is entitled to the rents and profits of, the land under a lease or agreement, the unexpired term of which exceeds one month.".

(6) In section 5 (earliest date for execution of declaration) —

(a) in subsection (1), after "publication" there will be inserted "in a local newspaper circulating in the area in which the land is situated"; and

(b) subsection (2) will be omitted.

(7) In section 7 (constructive notice to treat), in subsection (1)(a), the words "(as modified by section 4 of the Acquisition of Land Act 1981)" will be omitted.

(8) References to the 1965 Act in the Compulsory Purchase (Vesting Declarations) Act 1981 are to be construed as references to that Act as applied by section 125 of the 2008 Act to the compulsory acquisition of land and rights under this Order.

Rights under or over streets

31.—(1) The undertaker may enter on and appropriate so much of the subsoil of, or air-space over, any street within the Order limits as may be required for the purposes of the authorised development and may use the subsoil or air-space for those purposes or any other purpose ancillary to the authorised development.

(2) Subject to paragraph (3), the undertaker may exercise any power conferred by paragraph (1) in relation to a street without being required to acquire any part of the street or any easement or right in the street.

(3) Paragraph (2) shall not apply in relation to—

(a) any subway or underground building; or

(b) any cellar, vault, arch or other construction in, on or under a street which forms part of a building fronting onto the street.

(4) Subject to paragraph (5), any person who is an owner or occupier of land appropriated under paragraph (1) without the undertaker acquiring any part of that person's interest in the land, and who suffers loss as a result, may be entitled to compensation to be determined, in case of dispute, under Part 1 of the 1961 Act.

(5) Compensation will not be payable under paragraph (4) to any person who is an undertaker to whom section 85 of the 1991 Act (sharing cost of necessary measures) applies in respect of measures of which the allowable costs are to be borne in accordance with that section.

[Temporary use of land for carrying out the authorised development

32.—(1) The undertaker may, in connection with the carrying out of the authorised development—

(a) enter into and take temporary possession of—

(i) the land specified in columns (1) and (2) of Schedule 6 (land of which temporary possession may be taken) for the purpose specified in relation to that land in column (3) of that Schedule relating to the part of the authorised development specified in column (4) of that Schedule; and

(ii) any of the Order land in respect of which no notice of entry has been served under section 11 of the 1965 Act or no declaration has been made under section 4 of the Compulsory Purchase (Vesting Declarations) Act 1981;

(b) remove any buildings and vegetation from that land; and

(c) construct and use temporary works (including the provision of means of access) and buildings on that land.

(2) Not less than 14 days before entering on and taking temporary possession of land under this article the undertaker shall serve notice of the intended entry on the owners and occupiers of the land.

(3) The undertaker may not, without the agreement of the owners of the land, remain in possession of any land under this article—

(a) in the case of land of which temporary possession may be taken, after the end of the period of 1 year beginning with the date of completion of the part of the authorised development specified in relation to that land in column (4) of Schedule 6;

(b) in the case of any Order land, after the end of the period of 2 years beginning with the date of completion of the work for which temporary possession of the land was taken unless the undertaker has, by the end of that period, served a notice of entry under section 11 of the 1965 Act or made a declaration under section 4 of the Compulsory Purchase (Vesting Declarations) Act 1981 in relation to that land.

(4) Before giving possession of land of which temporary possession has been taken under this article, the undertaker shall remove all temporary works and restore the land to the reasonable satisfaction of the owners of the land; but the undertaker shall not be required to replace a building removed under this article.

(5) The undertaker shall pay compensation to the owners and occupiers of land of which temporary possession is taken under this article for any loss or damage arising from the exercise in relation to the land of the provisions of any power conferred by this article.

(6) Any dispute to a person's entitlement to compensation under paragraph (5), or as to the amount of the compensation, shall be determined under Part 1 of the 1961 Act.

(7) Nothing in this article shall affect any liability to pay compensation under section 10(2) of the 1965 Act (further provisions as to compensation for injurious affection) or under any other enactment in respect of loss or damage arising from the carrying out of the authorised development, other than loss or damage for which compensation is payable under paragraph (5).

(8) The undertaker may not compulsorily acquire under this Order the land referred to in paragraph (1)(a)(i) except that the undertaker shall not be precluded from acquiring new rights over any part of that land under article 26 (compulsory acquisition of land and rights);

(9) Where the undertaker takes possession of land under this article, the undertaker shall not be required to acquire the land or any interest in it.

(10) Section 13 of the 1965 Act (refusal to give possession to acquiring authority) shall apply to the temporary use of land pursuant to this article to the same extent as it applies to the compulsory acquisition of land under this Order by virtue of section 125 of the 2008 Act (application of compulsory acquisition provisions).]

PART 6

MISCELLANEOUS AND GENERAL

Deemed marine licence

33. The undertaker is deemed to be granted a licence under Part 4 (marine licences) of the Marine and Coastal Access Act 2009(**w**) to carry out the works described in Schedule 7 (deemed marine licence), subject to the provisions set out in that Schedule, which are to be treated as licence conditions.

Operational land for purposes of the 1990 Act

34. Development consent granted by this Order within the Order limits is to be treated as specific planning permission for the purposes of section 264(3)(a) of the 1990 Act (cases in which land is to be treated as operational land for the purposes of that Act).

Defence to proceedings in respect of the statutory nuisance

35. Where proceedings are brought under section 82(1) of the Environmental Protection Act 1990(**x**) (summary proceedings by person aggrieved by statutory nuisance) in relation to a nuisance falling within paragraph (g) of section 79(1) of that Act (noise emitted from premises so as to be prejudicial to health or a nuisance) no order is to be made, and no fine may be imposed, under section 82(2) of that Act if—

(a) the defendant shows that the nuisance—

(i) relates to premises used by the undertaker for the purposes of or in connection with the construction or maintenance of the authorised development and that the nuisance is attributable to the carrying out of the authorised development in accordance with a notice served under section 60 (control of noise on construction site), or a consent given under section 61 (prior consent for work on construction site) or 65 (noise exceeding registered level), of the Control of Pollution Act 1974(**y**); or

(ii) is a consequence of the construction or maintenance of the authorised development and that it cannot reasonably be avoided; or

(b) the defendant shows that the nuisance—

(i) relates to premises used by the undertaker for the purposes of or in connection with the use of the authorised development and that the nuisance is attributable to the use of the authorised development in accordance with a scheme of monitoring and attenuation of noise agreed with the relevant planning authority as described in requirement 27; or

(ii) is a consequence of the use of the authorised development and that it cannot reasonably be avoided.

(2) Section 61(9) (consent for work on construction site to include statement that it does not of itself constitute a defence to proceedings under section 82 of the Environmental Protection Act 1990) of the Control of Pollution Act 1974 and section 65(8) of that Act (corresponding provision in relation to consent for registered noise level to be exceeded), does not apply where the consent relates to the use of premises by the undertaker for the purposes of or in connection with the construction or maintenance of the authorised development.

(**w**) 2009 c.23

(**x**) 1990 c.43. There are amendments to this Act which are not relevant to this Order.

(**y**) 1974 c.40. Sections 61(9) and 65(8) were amended by section 162 of, and paragraph 15 of Schedule 3 to, the Environmental Protection Act 1990 (c. 25). There are other amendments to the 1974 Act which are not relevant to this Order.

Protections of Interests

36. Schedule 8 to this Order has effect.

Saving for Trinity House

37. Nothing in this Order prejudices or derogates from any of the rights, duties or privileges of Trinity House.

Certification of plans etc

38.—(1) The undertaker, as soon as practicable after the making of this Order, must submit to the Secretary of State copies of—

(a) the book of reference;

(b) the land plans;

(c) the access and rights of way plans;

(d) the environmental statement; and

(e) the works plans.

for certification that they are true copies of the documents referred to in this Order.

(2) A plan or document so certified shall be admissible in any proceedings as evidence of the contents of the document of which it is a copy.

Service of Notices

39.—(1) A notice or other document required or authorised to be served for the purposes of this Order may be served—

(a) by post

(b) with the consent of the recipient and subject to paragraphs (6) to (8) by electronic transmission.

(2) Where the person on whom a notice or other document to be served for the purposes of this Order is a body corporate, the notice or document is duly served if it is served on the secretary or clerk of that body.

(3) For the purposes of section 7 of the Interpretation Act 1978(**z**) as it applies for the purposes of this article, the proper address of any person in relation to the service on that person of a notice or document under paragraph (1) is, if that person has given an address for service, that address, and otherwise—

(a) in the case of the secretary or clerk of a body corporate, the registered or principal office of that body; and

(b) in any other case, the last known address of that person at the time of service.

(4) Where for the purposes of this Order a notice or other document is required or authorised to be served on a person as having any interest in, or as the occupier of, land and the name or address of that person cannot be ascertained after reasonable enquiry, the notice may be served by—

(a) addressing it to that person by name or by the description of "owner", or as the case may be "occupier", of that land (describing it); and

(b) either leaving it in the hands of a person who is or appears to be resident or employed on the land or leaving it conspicuously affixed to some building or object on or near the land.

(**z**) 1978 c.30.

(5) Where a notice of other document required to be served or sent for the purposes of this Order is served or sent by electronic transmission the requirement can be taken to be fulfilled only where—

(a) the recipient of the notice or other document to be transmitted has given consent to the use of electronic transmission in writing or by electronic transmission;

(b) the notice or document is capable of being accessed by the recipient;

(c) the notice or document is legible in all material respects; and

(d) in a form sufficiently permanent to be used for subsequent reference.

(6) Where the recipient of a notice or other document served or sent by electronic transmission notifies the sender within 7 days of receipt that the recipient requires a paper copy of all or part of that notice or other document the sender will provide such a copy as soon as reasonably practicable.

(7) Any consent to the use of electronic communication given by a person may be revoked by that person in accordance with paragraph (8).

(8) Where a person is no longer willing to accept the use of electronic transmission for any of the purposes of this Order—

(a) that person must given notice in writing or by electronic transmission revoking any consent given by that person for that purpose; and

(b) such revocation will be final and takes effect on a date specified by the person in the notice but that date may not be less than 7 days after the date on which the notice is given.

(9) This article may not be taken to exclude the employment of any method of service not expressly provided for by it.

(10) In this article "legible in all material respects" means that the information contained in the notice or document is available to that person to no lesser extent than it would be if served, given or supplied by means of a notice or document in printed form.

Arbitration

40. Any difference under any provision of this Order, unless otherwise provided for, must be referred to and settled by a single arbitrator to be agreed between the parties or, failing agreement, to be appointed on the application of either party (after giving notice in writing to the other) by the President of the Institution of Civil Engineers.

SCHEDULES

SCHEDULE 1

Article [ ]

AUTHORISED DEVELOPMENT

NATIONALLY SIGNIFICANT INFRASTRUCTURE PROJECT

Works No. 1

Within the area described on the works plans as Works No. 1

(1) a quay (constructed in two phases) being either—

(a) A quay of solid construction comprising a quay wall and reclamation behind it on the south side of the River Tees including dredging the berthing pocket and other areas within which dredging is deemed to be licensed by virtue of the deemed marine licence; or

(b) A quay of open construction comprising

(i) a suspended deck supported by pipes, reclamation and a revetment on the re-graded, reclaimed slope on the south side of the River Tees:

(ii) dredging the berthing pocket and slope beneath the quay and other areas within which dredging is deemed to be licensed by virtue of the deemed marine licence; and

(iii) the erection of three approach bridge structures .

(2) the demolition of the existing jetty and the associated transfer tower and conveyor when required for the construction of phase 2.

ASSOCIATED DEVELOPMENT

Works No. 2

Within the area described on the works plans as Works No. 2—

(a) amendments to the existing jetty for import and export pending completion of the full quay to include:-

(i) refurbishment, removal, repair and improvements;

(ii) strengthening works;

(iii) maintenance dredging and capital dredging of the jetty berth pocket; and

(iv) the erection of additional support structures.

(b) the erection of a transfer tower and construction of a conveyor.

Works No. 3

Within the area described on the works plans as Works No. 3—

Parallel conveyors on twin supports to transfer the polyhalite from the materials handling facility to Works No. 1 including transfer stations (both southern and northern routes).

Works No. 4A

Within the area described in the works plans as Works No. 4A—

(a) staff welfare facilities;

(b) offices;

(c) workshop;

(d) parking;

(e) warehouse; and

(f) ancillary infrastructure.

Works No. 4B

Within the area described on the works plans as Works No. 4B—

(a) temporary construction compound and laydown areas;

(b) temporary parking;

(c) temporary welfare facilities.

(d) temporary offices; and

(e) temporary storage.

And in connection with Works 1 – 4B described above further site wide development within the Order limits but excluding the lagoon (apart from items (l) and (m) below which partly include the lagoon) including the provision of—

(a) shiploaders;

(b) surface and foul water disposal arrangements;

(c) lighting;

(d) fencing;

(e) parking;

(f) access;

(g) CCTV;

(h) surge bins;

(i) storage;

(j) services;

(k) substations;

(l) the extension of the existing pipe running through the embankment between the lagoon and the Tees estuary;

(m) bank stabilisation; and

(n) such other works as may be necessary or expedient for the purposes of or in connection with the construction or use of the authorised development and which do not given rise to any materially new or materially different environmental effects from those assessed in the environmental statement.

SCHEDULE 2

Article [ ]

REQUIREMENTS

1. In this Schedule—

[definitions if needed]

Time limits

2. The authorised development must be begun within 7 years of the date on which this Order comes into force.

Stages of the development

3. No part of the authorised development is to commence until a written scheme setting out all the stage of the authorised development has been submitted to and approved by the relevant planning authority. The written scheme will include details of: [ ]

Detailed design approval

4. Except where the authorised development is carried out in accordance with the drawings listed in paragraph 6, no authorised development may commence until details of the layout, scale and external appearance of the authorised development so far as they do not accord with the drawings listed in paragraph 6 have been submitted to and approved by the local planning authority, and the authorised development must be carried out in accordance with the approved details.

5. The authorised development must be carried out in accordance with the drawings listed below, unless otherwise approved by the relevant planning authority in accordance with paragraph 5 and the altered development falls within the Order limits and has no significant environmental effects beyond those assessed in the environmental statement—

[ ]

Highway access

6.—(1) No stage of the authorised development is to commence until for that stage, written details of the siting, design and layout of any new permanent or temporary means of access to a public highway to be used by vehicular traffic, or any alteration to an existing means of access to a public highway used by vehicular traffic, has, after consultation with the highway authority, been submitted to and approved by the local planning authority.

(2) The undertaker must have regard to any consultation responses received.

(3) The public highway accesses must be constructed, or, as the case may be, altered, in accordance with the approved details.

(4) No stage of the authorised development is to commence until for that stage, a written scheme (the "Access Management Scheme") has, after consultation with the relevant highway authority, been submitted to and approved by the relevant planning authority.

(5) The Access Management Scheme must be carried out in accordance with the approved details.

Fencing and other means of enclosure

7.—(1) No stage of the authorised development is to commence until, for that stage, written details of all proposed permanent and temporary fences, walls or other means of enclosure have been submitted to and approved by the relevant planning authority.

(2) Any temporary fencing must be removed on completion of the authorised development.

(3) Any approved permanent fencing of the authorised development must be completed before the authorised development is brought into use.

Surface water drainage

8.—(1) No stage of the authorised development is to commence until a detailed surface water drainage strategy (based on sustainable drainage principles and an assessment of the hydrological and hydrogeological context of the development, and including means of pollution control and funding arrangements) for that stage has been submitted to and approved by the local planning authority.

(2) The undertaker must have regard to any consultation responses received.

(3) The authorised scheme must be constructed in accordance with the approved surface water drainage strategy including any timetable embedded within it.

Foul water drainage

9.—(1) No stage of the authorised development is to commence until a detailed foul water drainage strategy (including means of pollution control and funding arrangements) for that stage has been submitted to and approved by the relevant planning authority.

(2) The undertaker must have regard to any consultation responses received.

(3) The authorised scheme must be constructed in accordance with the approved foul water drainage strategy including any timetable embedded within it.

Code of construction practice

10.—(1) No stage of the authorised development is to commence until a code of construction practice for that stage has been submitted to and approved by the relevant planning authority.

(2) All construction works must be undertaken in accordance with the approved code.

Construction traffic

11.—(1) No stage of the authorised development is to commence until a written transport statement, including any road condition survey, temporary speed limits, lay-bys and details of the preferred route for that stage to be used by construction traffic on public highways, after consultation with the highway authority, has been submitted to and approved by the relevant planning authority.

(2) The undertaker must have regard to any consultation responses received.

(3) Notices must be erected and maintained throughout the period of construction at every construction site exit to a public highway, indicating to drivers the route agreed by the relevant planning authority for traffic entering and leaving the site.

Control of noise during construction

12.—(1) No stage of the authorised development is to commence until a written scheme for noise management during construction and maintenance of that stage has been submitted to and approved by the relevant planning authority.

(2) The scheme must set out the particulars of—

(a) the works, and the method by which they are to be carried out;

(b) the noise attenuation measures to be taken to minimise noise resulting from the works, including any noise limits; and

(c) a scheme for monitoring the noise during the works to ensure compliance with the noise limits and the effectiveness of the attenuation measures.

(3) The approved noise management scheme must be implemented before and maintained during construction and maintenance of the relevant stage of the authorised development.

(4) The construction and maintenance works must be undertaken in accordance with the approved noise management scheme.

Control of noise during operation

13.—(1) The authorised development must not be brought into use until a written scheme for noise management during operation has been submitted to and approved by the relevant planning authority.

(2) The authorised development must be operated in accordance with the approved operational noise management scheme.

Flood warning and evacuation plan

14.—(1) No building of the authorised development is to be occupied until, after consultation with the local planning authority, written details of a flood warning and evacuation plan, which must include details of expected means of evacuation or safe refuge during a tidal flood event with safe refuge areas at not less than [ ] to and approved by the local planning authority.

(2) Unless otherwise agreed with the relevant planning authority, the finished floor level of all buildings must be set a minimum of [300 millimetres] above the level of the external storage areas and the buildings must incorporate flood resistant and resilient design with their construction.

SCHEDULE 3

Article [ ]

STREETS SUBJECT TO STREET WORKS

(1) *Area*	*(2)* *Street subject to street works*
Borough of Redcar & Cleveland	

SCHEDULE 4

Article [ ]

STREETS TO BE TEMPORARILY STOPPED UP

(1) *Area*	*(2)* *Street to be temporarily stopped up*	*(3)* *Extent of temporary stopping up*
Borough of Redcar & Cleveland	[ ]	Between points [ ] as shown on the access and rights of way plan

SCHEDULE 5

Article [ ]

ACCESS TO WORKS

(1) *Area*	*(2)* *Description of access*
Borough of Redcar and Cleveland	

SCHEDULE 6

Article [ ]

LAND OF WHICH TEMPORARY POSSESSION MAY BE TAKEN

(1) *Area*	*(2)* *Number of land shown on land plans*	*(3)* *Purpose for which temporary possession may be taken*	*(4)* *Relevant part of the authorised development*
Borough of Redcar & Cleveland	[ ]	[ ]	[ ]

SCHEDULE 7

Article [ ]

DEEMED LICENCE UNDER THE MARINE AND COASTAL ACCESS ACT 2009

PART 1

INTRODUCTORY

Interpretation

1.—(1) In this Schedule—

"the 2009 Act" means the Marine and Coastal Act 2009(**aa**);

"licence holder" means the undertaker and any agent or contractor acting on its behalf;

"licensable activity" means an activity licensable under Section 66 of the 2009 Act;

"licensed activity" means any activity described in Part 2 of this Schedule;

Addresses

2.—(1) Unless otherwise advised in writing by [the relevant organisation], the primary point of contact with the organisations listed below and the address for returns and correspondence shall be-

(a) Marine Management Organisation
Marine Licencing Team
Lancaster House
Hampshire Court
Newcastle upon Tyne
NE4 7YH

[other relevant organisations]

PART 2

LICENSED ACTIVITIES

3. For the purpose of constructing and maintaining the authorised development the licence holder may carry out the activities set out in this Part as if those activities were licensed under the 2009 Act.

Construction of the quay

4.—(1) The licence holder is permitted to construct the quay (Work No.1) and carry out associated land reclamation within the quay limits and according to the following specification:-

[ ]

Berthing pocket infill

5.Following or during the dredging of the berthing pocket, the licence holder is permitted to deposit up to [ ] of [ ] into the berthing pocket up to a maximum level of [ ] and must not undertaker maintenance dredging below the level of [ ]

[Capital dredging]

(**aa**) 2009 c.23

Maintenance dredging

6.—(1) The licence holder is permitted to carry out maintenance dredging at the following locations within the period specified in paragraph [ ]-

[locations]

(2) The dredging under sub-paragraph (1) may only be carried out for the purpose of—

(a) Maintaining the authorised development;

(b) [ ]

PART 3

ENFORCEMENT

7.Any breach of this Schedule does not constitute a breach of this Order but is subject to the enforcement regime in Chapter 3 of Part 4 of the 2009 Act as if this Schedule were a licence granted under that Act.

PART 4

CONDITIONS

[ ]

SCHEDULE 8

Article [ ]

PROTECTIVE PROVISIONS

[For Network Rail, National Grid Electricity and the pipeline corridor]

SCHEDULE 9

Article [ ]

HARBOUR LIMITS

1. The harbour limits are the boundaries of the polygon whose vertices are given by the co-ordinates in the table below and shown with the corresponding labels on the [Plan].

Table

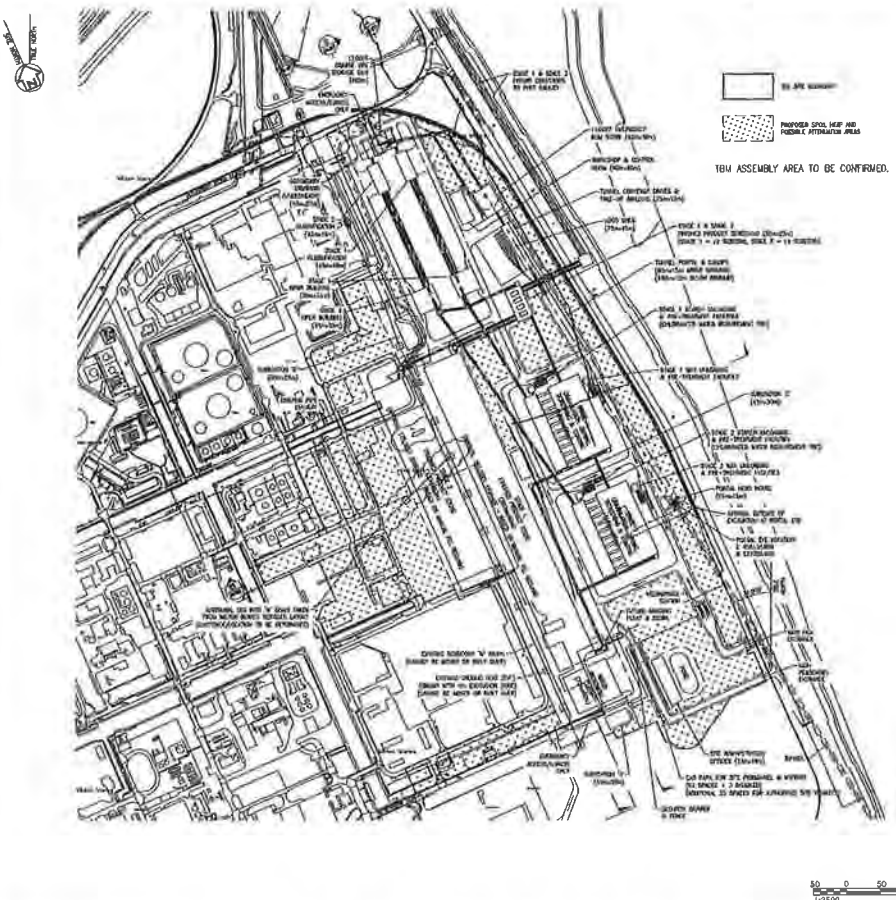
Latitude	*Longitude*	*Label*

EXPLANATORY NOTE

(This note is not part of the Order)

This Order authorises the construction and operation of a quay, associated onshore facilities and other development to be situated on the River Tees.

A copy of the Order plans and the book of reference mentioned in this Order and certified in accordance with article [38] of this Order (certification of plans, etc.) may be inspected free of charge during working hours at the offices of Redcar & Cleveland Borough Council, Kirkleatham Street, Redcar, TS10 1RT.



CODE 1: WORK CAN PROCEED
CODE 2: REVISE TO ADDRESS COMMENTS
CODE 3: REJECTED, WORK NOT TO PROCEED
CODE 4: DOCUMENT FOR INFORMATION

YORKPOTASH YORK POTASH LIMITED

HOWE INTERNATIONAL

DRAWING TITLE
OVERALL SITE LAYOUT
FOR PLANNING

DOCUMENT 3.7

143022-EIA-001

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THE YORK POTASH HARBOUR FACILITIES ORDER 201X

Explanatory Memorandum

Regulation Number:	5(2)(c)
Document Ref:	4.2
Author:	Marrons Shakespeares 1 Meridian South Meridian Business Park Leicester LE19 1WY
Date:	September 2014
Status:	DRAFT

YORKPOTASH
A Sirius Minerals Project

THE YORK POTASH HARBOUR FACILITIES ORDER 201X

DRAFT EXPLANATORY MEMORANDUM

SEPTEMBER 2014

Pursuant to Regulation 5(2)(c) Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

DOCUMENT 4.2

MARRONS SHAKESPEARES

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EXPLANATORY MEMORANDUM

Contents

1. Introduction

1.1 This memorandum accompanies an application for a development consent order ("the Application") submitted on behalf of York Potash Limited ("the Applicant"). The Application seeks approval of the York Potash Harbour Facilities Order 201X ("the DCO").

1.2 As required by Regulation 5(2)(c) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009, as amended, this memorandum explains the purpose and the effect of the provisions in the draft DCO. This memorandum has been prepared taking into account the guidance set out in the Advice Note 13: Preparing the Draft Order and Explanatory Memorandum (April 2012).

1.3 The proposed harbour forms part of the York Potash Project which involves the creation of a mine for the winning and working of polyhalite together with the necessary infrastructure required for the subsequent distribution of the mineral. The project principally comprises the following:

a) The mine with surface infrastructure to be located at Doves Nest Farm near Whitby.

b) A mineral transport system, being a 36.5km long tunnel with conveyor to transport the polyhalite from the mine to the Wilton facility at Teesside.

c) A materials handling facility at Wilton.

d) A harbour facility at Teesside linked to the materials handling facility by a conveyor system.

1.4 It is proposed that the dry mineral would be mined, crushed, loaded onto hoppers at Doves Nest Farm, near Whitby, and

transported by an underground conveyor system through the mineral transport system to Teesside. It would then pass through a materials handling facility (for granulation and storage) in preparation for onward distribution via the proposed new harbour facilities at Bran Sands on the River Tees. Approximately 13mtpa will ultimately be produced. Further detail is set out in the Project Description (Document 7.3).

1.5 The proposals for the mine, mineral transport system and materials handling facility (which are not NSIPs) and other associated works are the subject of applications to the relevant local planning authorities and minerals and waste planning authorities. The Project Position Statement (Document 1.7) sets out the current position of those applications. A licence for off shore mineral extraction was granted in January 2013.

2. Purpose of the Order

Nationally Significant Infrastructure Project – construction of harbour facilities

2.1 Section 14(1)(j) of the 2008 Act provides that a Nationally Significant Infrastructure Project ("NSIP") includes a project which consists of the construction or alteration of harbour facilities.

2.2 Section 24 of the 2008 Act provides the conditions which must be satisfied for the construction of harbour facilities to be classified as an NSIP. Section 24(1) states that the construction of harbour facilities will be treated as an NSIP if (when constructed) the harbour facilities satisfy the criteria listed in sub-sections (a) and (b).

2.3 The development to be authorised by the DCO lies wholly within England and English waters and will have a capacity of more than 5m tonnes of non-container/ro-ro cargo and therefore

accords with the conditions set out in Section 24(1) and therefore falls within the definition of a NSIP as set out in the 2008 Act.

2.4 The DCO sought will permit, in summary, the following works:-

i. the construction and operation of a quay structure on the River Tees at Bran Sands to facilitate the mooring of vessels in the estuary directly adjacent to the onshore harbour facility and allow shiploader access;

ii. dredging of the berthing area;

iii. the construction of shiploaders on the quay structure to load the mineral product onto ships for onward transportation

iv. the erection of surge bins for the ship loading flow management of the mineral product;

v. a conveyor system to transfer the polyhalite from the materials handling facility at Wilton to the quay;

vi. ancillary infrastructure;

2.5 The proposed development is more fully described in Schedule 1 of the draft DCO and includes associated development (see paragraphs 2.7, 2.8 and 2.9 below). Provision for ancillary matters is made in the body of the draft DCO (see paragraph 3 below).

2.6 As permitted by Section 120 of the 2008 Act, the draft DCO also includes requirements to govern the authorised development. The requirements are set out in Schedule 2 of the draft DCO and have regard to the model requirements that were contained in Schedule 4 of the model provisions.

Associated development

2.7 In connection with the construction of the quay, the draft DCO specifically authorises associated development being development that is associated with the NSIP.

2.8 Guidance on associated development has been issued by the Secretary of State for Communities and Local Government. This guidance sets out core principles which will be considered when deciding whether or not development should be treated as associated development.

2.9 The proposed associated development comprises works to the existing jetty, parallel conveyors to transfer the polyhalite from the materials handling facility to the quay, temporary construction compound areas, temporary parking, temporary welfare facilities and on shore welfare facilities, offices, workshops, ancillary infrastructure and further site wide development including:

- Shiploaders;
- Surface water foul water disposal arrangements;
- Lighting;
- Fencing;
- Parking;
- Access;
- CCTV;
- Surge bins;
- Storage;
- Services;
- Substations;
- Extension of the existing pipeline lagoon and Tees; and
- Bank stabilisation.

These aspects of the authorised development are considered to be associated development as they are *"not an aim in itself"* but are *"subordinate to the principle of development"*[1]

[1] See paragraph 5(ii) Guidance of associated development. Applications for Major Infrastructure Projects April 2013

3. Ancillary matters

3.1 The draft DCO also contains several ancillary matters, i.e. consent for legal powers not consisting of development.

3.2 The main ancillary matter is a power to acquire land or rights compulsorily, or by agreement in accordance with section 120(4) and Part 1 of Schedule 5, paragraphs (1 and) 2 of the Act. The draft DCO also contains powers of compulsory acquisition for land required for the authorised development, or to facilitate, or that is incidental to the authorised development under section 122 of the Act. It also seeks associated powers including the acquisition of rights to construct and maintain the authorised development. The compulsory purchase powers sought are explained in the Statement of Reasons that accompanies the application.

4. Draft DCO

4.1 The provisions of the draft DCO are now explained in sequence.

Part 1 – Preliminary

Article 1 (Citation)

4.2 Article 1 sets out the name and commencement of the Order.

Article 2 (Interpretation)

4.3 Article 2(1) defines terms used in the remainder of the draft DCO. For example, the term 'harbour' is used to refer to the quay, the dredged area in front of it, and all other buildings etc. used in connection with the quay and within the harbour limits.

4.4 Article 2(2) expands the definition of rights over land.

4.5 Article 2(3) defines measurements as approximate.

4.6 Article 2(4) explains that any references to works and

requirements are to those matters details in Schedules 1 and 2 respectively.

4.7 Article 2(5) confirms that as with the Order all measurements referred to in the Book of Reference are approximate.

Article 3 (Incorporation of the Harbours, Docks and Piers Clauses Act 1847)

4.8 Article 3 incorporates provisions of the Harbours, Docks and Piers Clauses Act 1847. This Act sets out a series of clauses that can be incorporated into the draft DCO authorising the construction of harbour facilities.

Article 4 (Application and modification of enactments)

4.9 Articles 4(1) and (2) apply conventional appeal arrangements to any refusal by the local planning authority of an application for approval pursuant to the provisions of a requirement, as if such approval was being sought in respect of a planning condition. This is required to resolve any dispute since there is no other statutory mechanism.

5. Part 2 – Principal powers

Article 5 (Development consent etc. granted by the Order)

5.1 Article 5(1) provides development consent for the authorised development to be carried out within the Order limits and subject to the requirements.

5.2 Article 5(2) provides that development carried out pursuant to a planning permission granted following implementation of the DCO would not be in breach of the DCO, ensuring no risk of criminal liability pursuant to Section 161 of the 2008 Act.

Article 6 (Limits of deviation)

5.3 Article 6 sets the limits in which the Applicant can deviate laterally (paragraph a) and confirms that the scope for deviation between the boundary of two adjoining areas of works is 20m either side of that boundary (paragraph b), to ensure sufficient flexibility to ensure that the project can be delivered without impediment.

Article 7 (jurisdiction of the harbour authority)

5.4 Article 7 deals with the jurisdiction of the harbour authority and confirms that the Applicant shall be the harbour authority for the newly created harbour. The provisions of this article ensure that there is no conflict between the powers of the Applicant and the appointed harbour master for the newly created harbour.

Article 8 (maintenance of authorised development)

5.5 Article 8 sets out the right for the Applicant to maintain the development.

Article 9 (provision of works)

5.6 Article 9 sets out the general works that can be provided and operated in the proposed harbour together with the ancillary works to facilitate the harbour. Articles 9 (1) and (2) set out the operations that the Applicant may undertake and facilitate the provision of the harbour. Article 9 (3) declares that works permitted by this Order benefit from permitted development.

Article 10 (benefit of Order)

5.7 Article 10 overrides Section 156(1) of the Act (as permitted by Section 156(2)) to give the benefit of the Order to the Applicant rather than anyone with an interest in the land. This is to ensure that the Order is implemented in a practical and orderly manner

rather than a sporadic and ad hoc development where several landowners implement different elements of the Order.

Article 11 (consent to transfer benefit of Order)

5.8 Article 11 enables the powers under the Order to be transferred from the Applicant to others only with the consent of the Secretary of State.

6. Part 3 – Streets

Article 12 (street works)

6.1 This Article makes provision for the Applicant to carry out the works described in Article 12 (a) – (e) for the purposes of the authorised project affecting the streets specified in Schedule 3. Ordinarily the Applicant would require a street works licence pursuant to the New Roads and Street Works Act 1991 to carry out such works, however, the inclusion of this Article in the Order will provide a statutory right to undertake street works within the specified streets without the need for the Applicant to obtain a separate licence from the street authority.

Article 13 (temporary stopping up a street)

6.2 Article 13 allows streets to be stopped up temporarily for the works. The streets listed in Schedule 4 may be stopped up after consultation with the street authority.

Article 14 (access to works)

6.3 Article 14 allows the creation of new access points from the public highway as listed in Schedule 5 without further approval. For any other access, the approval of the highway authority is required. If the approval has not been provided within 28 days, it will be deemed to have been given.

Article 15 (agreement with highway authority)

6.4 Article 15 allows the Applicant and the highway authority (Redcar and Cleveland Borough Council) to enter into agreements about the street works necessitated by the project.

7. Part 4 – Supplemental Powers

Article 16 (discharge of water)

7.1 Article 16 sets out the circumstances in which the Applicant is entitled to discharge water into a sewer or watercourse. The Applicant will be entitled to discharge with the consent of the conduits owner, who cannot withhold its consent unreasonably.

Article 17 (protective work to buildings)

7.2 Article 17 sets out the circumstances when the Applicant may take protective works to nearby buildings that it considers may otherwise be damaged by the works. Protective works can only be undertaken on the giving of 14 days notice, unless in an emergency, and the building owner can seek arbitration if appropriate. This power is unlimited and lasts for 5 years after the relevant part of the project comes into operation. The article also ensures the Applicant must compensate landowners and/or occupiers for any loss or damage.

Article 18 (authority to survey and investigate the land)

7.3 Article 18 entitles the Applicant to enter land with the Order limits for the purposes of investigating, surveying and testing. The Applicant is required to provide 14 days notice and compensate for any loss or damage.

Article 19 (tidal works not to be executed without the approval of the Secretary of State)

7.4 Article 19 imposes a time limit of 5 years within which

construction of the tidal works must have commenced. If works have not commenced within that period permission from the Secretary of State is required. The Article also gives the Secretary of State enforcement powers where the provisions of this Article are breached.

Article 20 (abatement of works abandoned or decayed)

7.5 Article 20 provides that where the Applicant abandons or allows tidal work to fall into disrepair the Secretary of State may require him to repair, restore or remove works. Such works are to be undertaken at the Applicant's own expense or may be recovered from the Applicant in the event that the Secretary of State undertakes the works.

Article 21 (survey of tidal works)

7.6 Article 21 gives powers to the Secretary of State to order the survey and examination of tidal works as he sees fit. The power extends before, during and after construction.

Article 22 (lights on tidal works etc. during construction)

7.7 Article 22 requires the Applicant to light the works during the construction between sunset and sunrise for the purposes of navigational safety.

Article 23 (provisions against danger to navigation)

7.8 Article 23 requires the Applicant in the case of damage to, destruction or decay of a tidal work, to lay down buoys, lights and other steps as may be required to the satisfaction of the Tees and Hartlepools Port Authority and Trinity House.

Article 24 (permanent lights on tidal works)

7.9 Article 24 ensures that after the tidal works have been completed the Applicant must light the outer extremities of those

works for navigational safety from sunset to sunrise.

Article 25 (power to appropriate)

7.10 Article 25 replaces Section 33 of the 1847 clauses Act and allows berths at the harbour to be allocated for the use of particular companies.

8. Part 5 – Powers of acquisition

Article 26 (Compulsory acquisition of land and rights)

8.1 Article 26 authorises the acquisition of land and existing rights by compulsory purchase. The power is limited to the land and rights which are required for the project and is more particularly detailed in the book of reference.

Article 27 (Power to override easements and other rights)

8.2 Article 27 ensures that where the works permitted by Order interfere with existing easements or other rights, those rights shall not present an impediment to delivery. The Article provides for compensation to be payable to the beneficiary of any right that is extinguished, abrogated or discharged.

Article 28 (Compulsory acquisition of land – incorporating the mineral code)

8.3 By incorporating the 'mineral code' this article prevents existing minerals under land being automatically acquired. It also addresses the situation where an owner wishes to work existing minerals and provides the undertaker with the ability to compensate the owner for any liability to do so as a result of the development.

Article 29 (Time limit for exercising authority to acquire land compulsorily)

8.4 Article 29 gives the applicant 5 years to issue 'notices to treat' or a 'general vesting declaration' to acquire land using powers of compulsory purchase.

Article 30 (Application for Compulsory Purchase (Vesting Declarations) Act 1981)

8.5 Article 30 applies the provisions of the 1981 Act as if the Order was a Compulsory Purchase Order. The vesting declaration is a method by which land is passed to the acquiring body more quickly than using notices to treat and is a method most often used where large amounts of land are involved.

Article 31 (Rights under or over streets)

8.6 Article 31 gives the Applicant the power to occupy land above or below streets within the Order limits without having to acquire that land. Compensation is payable for any loss or damage to structures along the relevant street.

Article 32 (Temporary use of land for carrying out the authorised development)

8.7 Article 32 allows the Applicant to occupy the land temporarily while the works are carried out, and also any of the land identified for the permanent acquisition that has not yet been acquired.

9. **Part 6 – Miscellaneous and general**

Article 33 (Deemed Marine Licence)

9.1 Article 33 deems the granting of a Marine Licence, which is a licence to deposit or build on the sea bed below high water mark to the Applicant.

Article 34 (Operational land for purposes of the 1990 Act)

9.2 Article 34 declares that land within the Order limits shall be treated as operational land of a statutory undertaker for the purposes of the Town & Country Planning Act 1990.

Article 35 (Defence proceedings in respect of statutory nuisance)

9.3 Section 158 of the Act confirms statutory authority for the purposes of a defence in statutory nuisance generally. Article 35 amends the terms of the defence in the case of noise nuisance (other types of nuisance continue to have the general defence afforded by Section 158).

9.4 The defence is available if noise relates to the construction or maintenance of the project and is in accordance with any controls imposed by the local authority under the Control of Pollution Act 1974 or cannot reasonably be avoided, or the use of the project is in accordance with a scheme approved pursuant to the requirements.

Article 36 (Protection of interests)

9.5 Article 36 applies Schedule 8 which contains protective provisions for various parties. It is currently intended that protective provisions will be included for Network Rail, National Grid Electricity and to protect the existing pipelines within the Order Limits.

Article 37 (Saving for Trinity House)

9.6 Article 37 protects the interests of Trinity House, the general lighthouse and navigational safety authority for England.

Article 38 (Certification of plans etc)

9.7 Article 38 requires the promoter to submit the final versions of

the plans for certification to the decision maker (the Secretary of State).

Article 39 (Service of notices)

9.8 Article 39 governs how any notices that may be served under the Order shall be deemed been served properly. In particular, if allowed service by email at the consent of the recipient, and deals with the situation of service on an unknown landowner.

Article 40 (Arbitration)

9.9 Article 40 governs what happens in the event that two parties disagree in the implementation of any provision of the Order. The matter is to be settled by a single arbitration and in the event that a single arbitrator cannot be agreed, he shall be appointed by the President of the Institute of Civil Engineers.

10. **Schedules**

Schedule 1 (Authorised development)

10.1 This Schedule describes the authorised development for which Development Consent is sought including associated development.

10.2 The authorised development is divided into separate works that describe the different aspects of the proposal. The works numbers relate to areas on the Works Plans (Documents 2.2A-C). They can be summarised as follows:

NSIP

Works No 1

This is the construction of the new quay which is to be constructed in two phases. It includes associated dredging and

erection of necessary structures as well as the demolition of the existing jetty when necessary for the construction of Phase 2.

Associated Development

Works No 2

This is the works to the existing Jetty for the import and export. The existing jetty will be used pending completion of the full quay. The works include the erection of a transfer tower and the construction of a conveyor to transport the polyhalite from the transfer tower to the jetty.

Works No 3

This is the construction of the parallel conveyors for the transfer of the polyhalite from the materials handling facility to the quay.

Works No 4A

The provision of permanent facilities to include staff welfare facilities, offices, a workshop, warehousing, parking and any ancillary infrastructure.

Works No 4B

The provision of temporary facilities to include construction compound and laydown areas, parking, welfare facilities, offices and storage.

Schedule 1 also lists the site wide development which will take place within the Order Limits and is applicable across the site. This includes diverse items the precise locations of which it is not possible to identify at this stage[2]

[2] This approach is consistent with other approved DCO, e.g. the Lancashire County Council (Torris Holme to the M6 Link (A683 Completion of Heysham to M6 Link Road) Order 2013 S.I.2013 675) and the Daventry International Rail Freight Interchange Order S.I. 2014 1796

Schedule 2 (Requirements)

10.3 This Schedule sets out the requirements the Applicant must meet in carrying out the construction of the authorised project. The objective of these requirements is self-explanatory.

10.4 The requirements cover the following issues:-

- Time limits (Requirement 2)
- Stages of the development (Requirement 3)
- Detailed design approval (Requirements 4 and 5)
- Highways access (Requirement 6)
- Fencing and other means of enclosure (Requirement 7)
- Surface water drainage (Requirement 8)
- Foul water drainage (Requirement 9)
- Code of Construction practice (Requirement 10)
- Construction traffic (Requirement 11)
- Control of noise during construction (Requirement 12)
- Control of noise during operation (Requirement 13)
- Flood warning and evacuation plan (Requirement 14)

Schedule 3 (Streets subject to street works)

10.5 This Schedule specifies the streets within the Order limits that may be subject to street works.

Schedule 4 (Streets to be temporarily stopped up)

10.6 This Schedule specifies the streets within the Order limits that are to be temporarily stopped up.

Schedule 5 (Access to works)

10.7 This Schedule sets out the new and altered accesses. The access and rights of way plan is Document 2.3.

Schedule 6 (Land of which temporary possession may be taken)

10.8 This Schedule identifies those parcels of land where possession may be required temporarily to facilitate the works permitted by the Order.

Schedule 7 (Deemed Marine Licence)

10.9 This Schedule has been created to set out the terms of the Marine Licence that will be deeded to be granted by the Order.

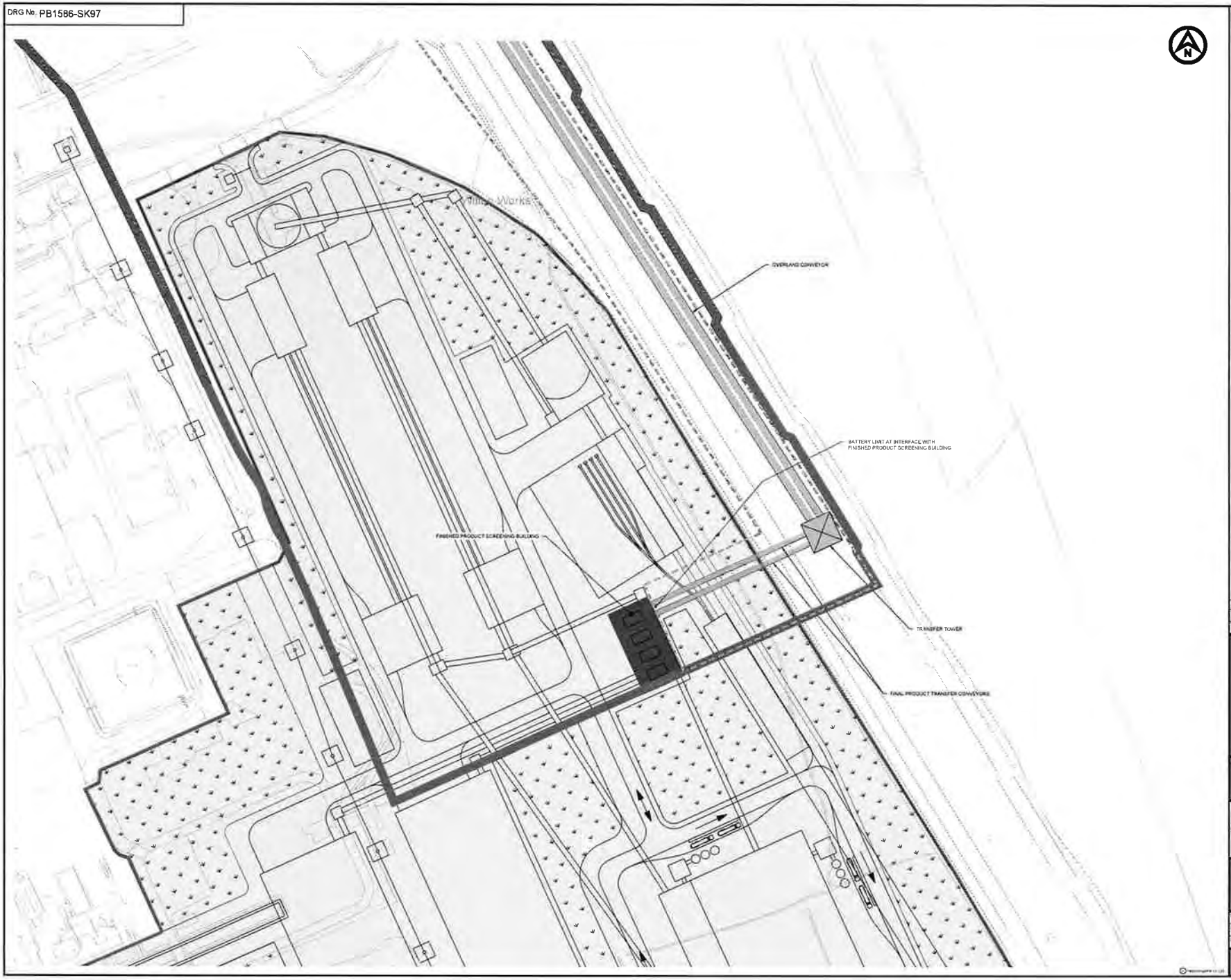
Schedule 8 (Protective provisions)

10.10 This Schedule has been included to identify those protective provisions that may be required with relevant statutory undertakers and other bodies.

Schedule 9 (Limits of harbour)

10.11 This Schedule has been included to identify the exact limits of the harbour which is to be constructed pursuant to the works permitted by the Order.

DRG No. PB1586-SK97



NOTES

LEGEND

- ORDER LIMITS
- WILTON MATERIALS HANDLING FACILITY
- CONVEYOR ENVELOPE
- FINISHED PRODUCT SCREENING BUILDING
- TRANSFER TOWER
- CONVEYORS

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REVISIONS

YORKPOTASH

PROJECT: YORK POTASH

TITLE: THE YORK POTASH
HARBOUR FACILITIES ORDER 201X
INTERFACE AT MATERIALS HANDLING FACILITY
REGULATION 5 (2)(o)
DOCUMENT 3 6

Royal HaskoningDHV

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DATE: JULY 14 | CLIENTS REF:
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DRAWING No: PB1586-SK97 | REVISION: 0

Section 48 Planning Act 2008

Regulation 4 Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulation 2009

The York Potash Harbour Facilities Order 201X

NOTICE PUBLICISING A PROPOSED APPLICATION FOR A DEVELOPMENT CONSENT ORDER ("DCO")

Notice is hereby given that York Potash Limited of 3rd Floor, Greener House, 66-68 Haymarket, London, SW1Y 4RF (the "Applicant") proposes to apply to the Planning Inspectorate under section 37 of The Planning Act 2008 for a development consent order ("DCO") to authorise the construction and operation of Harbour facilities at Bran Sands, Teesside for the export of polyhalite bulk fertilizer which will be linked by conveyor to a materials handling facility located within the Wilton International complex (the "Application").

The project is development that requires an environmental impact assessment and the Applicant will submit an Environmental Statement with the Application.

The Application relates to land at Bran Sands, Teesside and land at Wilton International complex and is part of a wider project being promoted by the Applicant ("the Project"). The Project comprises the development of a new polyhalite mine south of Whitby; transportation of the polyhalite from the mine to Teesside via a proposed 36.5km underground Mineral Transport System and transferral of the polyhalite via a Materials Handling Facility ("MHF") to the Harbour facilities.

The proposed DCO will, amongst other things, authorise:

- The construction and operation of a quay structure on the River Tees at Bran Sands to facilitate the mooring of vessels in the estuary directly adjacent to the onshore harbour facilities and allow shiploader access;
- Dredging of the berthing area;
- The construction of shiploaders on the quay structure to load the mineral product onto ships for onward transportation;
- The erection of surge bins for the ship loading flow management of the mineral product;
- A conveyor system to transport the polyhalite connecting the harbour with the materials handling facility within the Wilton International complex; and
- Ancillary infrastructure.

A copy of details of the proposals, preliminary environmental information, plans, maps and other draft documents showing the nature and location of the proposed development, may be inspected free of charge at the following locations and during the hours set out below.

- Redcar and Cleveland Borough Council offices, Kirkleatham Street, Redcar, TS10 1RT Mon – Fri 09:00 to 17:00;
- York Potash Limited, 7 – 10 Manor Court, Manor Garth, Scarborough, YO11 3TU Mon – Fri 09:00 to 17:00;
- Redcar Library, Kirkleatham St, Redcar, Cleveland TS10 1RT Mondays to Wednesdays and Fridays 09:00 to 18:00, Thursdays 09:00 to 17:00 and Saturdays 09:30 to 12:30; and
- Tuned In, Majuba Road, Redcar, TS10 5BJ Mondays to Fridays 08:30 to 20:00, Saturdays 08:30 to 18:00 and Sundays 08:30 to 16:00.

The documents relating to the proposed Application will be on display at the above locations from 11 September 2014 to 16 October 2014. Copies of the plans, maps and documents can be provided in paper copy form at a cost of £600 or on CD free of charge. Further details in relation to the project and these documents can be found on the Applicant's website www.yorkpotash.co.uk.

Any responses or representations in respect of the proposed Application, should be sent in writing to the Applicant, at York Potash Consultation Team, Nathaniel Litchfield & Partners, 14 Regent's Wharf, All Saints Street, London N1 9RL or by e-mail to yorkpotash@nlpplanning.com.

Any response or representation in respect of the proposed Application MUST (i) be received by the Applicant by 16 October 2014, (ii) be made in writing, (iii) state the grounds of the response or representation and (iv) indicate who is making the response or representation, and (v) give an address to which correspondence relating to the response or representation may be sent.

Responses and representations will be made public.

THE YORK POTASH HARBOUR FACILITIES ORDER 201X

Statement of Reasons

Regulation Number:	5(2)(h)
Document Ref:	5.1
Author:	Marrons Shakespeares 1 Meridian South Meridian Business Park Leicester LE19 1WY
Date:	September 2014
Status:	DRAFT

YORKPOTASH
A Sirius Minerals Project

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

The York Potash Harbour Facilities Order 201X

STATEMENT OF REASONS

Pursuant to Regulation 5(2)(h)

DOCUMENT 5.1

MARRONS SHAKESPEARES

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CONTENTS PAGE

The York Potash Harbour Facilities Order 201X
Statement of Reasons
Document 5.1
September 2014

Introduction

1.1 This statement of reasons relates to an application made by York Potash Limited ("the Applicant") to the Planning Inspectorate under Section 37 of the Planning Act 2008 for a Development Consent Order ("DCO") to authorise the construction and operation of Harbour facilities at Bran Sands, Teesside which will be linked by conveyor to a material handling facility located within the Wilton International complex ("the Application").

1.2 This statement has been prepared in compliance with the requirements of Regulation 5(2)(h) of the Infrastructure Planning (Application: Prescribed Forms and Procedure) Regulations 2009 and in accordance with the Department for Communities and Local Government Guidance "Planning Act 2008: Guidance related to procedures for compulsory acquisition" (the CLG Guidance)

1.3 This statement is required to support the Application because the DCO would authorise the compulsory acquisition of land and rights over land. The land proposed to be the subject of compulsory acquisition is referred to in this statement as the "Order Land".

1.4 This statement forms part of a suite of Application documents. It should be read alongside and is informed by those documents. In particular, whilst considering this Statement of Reasons, the following application documents should also be considered:-

1.4.1 The Funding Statement (Document No 5.2).

1.4.2 The Land Plans (showing the land which it is anticipated will be acquired/the land over which it is anticipated rights will be acquired/extinguished and the land over which new rights are to be created) (Document No 2.1A-D).

1.4.3 The Book of Reference (Document No 5.3).

2. Summary

2.1 This statement explains why it is necessary and justifiable for the DCO to contain compulsory acquisition powers which relate to the land.

2.2 The following areas are addressed in this statement:-

2.2.1 **Section 3** contains the following:-

a) A description of the land over which it is proposed to exercise compulsory powers of acquisition, its location and present use.

b) The Undertaker's (being York Potash Limited and its associated companies) purpose in seeking to acquire land, rights and to extinguish rights over land including brief details of the wider scheme for which development consent is sought.

2.2.2 **Section 4** sets out the justification for seeking powers of compulsory acquisition including reference to how regard has been given to the provisions of Article 1 of the First Protocol to the European Convention on Human Rights together with details of the national needs for the development.

2.2.3 **Section 5** contains any other information which may be of interest to persons who are or may be affected by the DCO.

3. Scope of acquisition and purpose in seeking to acquire land/rights

3.1 A full description of the application site can be found in chapter [ ] of the Environmental Statement (Document 6.5) accompanying the Application.

3.2 The proposed harbour forms part of the York Potash Project which involves the creation of a mine for the winning and working of polyhalite together with the necessary infrastructure required for the subsequent distribution of the mineral. The project principally comprises the following:

a) The mine with surface infrastructure to be located at Doves Nest Farm near Whitby.

b) A mineral transport system, being a 36.5km long tunnel with conveyor to transport the polyhalite from the mine to the Wilton facility at Teesside.

c) A materials handling facility ("MHF") at Wilton.

d) A harbour facility at Teesside linked to the materials handling facility by a conveyor system

3.3 The DCO will, amongst other things, authorise the construction and operation of, in summary:-

- The construction and operation of quay structure on the River Tees at Bran Sands to facilitate the mooring of vessels in the estuary directly adjacent to the onshore harbour facility and allow shiploader access;

- Dredging of the berthing area;
- The construction of shiploaders on the quay structure to load the mineral product onto ships for onward transportation;
- The erection of surge bins for the ship loading flow management of the mineral product;
- A conveyor system to transport the polyhalite connecting the harbour with the MHF within the Wilton International complex; and
- Ancillary infrastructure.

3.4 The Land Plans and Book of Reference demonstrate that there are numerous unknown third party rights over the land. The Applicant has taken the cautious approach of seeking powers of compulsory purchase (or rights of use) in respect of all parcels of land required for the development. The Applicant has taken this approach to ensure that it is able to acquire all of the interests it needs in the whole of the Order Land.

3.5 The DCO would permit only the Undertaker (being York Potash Limited) and its associated companies to exercise powers of compulsory acquisition in respect of land and interests sought within the DCO to support the delivery of the Harbour facilities.

3.6 The Undertaker requires the rights over the areas of land which are set out in the Book of Reference and shown on the Land Plans accompanying the DCO. There are some Crown interests in the Order limits (details of which are explained in the Book of Reference and shown on the Land Plans). Section 135 of the Planning Act 2008 permits the inclusion of Crown land in a DCO but only with the consent of the relevant Crown authority. The Application therefore doesn't include Crown land within the Order land (but these interests are described in the Book and Reference and shown on the Land Plans as required by Regulations 5 (2)(n) and 7 (1)(d) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009.

4. Justification for seeking Compulsory Acquisition powers

4.1 Section 122 of the Planning Act provides:

"*(1) An order granting development consent may include provision authorising the compulsory acquisition of land only if the*

Secretary of State is satisfied that the conditions in subsections (2) and (3) are met:-

(2) The condition is that the land:-

(a) is required for the development to which the development consent relates,

(b) is required to facilitate or is incidental to that development, or

(c) is replacement land which is to be given in exchange for the order land under Section 131 or 132.

(3) The condition is that there is a compelling case in the public interest for the land to be acquired compulsorily".

4.2 Section 3 above demonstrates that the proposed acquisition as detailed in the Book of Reference is required in order to carry out the development to which the DCO relates. No more land (or, indeed, rights over land) than is necessary is proposed to be taken. Section 122(2) is therefore complied with.

4.3 In order to comply with the condition contained in Section 122(3), it must be shown that there is a compelling case in the public interest for the compulsory acquisition. The CLG guidance states "*for this condition to be met, the Secretary of State will need to be persuaded that there is compelling evidence that the public benefits that would be derived from the compulsory acquisition will outweigh the private loss that would be suffered by those whose land is to be acquired*".[1]

4.4 In this regard, the Undertaker relies on the benefits of the proposal which are identified and detailed in the Planning Statement (Document No 7.4).

4.5 The Applicant has considered all reasonable alternatives to compulsory acquisition (including modifications to the scheme) and believes that the application documentation demonstrates that the proposed interference with the rights of those with an interest in the land is for a legitimate purpose and that it is necessary and proportionate.

4.6 The CLG guidance requires an application for a DCO which authorises compulsory acquisition to be accompanied by a statement explaining how the compulsory acquisition will be funded. Please refer to the Funding Statement in this regard which confirms

[1] Paragraph 13 CLG guidance.

that the Undertaker has the means with which to fund the proposed compulsory acquisition.

4.7 Regard has been had to the provisions of Article 1 of the First Protocol to the European Convention of Human Rights which protects the rights of everyone to the "*peaceful enjoyment of possessions except in the public interest and subject to the conditions provided for by law*". Any interference with possessions must therefore be proportionate and in determining whether a particular measure is proportionate, a "*fair balance*" should be struck between the demands of the general interest and the protection of the individuals' rights.

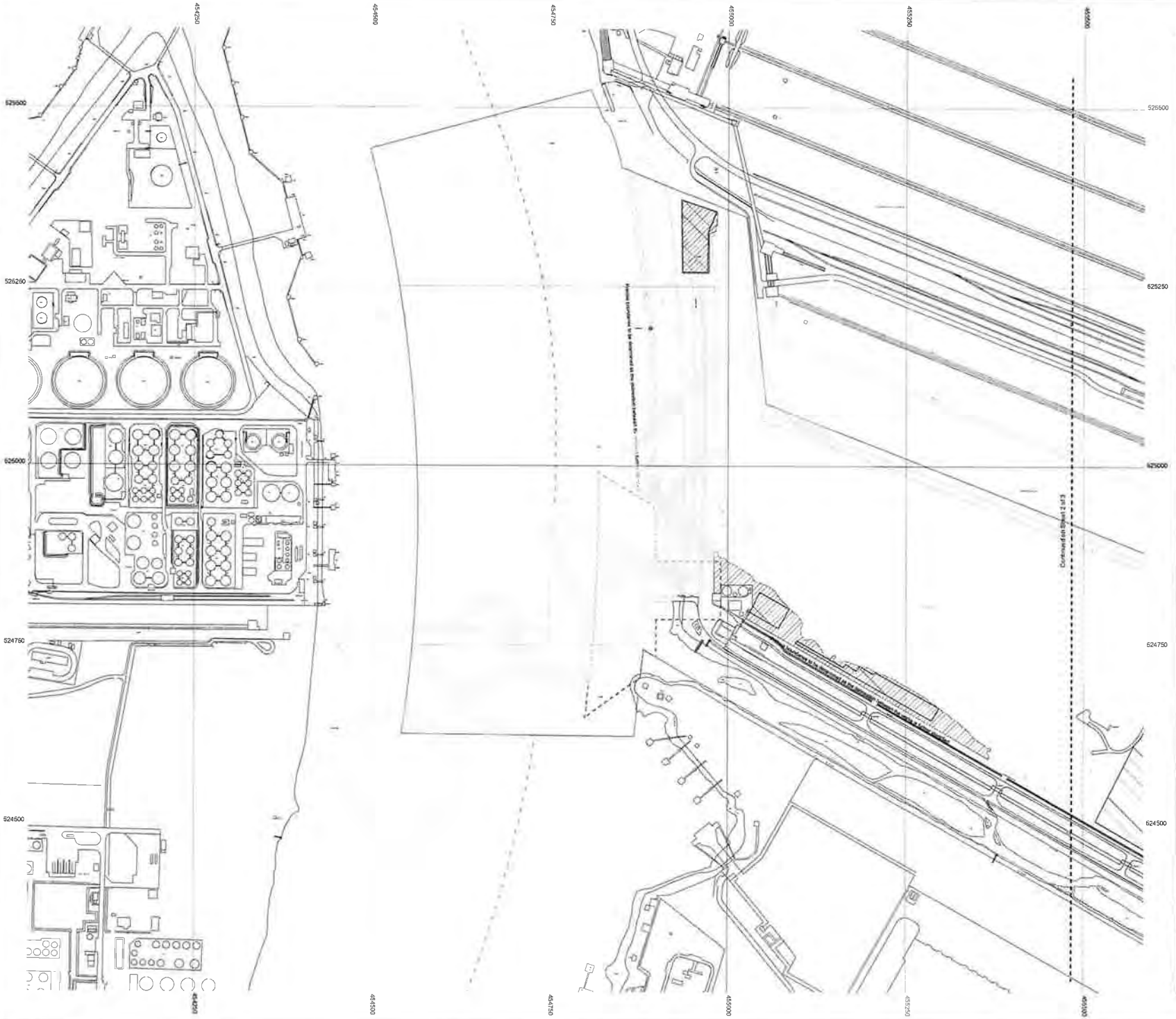
4.8 Whilst the beneficiaries of the interests in the Order Land will be deprived of their interest if the DCO is confirmed, this will be done in accordance with the law. The DCO is being pursued in the public interest as required by Article 1 of the First Protocol. The public benefits associated with the proposed development are set out earlier in this statement.

4.9 Accordingly, the Undertaker is satisfied that although the Convention rights are likely to be engaged, the proposed development does not conflict with those rights and will be proportionate because there is a compelling case in the public interest of the proposals which outweighs in this instance the impact on individual rights.

5. Other information of interest to those affected by the DCO

5.1 Further information about the application can be found on the Applicant's website dedicated to the proposals – www.yorkpotash.co.uk.

5.2 Owners and occupiers of any of the Order Land who wish to discuss matters relating to the negotiation of agreements should contact *[set out contact]* at York Potash on 01723 470 010.



Legend

Land required for, or affected by the authorised development (the Order limits)

	Work No	Brief Description (see Schedule 1 to the Development Consent Order)
	1	Maximum Limits of Deviation
	2	Maximum Limits of Deviation
	3	Maximum Limits of Deviation
	4A	Maximum Limits of Deviation
	4B	Maximum Limits of Deviation

Metres

Notes

Any boundary between the areas of two Works Numbers may deviate laterally by 20 metres either side of the boundary

Draft for consultation

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YORKPOTASH

Title

The York Potash Harbour Facilities Order 201X - Works Plan (Sheet 1 of 2)

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Regulation 5(2)(i)

Document Number: 2.2A

Scale	Date
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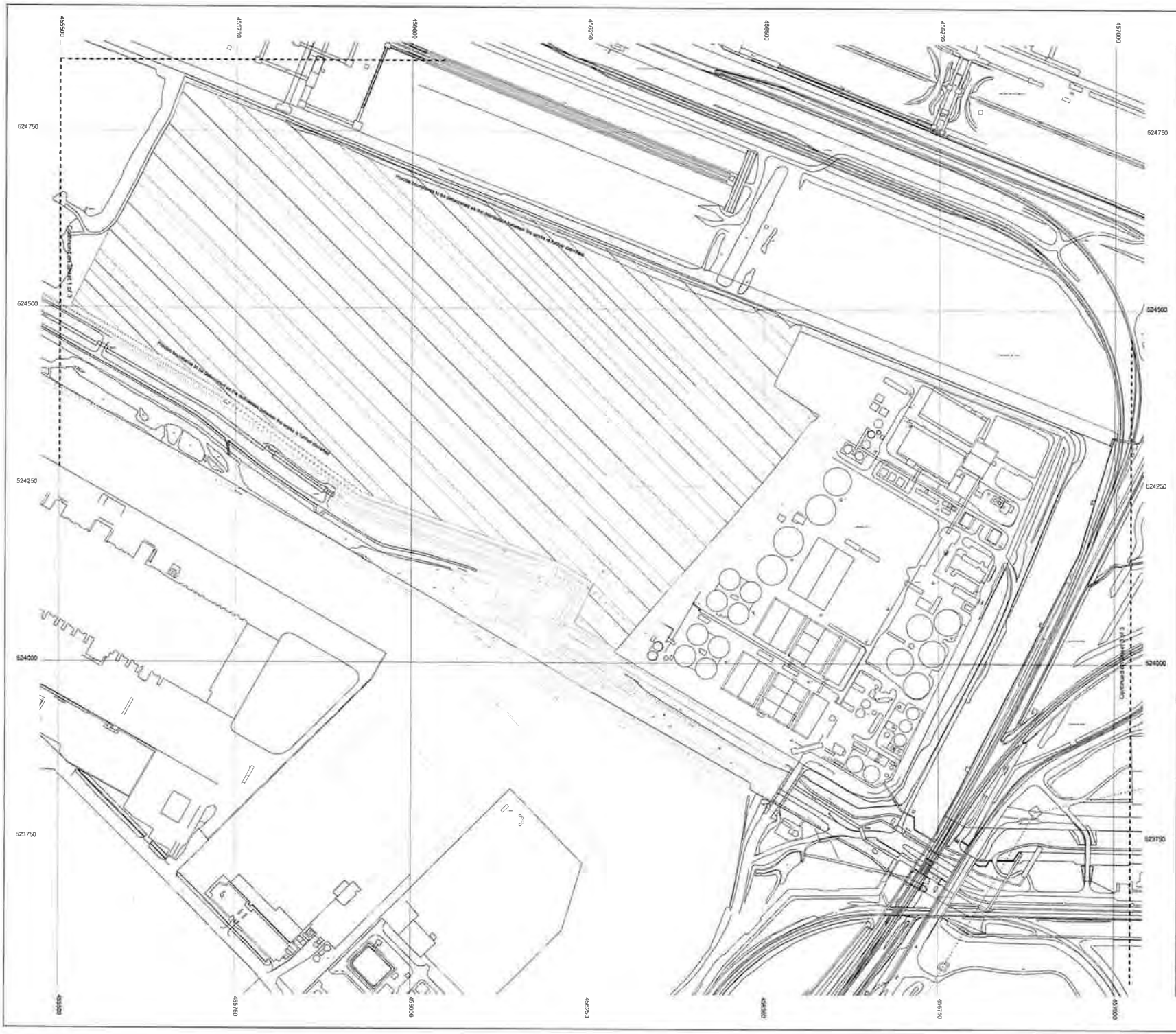
Drawing No	**Revision**
YPL Works Plan Sheet 1	v1.0

Approved By:	Checked By:	Drawn By:
TP	MD	DC



Legend

Land required for, or affected by the authorised development (the Order limits)

	Work No	Brief Description (see Schedule 1 to the Development Consent Order)
	3	Maximum Limits of Deviation
	4B	Maximum Limits of Deviation

0 25 50 75 100 125 150 175 200
Metres

Notes

Any boundary between the areas of two Works Numbers may deviate laterally by 20 metres either side of the boundary

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Sirius Minerals

Title

The York Potash Harbour Facilities Order 201X - Works Plan (Sheet 2 of 3)

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Regulation 5(2)(i)

Document Number: 2.2B

Scale	Date
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Drawing No: YPL Works Plan Sheet 2	Revision: v1.0

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TP	MD	DC

Legend

Land required for, or affected by the authorised development (the Order limits)

	Work No.	Brief Description (see Schedule 1 to the Development Consent Order)
	8	Maximum Limits of Deviation
	4B	Maximum Limits of Deviation

Metres

Notes:

Any boundary between the areas of two Works Numbers may deviate laterally by 20 metres either side of the boundary

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The York Potash Harbour Facilities Order 201X - Works Plan (Sheet 3 of 3)

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Regulation 5(2)(i) Document Number 2.2C

Scale	Date
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Drawing No: YPL Works Plan Sheet 3	Revision: v1.0

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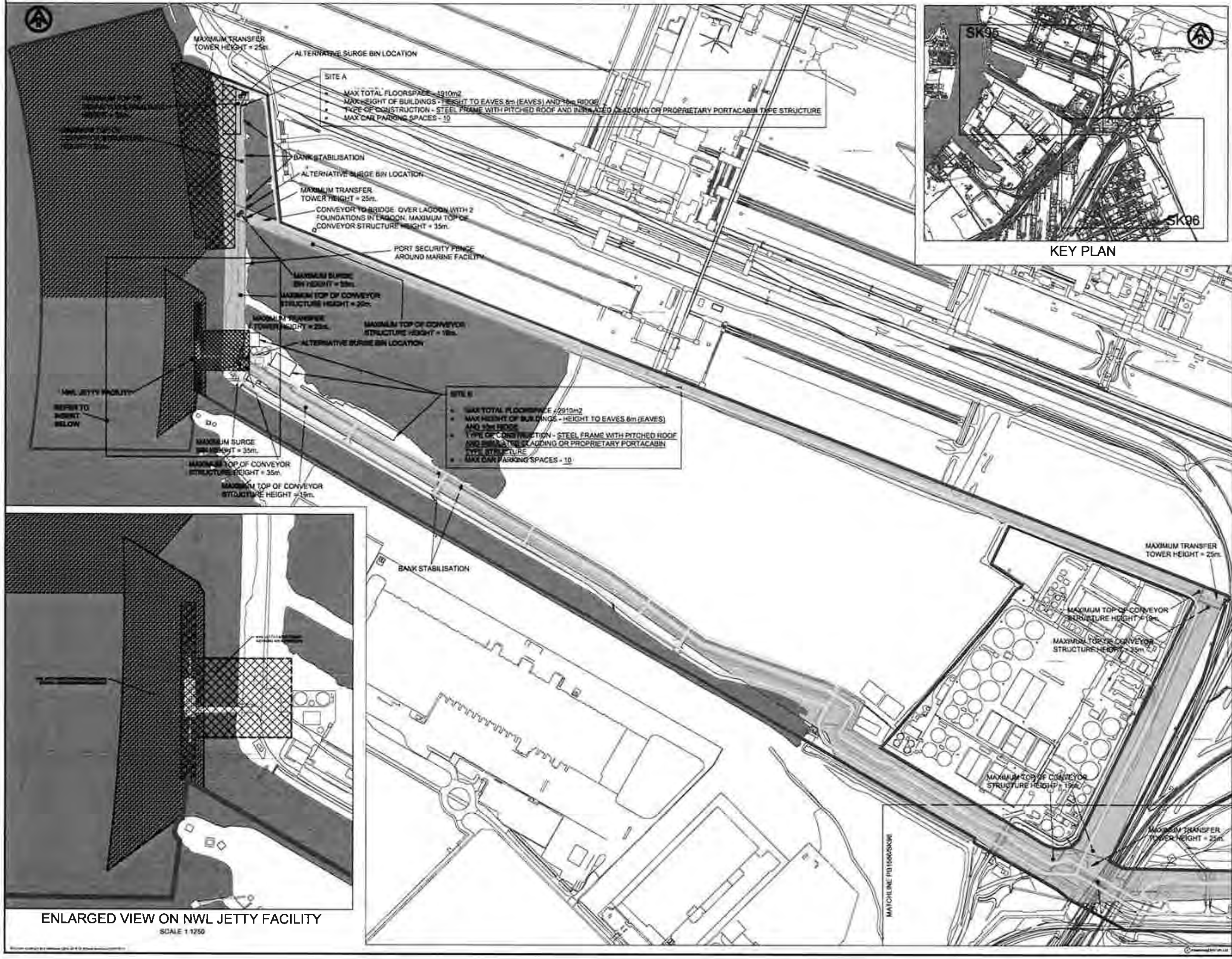

ENLARGED VIEW ON NWL JETTY FACILITY

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NOTES

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PROJECT

YORK POTASH

TITLE

THE YORK POTASH
HARBOUR FACILITIES ORDER 201X
LAYOUT PLANS (PHASE 1)
REGULATION 5 (2)(o)
DOCUMENT 3 3A

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KEY PLAN

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THE YORK POTASH
HARBOUR FACILITIES ORDER 201X
LAYOUT PLANS (PHASE 1)
REGULATION 5 (2)(o)
DOCUMENT 3.3B

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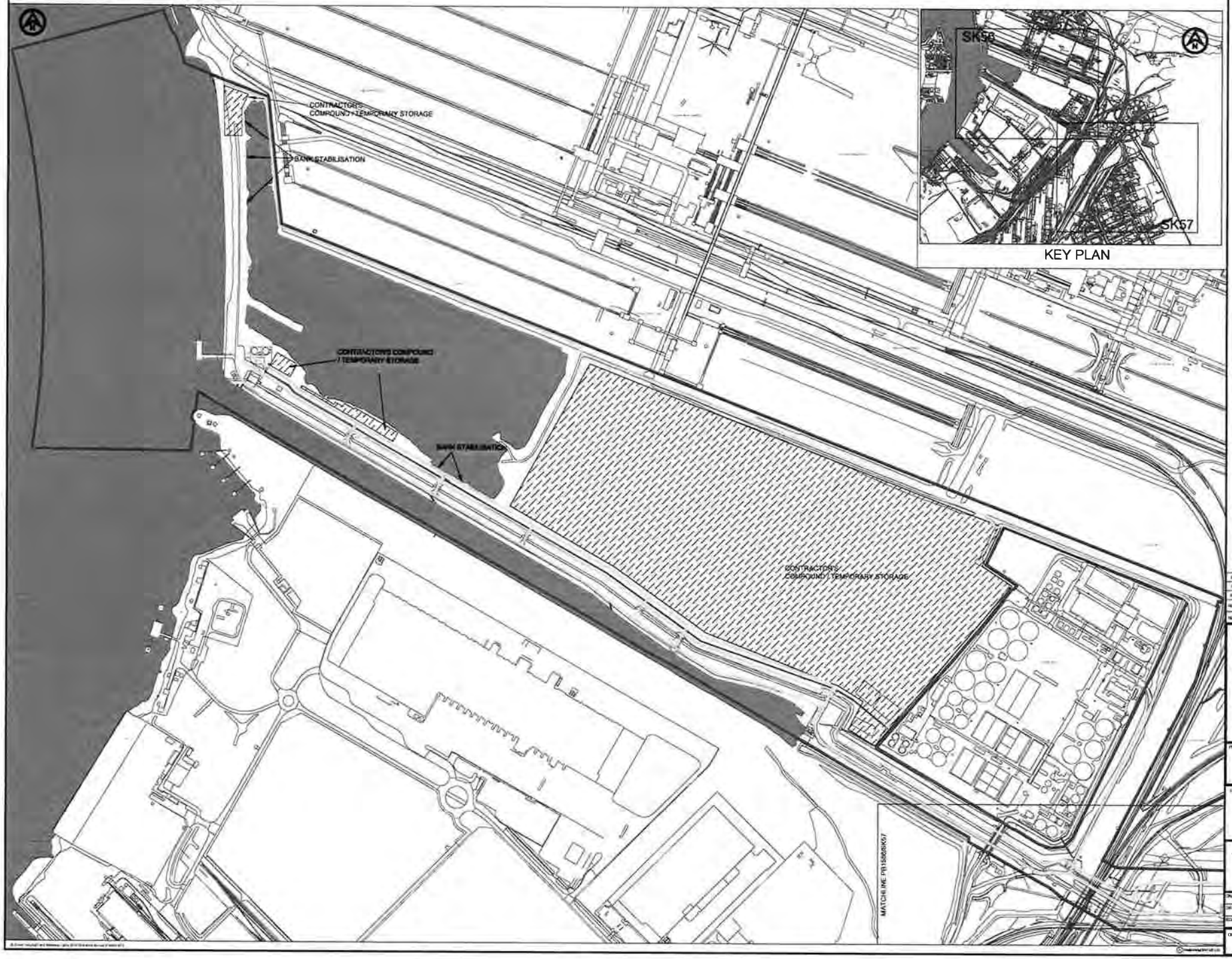

KEY PLAN

NOTES

KEY

ENVELOPE IN WHICH TO LOCATE CONTRACTOR'S COMPOUND / TEMPORARY STORAGE:
- HARDING (MAX. 70 SPACES)
- STORAGE
- LAYDOWN
- OFFICES
- WELFARE FACILITIES

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PROJECT
YORK POTASH

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THE YORK POTASH
HARBOUR FACILITIES ORDER 201X
LAYOUT PLANS (TEMPORARY)
REGULATION 5 (2)(o)
DOCUMENT 3 2A

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KEY PLAN

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PROJECT: YORK POTASH

TITLE: THE YORK POTASH HARBOUR FACILITIES ORDER 201X LAYOUT PLANS (TEMPORARY) REGULATION 5 (2)(o) DOCUMENT 3 2B

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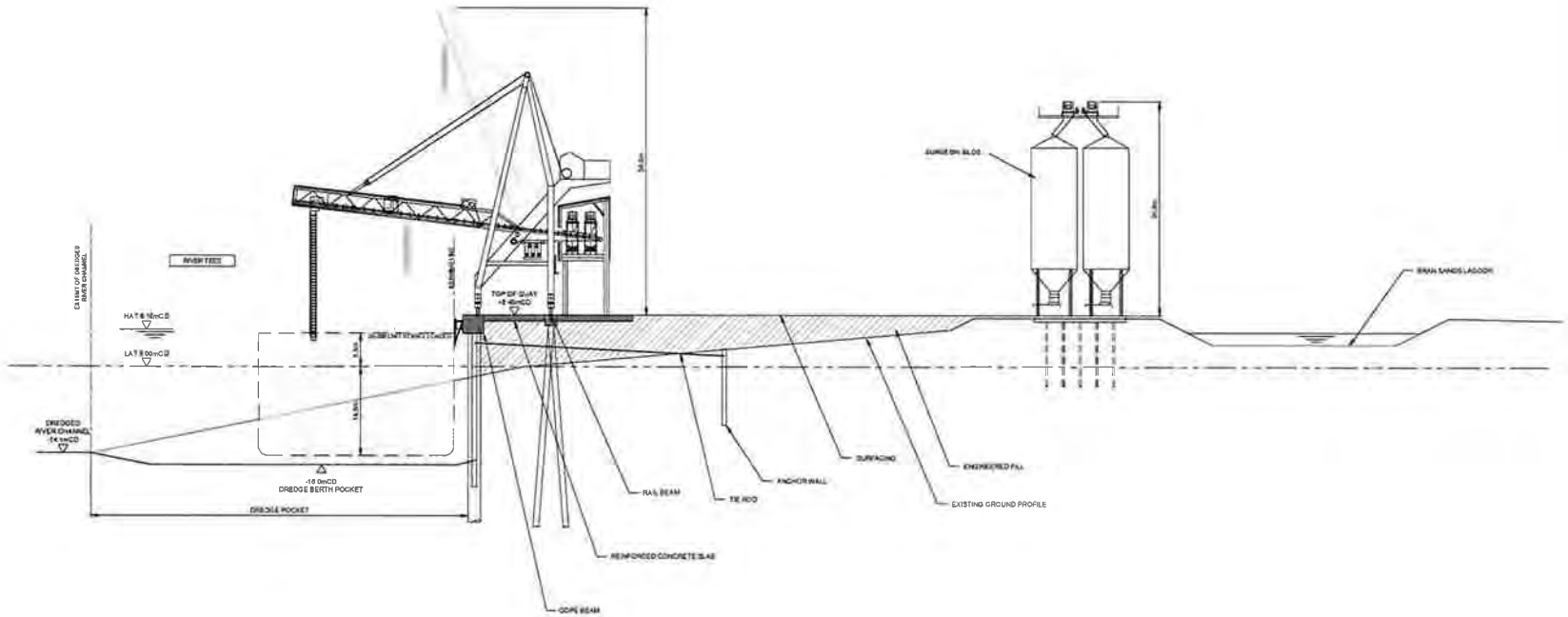

NOTES
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TITLE
THE YORK POTASH
HARBOUR FACILITIES ORDER 201X
INDICATIVE SECTION
SOLID QUAY CONSTRUCTION
REGULATION 5 (2)(o)
DOCUMENT 3.5B

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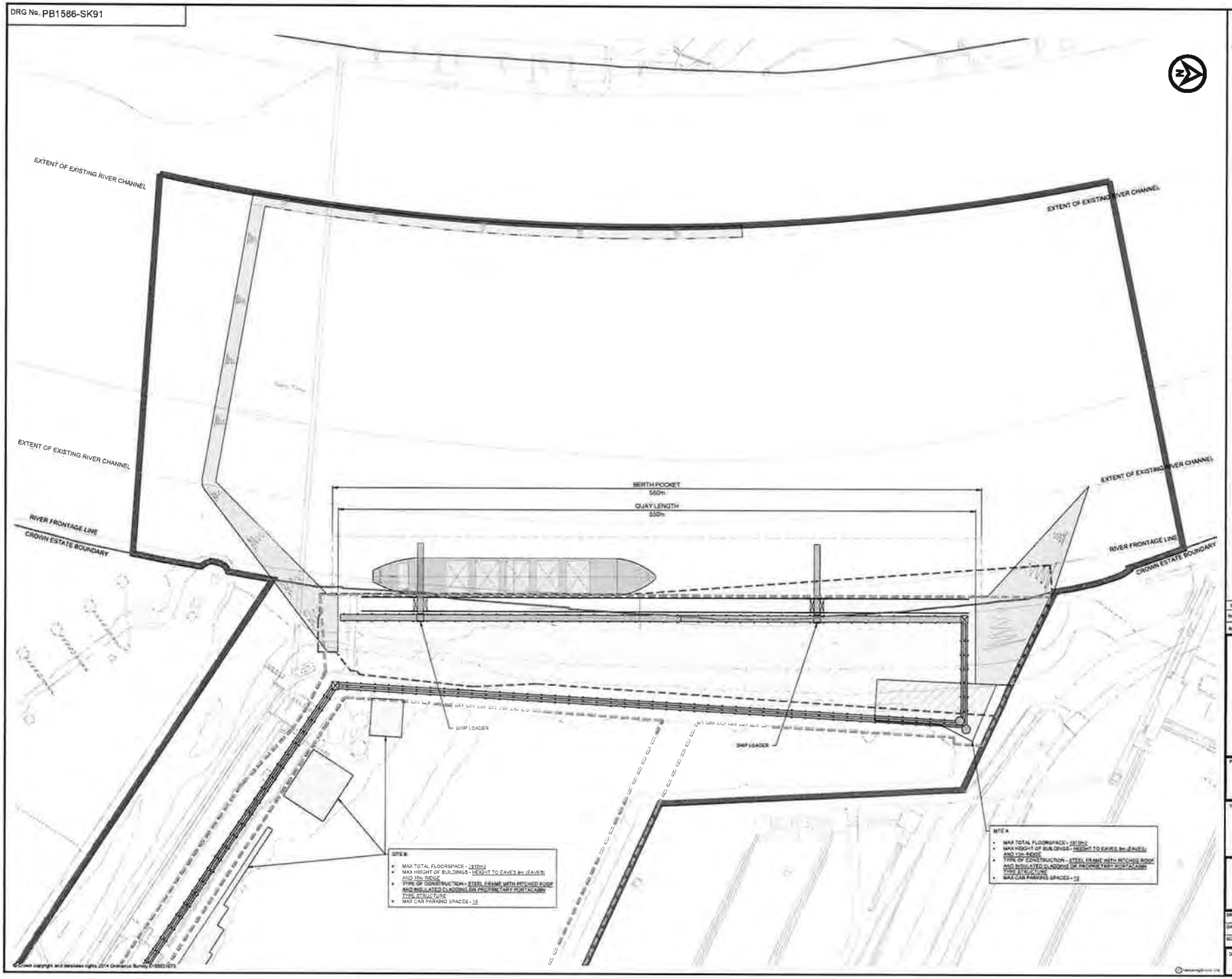

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KEY

- ORDER LIMITS
- CONVEYOR ENVELOPE
- QUAY ALIGNMENT ENVELOPE
- ADMINISTRATIVE
  - PARKING
  - WORKSHOP
  - WAREHOUSE
  - ADMINISTRATION OFFICES
  - WELFARE FACILITIES
  - ANCILLARY BUILDINGS
- ENGINEERING FILL
- DREDGED AREA
- EXTENTS OF BERTH POCKET
- DREDGED SIDE SLOPES
- TRANSFER TOWER
- SURGE BINS
- CONVEYORS

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YORK POTASH

Sirius Minerals

PROJECT: YORK POTASH

TITLE: THE YORK POTASH HARBOUR FACILITIES ORDER 201X INDICATIVE LAYOUT - SOLID QUAY CONSTRUCTION AT END OF PHASE 2 REGULATION 5(2)(o) DOCUMENT 3.5A

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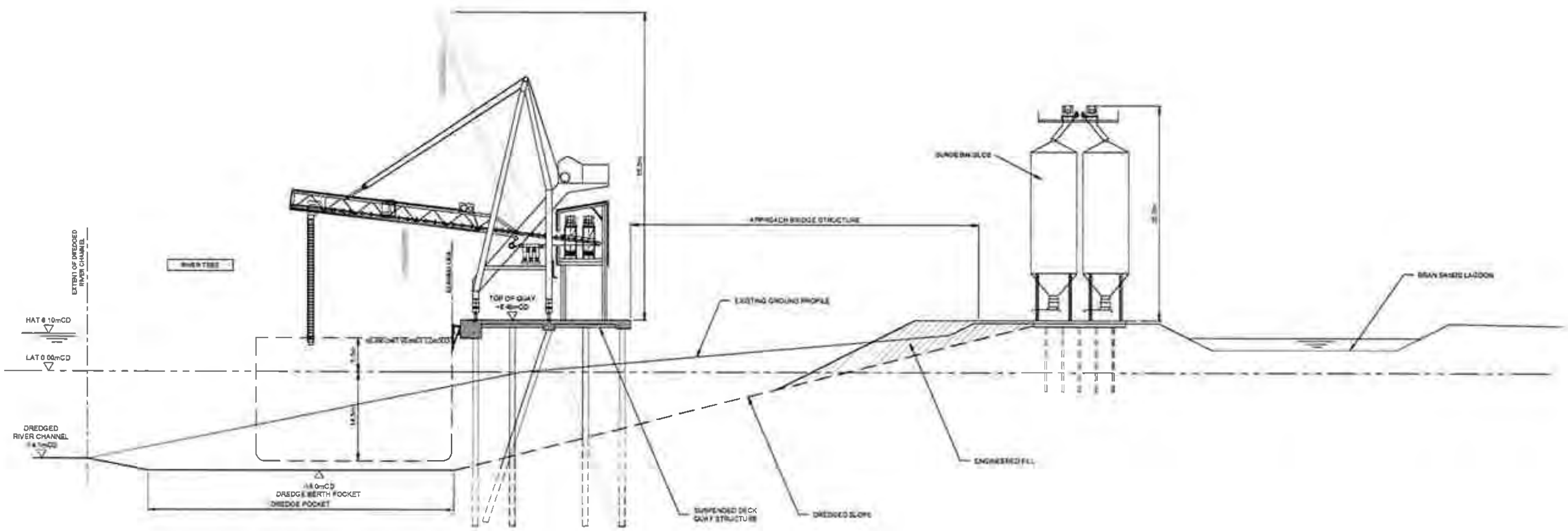
REVISION: 0

DRG No PB1586-SK94



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PROJECT
YORK POTASH

TITLE
THE YORK POTASH
HARBOUR FACILITIES ORDER 201X
INDICATIVE SECTION
OPEN QUAY CONSTRUCTION
REGULATION 5 (2)(o)
DOCUMENT3 5D

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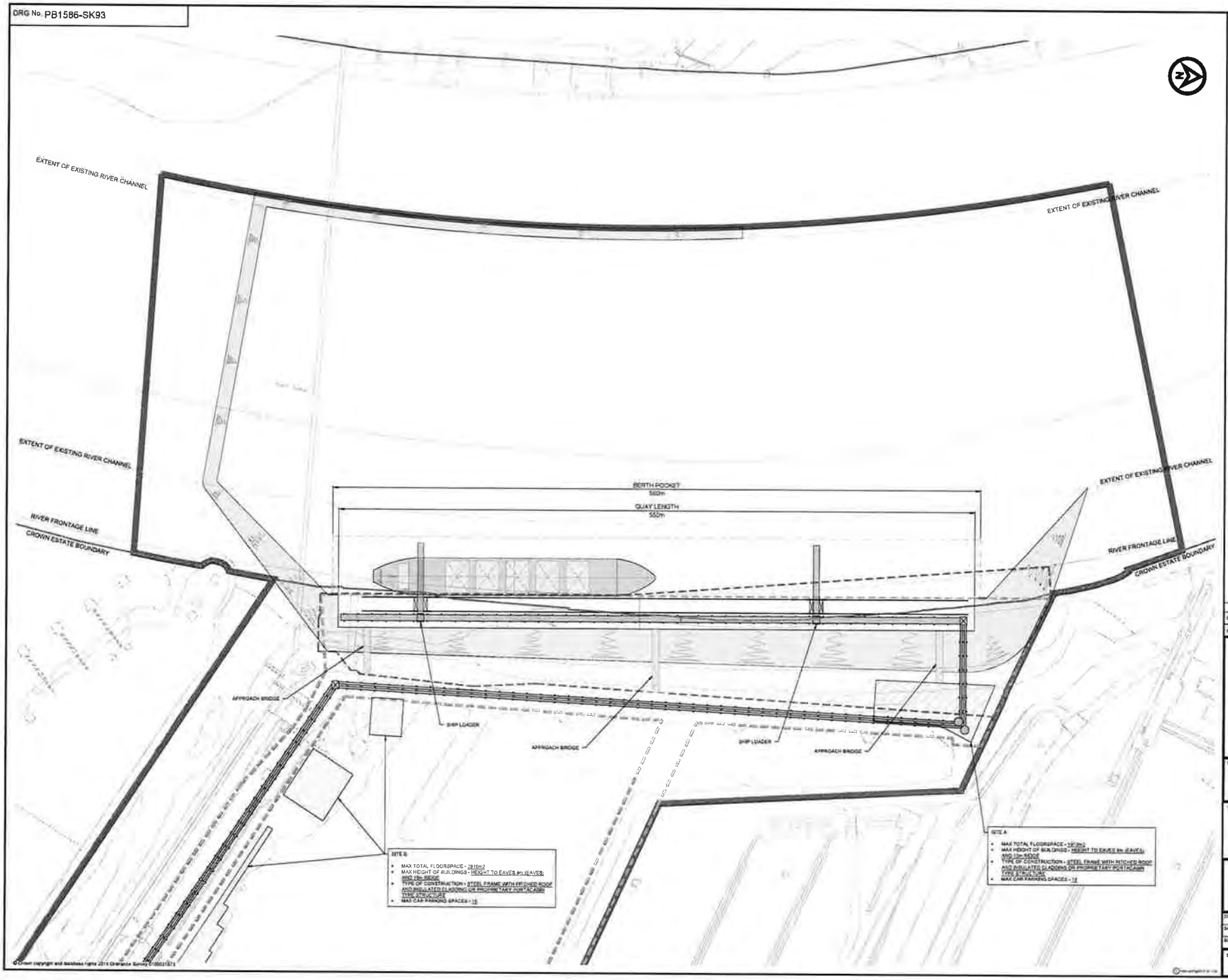

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KEY

- ORDER LIMITS
- CONVEYOR ENVELOPE
- QUAY ALIGNMENT ENVELOPE
- ADMINISTRATIVE
  - PARKING
  - WORKSHOP
  - WAREHOUSE
  - ADMINISTRATION OFFICES
  - WELFARE FACILITIES
  - ANCILLARY BUILDINGS
- ENGINEERING FILL
- DREDGED AREA
- EXTENTS OF BERTH POCKET
- DREDGED SIDE SLOPES
- TRANSFER TOWER
- SURGE BINS
- CONVEYORS

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Sirius Minerals

PROJECT: YORK POTASH

TITLE: THE YORK POTASH HARBOUR FACILITIES ORDER 201X INDICATIVE LAYOUT OPEN QUAY CONSTRUCTION AT END OF PHASE 2 REGULATION 5 (2)(o) DOCUMENT 3.5C

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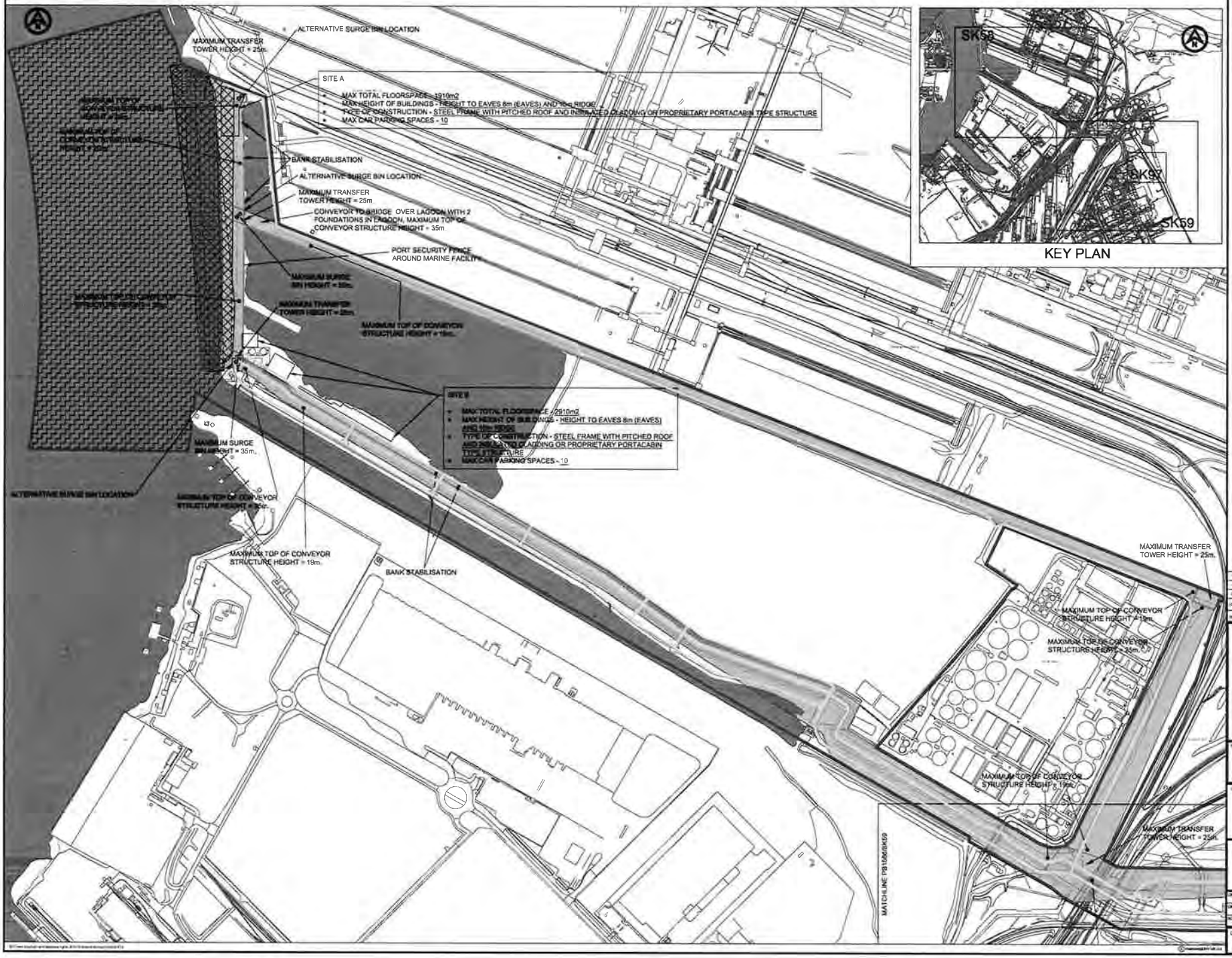

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THE YORK POTASH
HARBOUR FACILITIES ORDER 201X
LAYOUT PLANS (PERMANENT)
REGULATION 5 (2)(o)
DOCUMENT 3.4A

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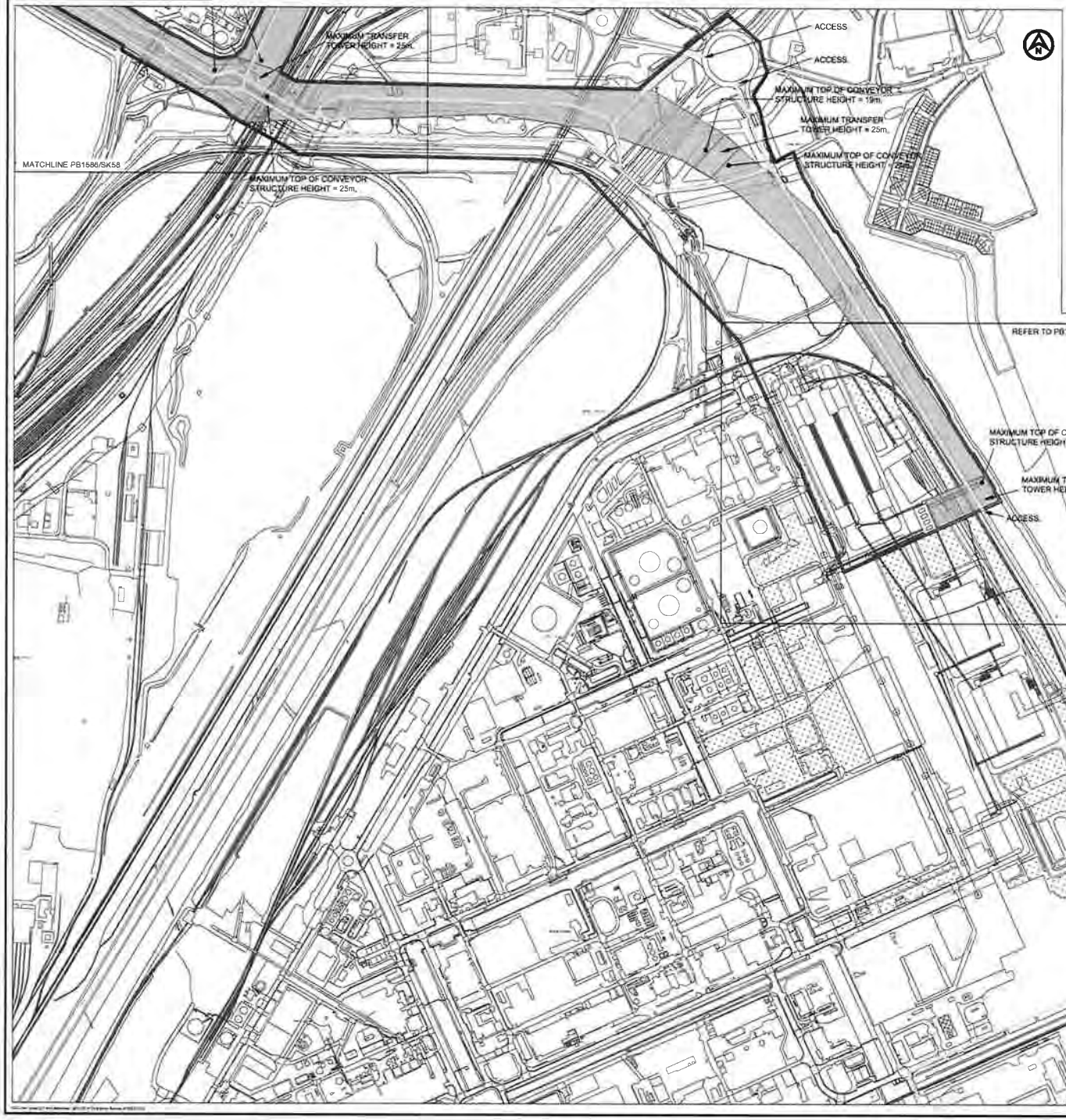

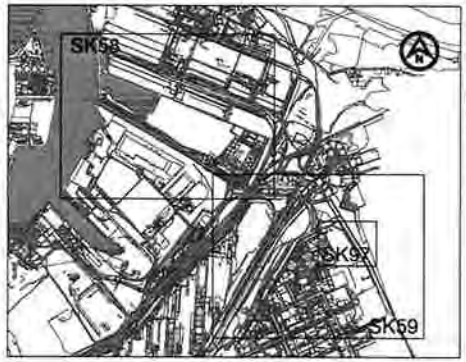

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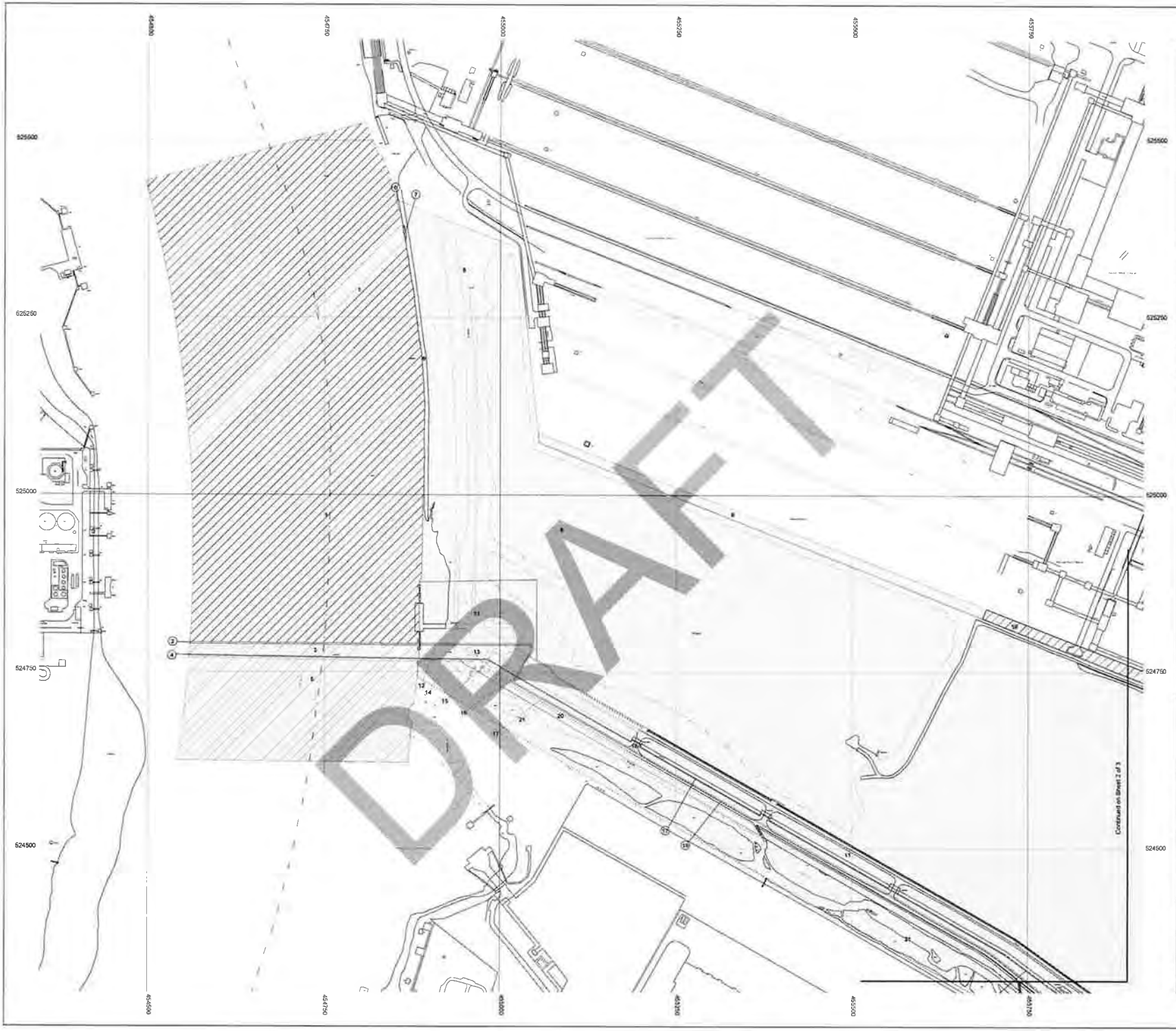

Legend

Order Land

Land containing Crown Interests

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25 0 25 50 75 100 125 150 175 200

Metres

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The York Potash Harbour Facilities Order 201X - Land Plan (Sheet 1 of 3)

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Regulation 5(2)(i) and 6(2)(n)

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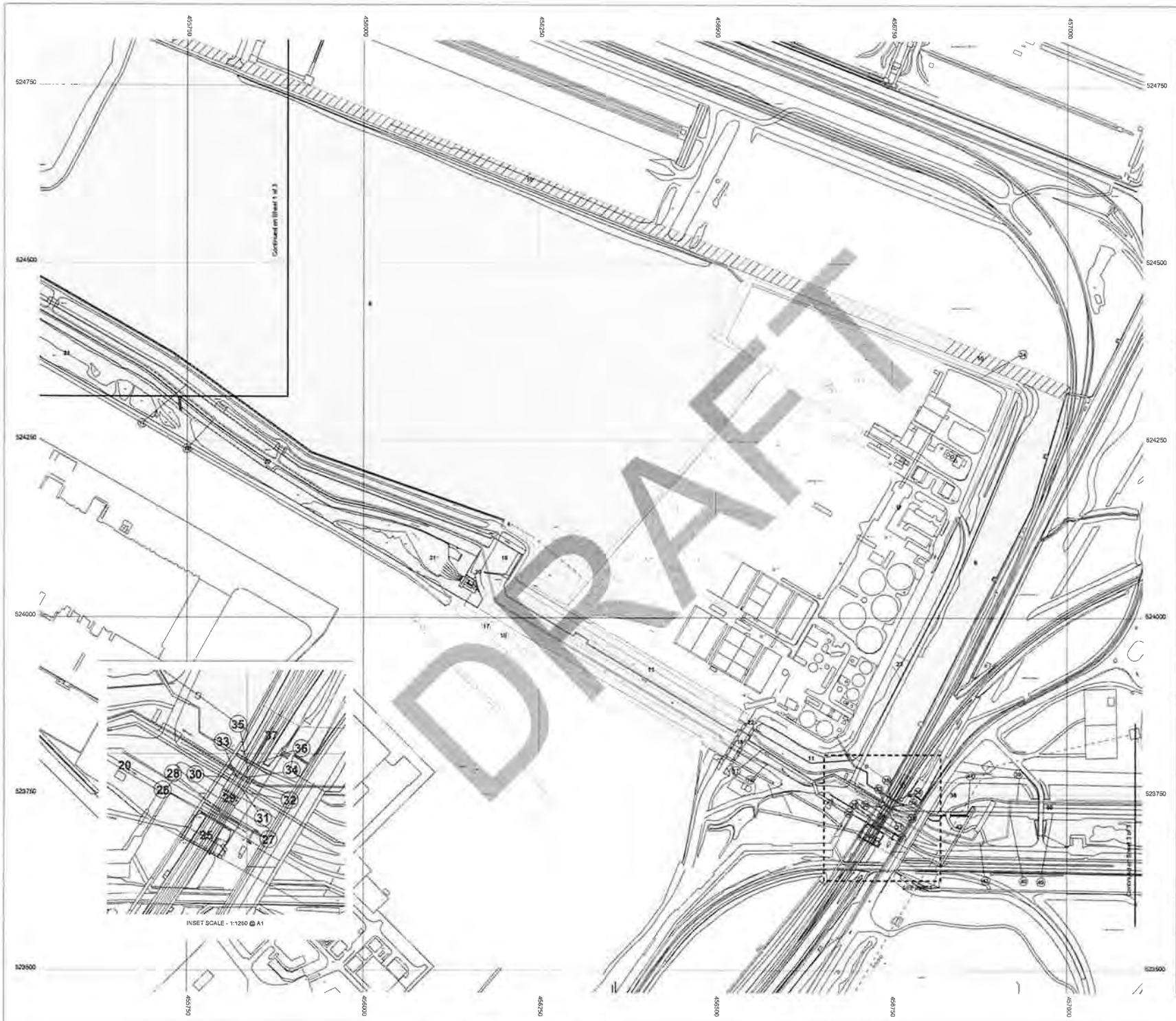

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Order Land

Land containing Crown Interests

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The York Potash Harbour Facilities Order 20[ ]X - Land Plan (Sheet 2 of 3)

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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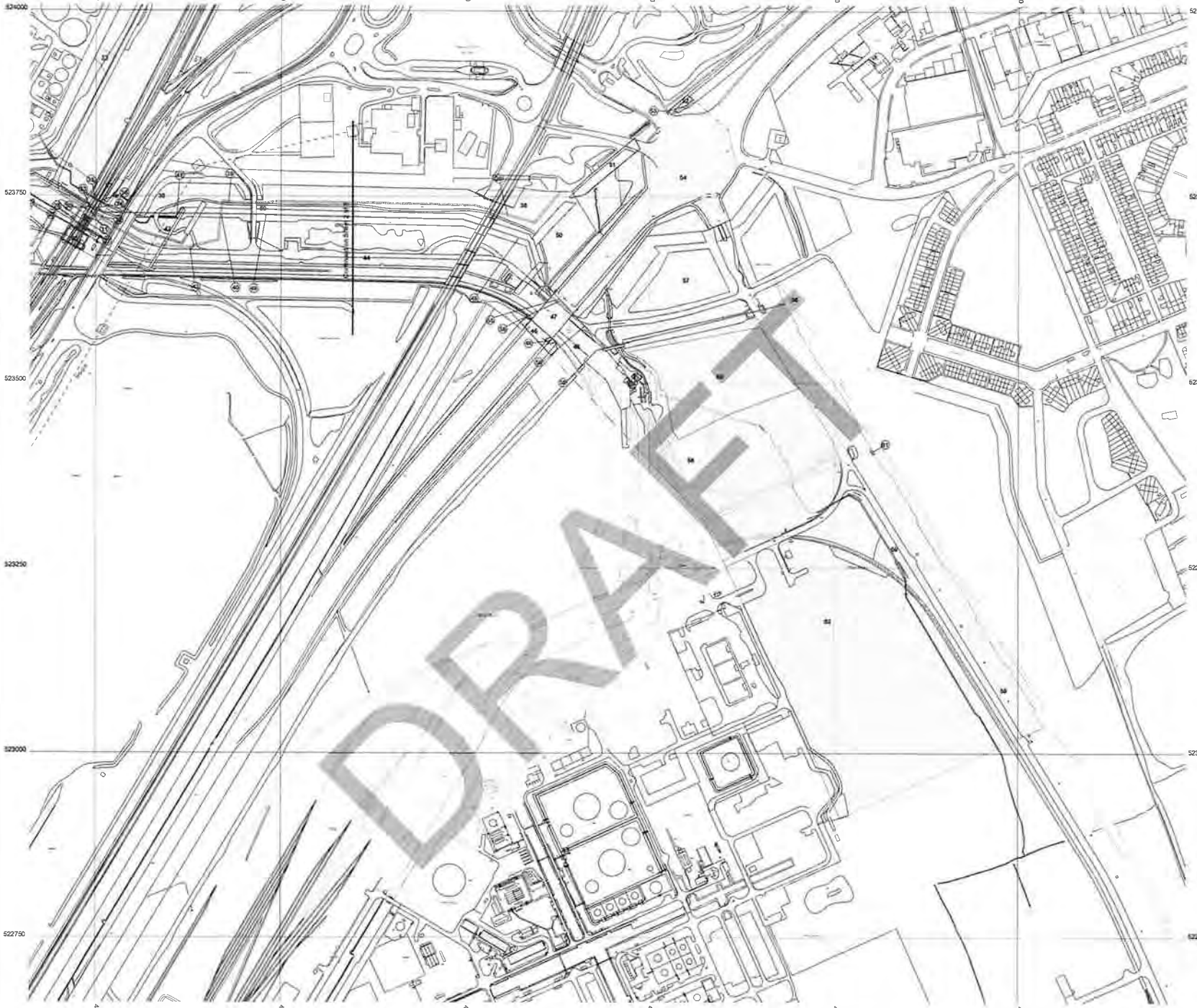

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Order Land

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THE YORK POTASH
HARBOUR FACILITIES ORDER 201X
OVERLAND CONVEYOR IMAGES
REGULATION 5 (2)(o)
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OVERLAND CONVEYOR IMAGES
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Legend

Land required for, or affected by the authorised development (the Order limits)

N

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The York Potash Harbour Facilities Order 201X - Access and Rights of Way Plan (Sheet 1 of 3)

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Regulation 5(2)(k)

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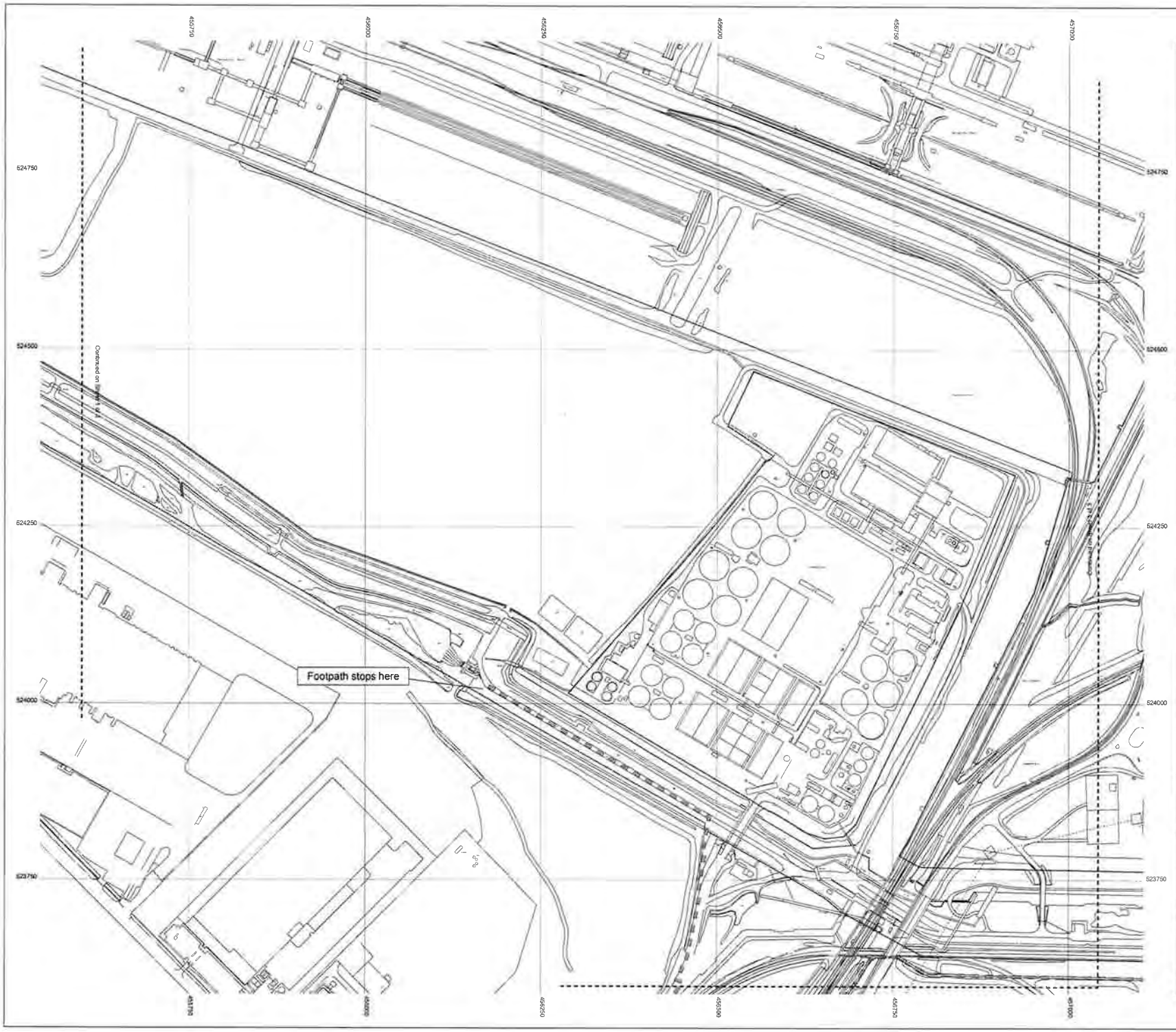

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Public Right of Way (to be unchanged)

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The York Potash Harbour Facilities Order 201X - Access and Rights of Way Plan (Sheet 2 of 3)

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Regulation 5(2)(k)

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Legend

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The York Potash Harbour Facilities Order 201X - Access and Rights of Way Plan (Sheet 3 of 3)

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Regulation 6(2)(k)

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York Potash Harbour Facilities Order 201X - Preliminary Environmental Report

September 2014

Final Report (Revision 0)

Royal HaskoningDHV

Document title: York Potash Harbour Facilities Order 201X - Preliminary Environmental Report
Status: Final Report (Revision 0)
Date: September 2014
Project number: 9Y0989
Client: York Potash Ltd
Client contact: James Barrie

Reference: Harbour Facilities PER
Drafted by: Steven Rayner
Checked by: Matt Simpson
Date / initials check: 5 September 2014
Approved by: Sian John
Date / initials approval: 5 September 2014

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Tables

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Figures

Plates

Drawings

1 INTRODUCTION

1.1 Background to the proposed scheme

1.1.1 York Potash Limited (YPL) (a subsidiary of Sirius Minerals Limited) proposes to develop a harbour facility on Teesside for the export of polyhalite bulk fertiliser (the product). The proposed harbour facility, to be designed to export up to 13 million tonnes per annum (mtpa) of product, would comprise the following elements:

- A port terminal on the southern bank of the Tees estuary (with capital dredging of an associated berth pocket and approaches).
- A conveyor system to transfer product to the port terminal, from a Materials Handling Facility (MHF) at Wilton (the MHF at Wilton is the subject of a separate planning application and is not considered in this assessment).
- Product storage facilities adjacent to the port terminal, in the form of storage surge bins.
- Staff welfare facilities.

1.1.2 In this document, the harbour facility (comprising the port terminal, conveyor system and surge bins) is referred to as the 'proposed scheme'.

1.1.3 The proposed volume of product that would be handled by the facility exceeds the threshold set out in the Planning Act 2008 for the export of bulk material from harbour facilities (5mtpa). This means that the proposed harbour facility constitutes a Nationally Significant Infrastructure Project (NSIP), requiring a Development Consent Order (DCO) (see **Section 2**). The regulatory authority for a DCO is the Planning Inspectorate (PINS), with the consent issued by the Secretary of State. The conveyor system required for the transfer of product from the MHF to the port terminal is included within the scope of the DCO application.

1.2 The Preliminary Environmental Report (PER)

1.2.1 This Preliminary Environmental Report (PER) has been produced in accordance with PINS Advice Note 7, and presents the findings to date of the Environmental Impact Assessment (EIA) being undertaken by Royal HaskoningDHV on behalf of YPL.

1.2.2 The information presented in this PER constitutes 'preliminary environmental information' which is defined in The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009, as amended[1], as:

[1] As amended by the *Infrastructure Planning (Environmental Impact Assessment) (Amendment) Regulations 2012*

"Information referred to in Part 1 of Schedule 4 (information for inclusion in environmental statements) which –

a) Has been compiled by the applicant;

b) Is reasonably required to assess the environmental effects of the development."

1.2.3 The preliminary assessment presented within this PER has been based on the design information available at the time of writing. The concept design for the port terminal (including the options under consideration) has been completed, and detailed options for the proposed conveyor system are currently being investigated.

1.2.4 A number of studies and surveys were proposed within the Environmental Scoping Report (Royal HaskoningDHV, 2013; see **Appendix 1.1**) to inform the EIA. At the time of writing, some of these studies have been completed and a number are ongoing; therefore, all results are not available for full impact assessment at this stage. However, where results are available they have been reported and considered herein.

1.3 Outline of the wider York Potash Project

1.3.1 The proposed scheme forms one of four distinct project elements which together comprise the York Potash Project (YPP), namely:

1. the winning (the process of gaining access to the mineral) and working (the process of extracting the mineral) of polyhalite (the Mine);
2. a mineral transport system (MTS) for the removal and transfer of the resource;
3. a MHF for processing the polyhalite into a granulated product; and,
4. Harbour facilities to export the polyhalite (which are the subject of this PER).

1.3.2 YPL proposes to win and work product from two deep polyhalite seams which lie beneath the North York Moors National Park, one of which extends eastwards beneath the North Sea. A marine licence for this aspect has already been granted by the Marine Management Organisation (MMO). Once extracted, the dry product would be crushed, loaded onto hoppers, and transported to the MHF at Wilton through the underground MTS. The product would be granulated within the MHF in preparation for onward distribution via the port terminal. A proportion of the product would be distributed within the UK from the Wilton site (up to 150,000 tonnes of product, per annum, may be exported by road). This process is represented visually on **Figure 1-1**.

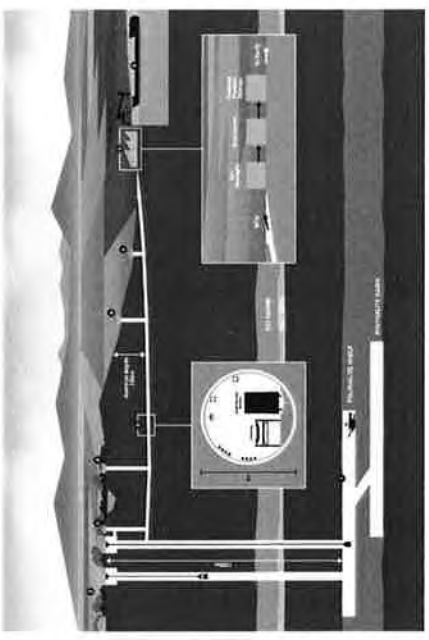


Figure 1-1 Overview of the key elements of the YPP

1.3.3 The overall YPP has four main geographical locations and the following consenting routes:

- The Mine and other ancillary facilities for the mine are proposed to be located at Dove's Nest Farm, near Whitby, with a proposed Construction Village and Park and Ride (P&R) to be located approximately 1.6km to the south of Whitby (although the Construction Village remains an option only). Operational phase P&R facilities would be located 2km to the east of Whitby (at Cross Butts roundabout) and at the Scarborough P&R, if required.
- The MTS would extend approximately 36.5km from Doves Nest Farm (where the MTS access shaft would be located) to the MHF at Wilton. The MTS would include three intermediate shafts installed along its route, located approximately 9km, 24km and 29km from the Mine.
- An application is to be made jointly to the North York Moors National Park Authority (NYMNPA) and Redcar and Cleveland Borough Council (RCBC) for the Mine and MTS; and applications are to be submitted to Scarborough Borough Council (SBC) and the NYMNPA for the Construction Village and P&R facilities and northern Operational P&R facilities respectively.
- The MTS portal and MHF would be located at Wilton. An application is to be made to RCBC for the MHF.
- The Harbour facility would be located adjacent to the Port of Teesside, on the River Tees and joined to the MHF by conveyors. The Harbour facility requires a DCO from the Secretary of State.

1.3.4 Separate environmental assessments are being undertaken for the mine and the MTS/MHF.

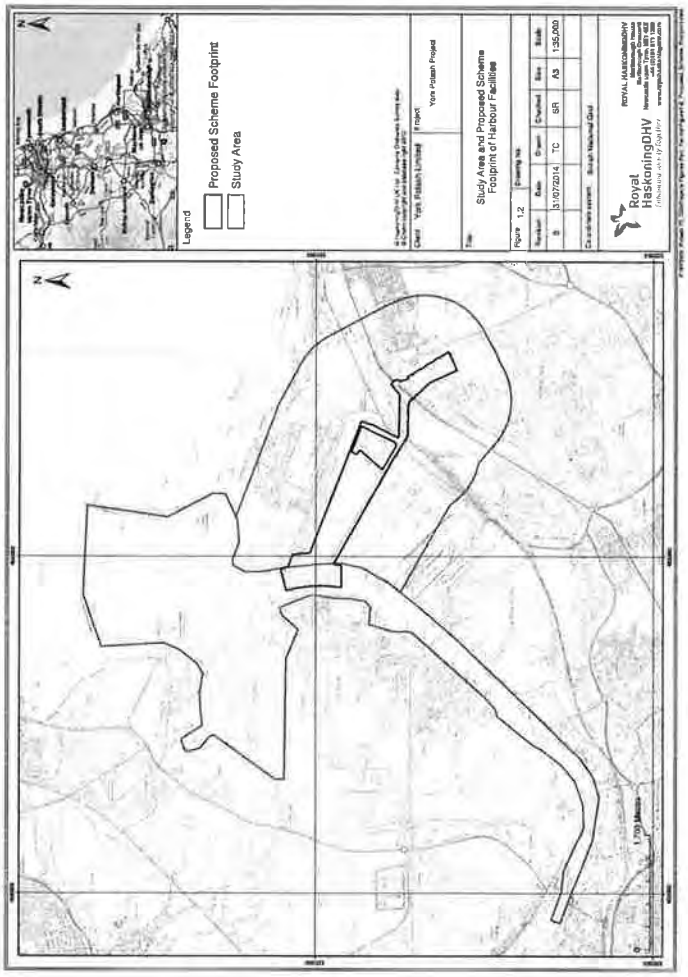
1.4 The study area for the proposed scheme

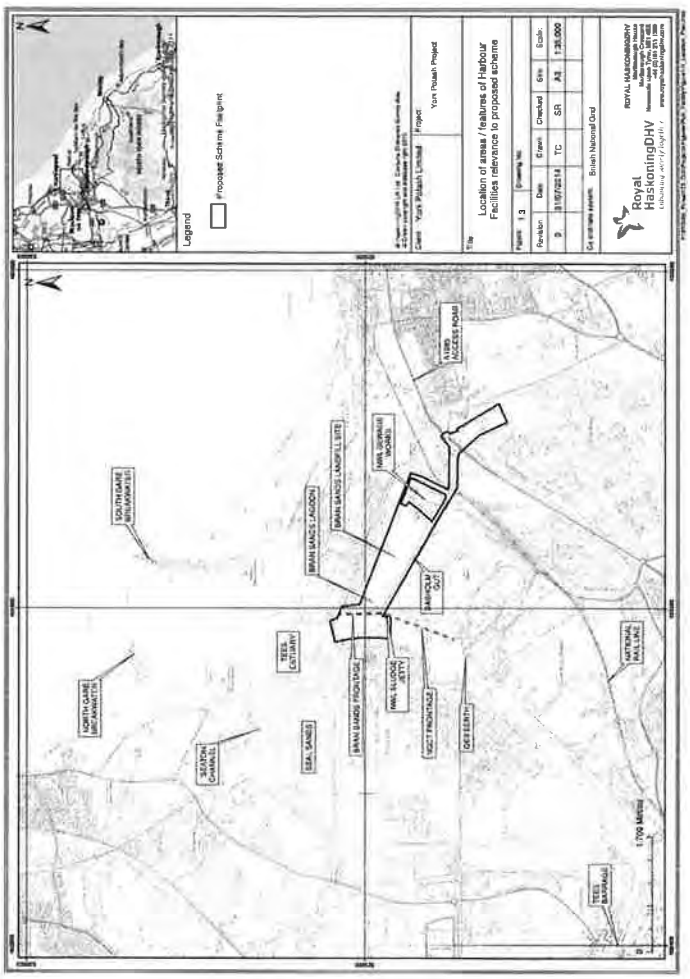
1.4.1 The study area is the area over which the direct and indirect potential impacts of the proposed scheme may be detected during the construction and operational phases. It includes the Tees estuary and the adjacent land on the south bank of the Tees estuary; as illustrated on **Figure 1-2**. **Figure 1-3** illustrates the location of a number of parcels of land and features which have been referred to throughout this report.

1.4.2 The Tees estuary is located on the north-east coast of England and lies between the towns of Stockton-on-Tees, Hartlepool, Redcar, Middlesbrough and Billingham. The Tees Valley has a long standing industrial heritage and remains one of the UK's main manufacturing regions.

1.4.3 The study area for the landside elements of the scheme comprises land to the south of the Tees estuary, extending eastwards to Dormanstown, northwards to Bran Sands steel works and southwards to Tees Dock. This boundary covers the area which has the potential to be directly and indirectly affected by the proposed scheme.

1.4.4 For the marine elements, the study area comprises the likely maximum extent over which potentially significant environmental impacts of the scheme may occur. The maximum extent of the potential impact has been determined to be the area over which the potential effects of the proposed scheme on tidal currents and sediment transport may occur. Such effects have the potential to affect other parameters, such as marine ecology, waterbird populations and water quality.





Royal HaskoningDHV

1 5 Report structure

1 5 1 Following this introduction, **Section 2** describes the relevant legislative and regulatory regime in the context of the EIA for the proposed harbour facility **Section 3** presents a description of the proposed scheme and **Section 4** describes the approach taken to the EIA

1 5 2 **Sections 5** to **21** contain the preliminary environmental assessment of the proposed scheme These sections describe the nature of the existing (baseline) environment for the various environmental parameters (e g ecology and air quality) considered during the EIA process Potential impacts that could arise during the construction and operational phases of the harbour facility with respect to each of these parameters are then identified and assessed (to the extent that the design information and baseline environmental information permits) and, where appropriate, mitigation measures are defined The predicted residual impacts (those potential impacts remaining assuming that the recommended mitigation measures are implemented) are then set out Any potentially significant environmental impacts during decommissioning are also identified

1 5 3 **Section 22** describes the approach that is being taken to the assessment of potential cumulative impacts **Section 23** describes the approach that is being taken to assess the implications of the proposed scheme under the Water Framework Directive (WFD) **Section 24** summarises the potentially significant impacts associated with the decommissioning phase of the proposed scheme

1 5 4 **Section 25** lists the references cited within this PER

2 RELEVANT LEGISLATION, REGULATION AND POLICY

2.1 Introduction

2.1.1 The planning process for dealing with proposals for NSIPs was established by the Planning Act 2008. This process, as amended by the Localism Act 2011, involves an examination of major proposals relating to energy, transport, water, waste and waste water, and includes opportunities for people to have their say before a decision is made by the relevant Secretary of State.

2.1.2 The Planning Act 2008 sets out the thresholds for NSIPs. For harbours, applications for development consent will be referred to PINS if the estimated incremental annual capacity exceeds:

- 0.5 million Twenty Foot Equivalent Units (TEU) for a container terminal;
- 250,000 movements for roll-on roll off (ro-ro);
- 5 million tonnes for other (bulk and general) traffic; or,
- A weighted sum equivalent to these figures taken together.

2.1.3 The harbour facility, once fully developed and operational, would provide for an export weight of 13mtpa of bulk product. As a result, the export value exceeds the threshold stated within the Planning Act 2008 with regard to the export of bulk materials from harbour facilities. The harbour facility therefore constitutes an NSIP and associated development covers the transport of the product by conveyor to the port from the MHF.

2.2 Environmental Impact Assessment Directive

2.2.1 An Environmental Statement (ES) will accompany the DCO application and will be produced in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (as amended by the Infrastructure Planning (Environmental Impact Assessment) (Amendment) Regulations 2012). These regulations have been produced in accordance with the European Council Directive 85/337/EEC which requires the assessment of the effects of certain public and private projects on the environment (the EIA Directive) and Directive 97/11/EEC (which amends Directive 85/337/EEC).

2.3 Habitats Directive

2.3.1 The Conservation of Species and Habitats Regulations 2010 (the 'Habitats Regulations') implement EC Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna (the Habitats Directive). In accordance with Section 61 of the Habitats Regulations, Appropriate Assessment is required for any plan or project, not connected with the management of a European site, which is likely to have a significant effect on the site either alone or in-combination with other plans or projects. European sites comprise Special Protection Areas (SPA), as designated under Council Directive 79/409/EEC (the Wild Birds Directive), or Special Areas of Conservation (SAC), as designated under the Habitats Directive. Appropriate Assessment is also required as a matter of government policy for potential SPAs, candidate SACs and listed Ramsar sites for the purpose of considering development proposals affecting them (ODPM, 2005).

2.3.2 The footprint of the proposed scheme does not lie within the boundary of a European site or Ramsar site. However, given the proximity of the proposed scheme to the Teesmouth and Cleveland Coast SPA and Ramsar site, the potential exists for the proposed scheme to have an effect on these designated sites. This potential has been considered further in this PER through the production of a draft Habitats Regulations Assessment (HRA) report (see **Appendix 2.1**).

2.3.3 Natural England has stated, through its response to PINS consultation on the Environmental Scoping Report (**Appendix 1.1**), that its view is that the proposed scheme would be likely to have a significant effect on internationally designated sites and, therefore, assessment under the Habitats Regulations will be required. Should PINS concur with this view, an Appropriate Assessment will be undertaken by PINS as the 'competent authority', with advice from Natural England.

2.4 Wildlife and Countryside Act 1981

2.4.1 Under the terms of Section 28(4)b of the Wildlife and Countryside Act 1981, as amended by Schedule 9 to the Countryside And Rights of Way Act 2000, any operations within or adjacent to a Site of Special Scientific Interest (SSSI) require consent from Natural England. There are a number of SSSIs within and adjacent to the study area; including the Tees and Hartlepool Foreshore and Wetlands, Seal Sands, Seaton Dunes and Common, South Gare and Coatham Sands, Redcar Rocks and Cowpen Marsh (these sites are discussed further in **Sections 8.4** and **9.4**). Hence this Act is of relevance to this application.

2.5 Water Framework Directive

2.5.1 The Water Framework Directive (2000/60/EC) (WFD) establishes a legal framework to protect and restore clean water across Europe to ensure long-term, sustainable use. It applies to waters out to one nautical mile from the baseline from which territorial waters are drawn.

2.5.2 One of the aims of the WFD is to ensure that all European waterbodies are of Good Ecological Status or Potential (for 'heavily modified' and 'artificial' waterbodies) by 2015 by the setting of Environmental Quality Objectives (EQOs) for water chemistry, ecological and hydromorphological quality parameters. The WFD is transposed into English and Welsh law through The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003.

2.5.3 The requirements of the WFD are to be addressed by undertaking a WFD compliance assessment. The proposed approach to the WFD compliance assessment is presented within **Section 23**.

2.6 Waste Framework Directive

2.6.1 The Waste Framework Directive (2008/98/EC) consolidates earlier legislation regulating waste. The Directive sets out the general rules applying to all categories of waste. A key objective of which is to provide measures to protect the environment and human health by preventing or reducing the adverse impacts of the generation and management of waste and by reducing overall impacts of resource use and improving the efficiency of such use.

2.6.2 Article 3(1) of the Directive defines waste as:

> *"...any substance or object ...which the holder discards or intends or is required to discard"*

2.6.3 More generally, the Directive provides a general duty to ensure that waste is dealt with in an environmentally friendly way. The key to this is the 'waste hierarchy', which emphasises prevention (in the first instance) and then re-use, recycling and recovery of waste (see **Figure 2-1**). EU Member States must have regard to the waste hierarchy when dealing with waste. Disposal to landfill or at sea is the least favourable option.

Figure 2-1 The waste hierarchy

2.6.4 Options for the disposal of waste have been identified in accordance with the waste hierarchy as part of this PER. A full consideration of potential waste disposal options is to be undertaken as part of the EIA process.

2.6.5 **Appendix 2.2** describes the proposals for the management of wastes expected to be generated during the construction and operational phases of the proposed scheme.

2.7 National, regional and local planning policy

2.7.1 All proposed development must take account of existing planning policy and guidance, and there are a number of national, regional and local plans and policies relevant to the proposed scheme and to this EIA process.

National Policy Statement for Ports

2.7.2 The Planning Act 2008 required new policy to be developed to provide the context for decisions associated with NSIPs in England and Wales. The National Policy Statement (NPS) for Ports (Department for Transport, 2012) seeks to:

- Encourage sustainable port development to cater for long term forecast growth in volumes of imports and exports by sea with a competitive and efficient port industry capable of meeting the needs of importers and exporters cost effectively and in a timely manner, thus contributing to long term economic growth and prosperity.
- Allow judgements about when and where new developments might be proposed to be made on the basis of commercial factors by the port industry or port developers operating within a free market environment.
- Ensure all proposed developments satisfy the relevant legal, environmental and social constraints and objectives, including those in the relevant European Directives and corresponding national regulations.

2.7.3 In order to help meet the requirements of Government policies on sustainable development, new port infrastructure should also:

- Contribute to local employment, regeneration and development.
- Ensure competition and security of supply.
- Preserve, protect and where possible improve marine and terrestrial biodiversity.
- Minimise emissions of greenhouse gases from port related development.
- Be well designed, functionally and environmentally.
- Be adapted to the impacts of climate change.
- Minimise use of greenfield land.
- Provide high standards of protection for the natural environment.
- Ensure that access to and condition of heritage assets are maintained and improved where necessary.
- Enhance access to ports and the jobs, services and social networks they create, including for the most disadvantaged.

2.7.4 Despite the recent recession, the national Government believes that there is a compelling need for substantial additional port capacity in the UK over the next 20 to 30 years, to be met by a combination of development already consented and developments for which applications have yet to be received. It states that excluding the possibility of providing additional capacity for the movement of goods and commodities through new port development would be to accept limits on economic growth and on the price, choice and availability of goods imported to the UK and available to consumers. It would also limit the local and regional economic benefits that new developments might bring. Such an outcome would be strongly against the public interest (Department for Transport, 2012).

Redcar and Cleveland Borough Council Local Plan

2.7.5 RCBC adopted its Core Strategy in July 2007 and this provides the development framework for the Borough over the plan period to 2021. At the same time the Council adopted its Development Policies Document which provides detailed development control policies that are intended to deliver the overarching policy objectives of the Core Strategy.

2.7.6 Development Plan Document policies of relevance in the context of the EIA for the proposed scheme include the following:

a) Adopted Core Strategy Policies

- Policy CS1 explains that development proposals will be assessed against their contribution to delivering sustainability objectives, including a thriving economy; easy access to jobs; and, a healthy, safe, attractive and well-maintained environment.
- Policy CS10 promotes the continued development and expansion of the port industry and port-related development along the River Tees.
- Policy CS20 encourages good quality and inclusive design in all new developments that respects and enhances the character of the local area, incorporating sustainable construction techniques and design concepts.
- Policy CS24 refers to the requirement to protect and enhance the Borough's biodiversity and geological resource, including protecting the integrity of European sites.
- Policy CS26 requires development proposals to manage travel demand, including through the preparation and implementation of Travel Plans.

b) Adopted Development Plan Document Policies

- Policy DP2 sets out the criteria for assessing the suitability of a site or location, including compliance with site allocations and designations and ensuring that development does not cause a significant impact on the amenities of occupiers of existing or proposed nearby properties.
- Policy DP3 requires all development to be designed to a high standard that respects or enhances the character and surroundings of the site, including biodiversity designations. It requires proposals to include a Travel Plan where these are likely to generate more than 30 employees.
- Policy DP6 states that development that would give rise to increased levels of noise or vibration or which would add to air, land or water pollution would need to be acceptable in terms of human health and safety; the environment; and, general amenity.
- Policy DP7 requires effective measures to be agreed to deal with potential contamination or unstable land issues.
- Policy DP11 refers to the need to ensure that development does not adversely affect important archaeological sites or monuments.

2.7.7 It is noted that RCBC is currently in the process of reviewing its Local Development Framework (LDF) with the intention of reverting back to a single Local Plan. The draft Local Plan was agreed by Cabinet on 21 September 2013, and sets out the preferred planning policies, site allocations and other designations that will guide development until 2029. RCBC is proposing to adopt the Local Plan in December 2014, so for the purposes of this PER and the subsequent ES the above policies remain relevant.

Stockton Borough Council Core Strategy Development Plan Document

2.7.8 Stockton Borough Council (SBC) adopted its Core Strategy in March 2010 and this provides the development framework for the Borough over the plan period to 2026. SBC is in the process of producing its Core Strategy Review and Regeneration and Environment Local Development Document (LDD), which will contain further planning policies which will shape development until 2029. An examination in public is due to take place in June 2015.

2.7.9 Policy CS4 safeguards land along the north bank of the River Tees. The policy states that no port or river based development will be permitted on, or on land immediately adjacent to, the North Tees Mudflat component of the Tees and Hartlepool Foreshore and Wetlands SSSI.

3 DESCRIPTION OF THE PROPOSED HARBOUR FACILITIES

3.1 Key characteristics of the proposed scheme and details of the construction phase

Introduction

3 1 1 This section describes the key characteristics of the proposed scheme and its construction. The proposed scheme comprises:

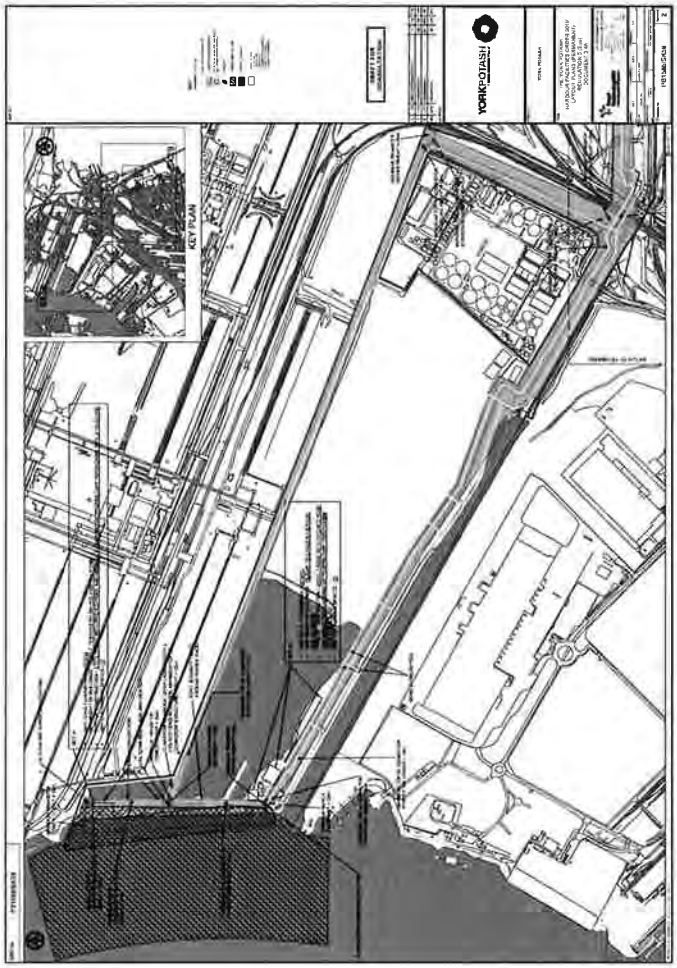
- a conveyor system between the port terminal and the MHF at Wilton[2];
- product storage facilities (surge bins) adjacent to the quay;
- a port terminal on the southern bank of the Tees estuary; and,
- capital dredging (i e deepening beyond the current maintained depth) of a section of the approach channel and to create a berth pocket to allow the maximum design vessels proposed access to the port terminal

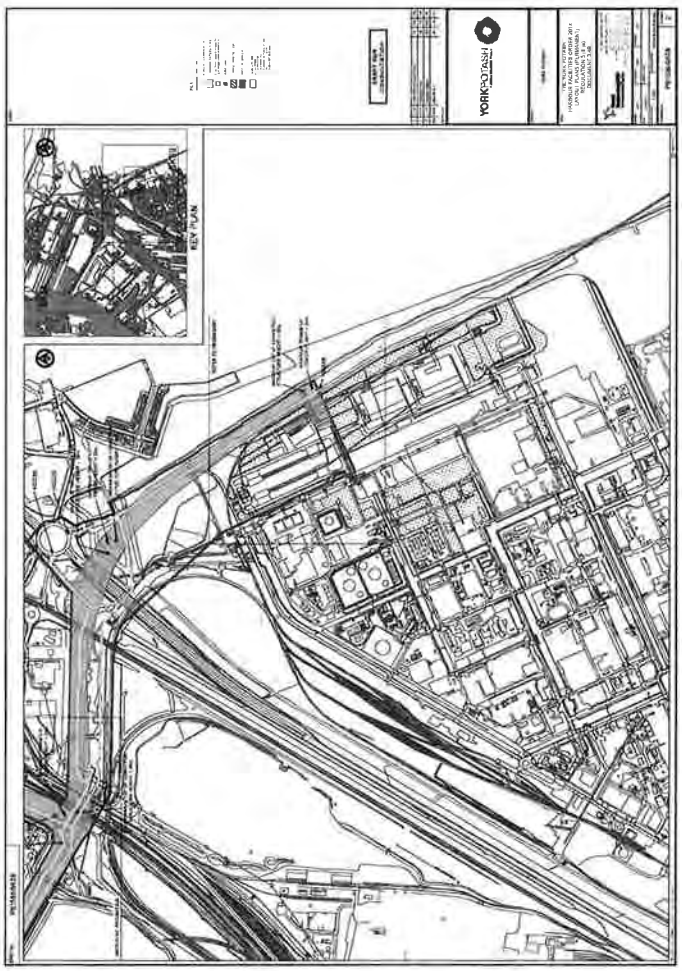
3 1 2 The concept design and proposed alignment of the conveyor system is currently being refined, however decisions on how the conveyor is proposed to interact with existing infrastructure (i e whether the conveyor would travel over, under or through existing roads, embankments, bridges and pipelines) have been made. The conveyor system would be installed within a conveyor route envelope, illustrated on **Drawing PB1586-SK58** and **PB1586-SK59**. Further detail regarding the conveyor system is provided in **Paragraphs 3.1.42** to **3.1.52**.

3 1 3 There is a requirement for facilities adjacent to the quay to temporarily store product that is delivered via the conveyor system (surge bin). It is proposed that two surge bins would be constructed for this purpose. These surge bins would be located along the landside frontage and dependent on the final arrangement of the export quay facilities and conveyor alignment may be located at either the northern or southern ends of the proposed port terminal or centrally (see **Drawing PB1586-SK58** and **PB1586-SK59**).

3 1 4 Two options are being considered for the quay construction within an overall envelope (see **Drawing PB1586-SK58**) – an open quay structure and a solid quay structure. In both cases, the development of the port terminal would be undertaken in two phases to provide the necessary export facilities that mirror the predicted increase in production from an initial 6 5mtpa to 13mtpa of product. In addition, three quay alignments are under consideration.

[2] In the Environmental Scoping Report (Royal HaskoningDHV, 2013), three options for the location of the MHF were presented. Options 1 and 2 included locating the MHF at RBT and SSI respectively. These options were subsequently discounted following further landowner negotiations, with the preferred option beinf to locate the MHF at Wilton (Option 3 in the Environmental Scoping Report).





3 1 5 Within the area that would require dredging in the current approach channel, the channel would be deepened from 10 4m below CD (bCD) to 14 1m bCD (to match the depth of the remainder of the approach channel downstream of this point to the mouth of the Tees). The approach channel dredging required would be the same for both the open quay structure and solid quay structure. It is proposed that dredging to 16m bCD would be undertaken to create the berth pocket.

Key parameters of the proposed quay

Quay length

3 1 6 As the design basis for the port terminal, the maximum design vessels proposed are 85,000DWT[3] with an overall length of 244m. The port terminal needs to be capable of accommodating the maximum design vessel at either berth although the constraints of the site mean that it may not be possible accommodate two maximum design vessels at the same time. The minimum required quay length to accommodate two maximum design vessels simultaneously with a spacing of approximately 25m between them, is 513m. In addition, either mooring dolphins or an extended quay length is required for fore and aft mooring points.

3 1 7 For an 85,000DWT vessel 244m long, the hatches will typically extend over approximately 190m. The length of rail required to allow the ship loaders to access all hatches across a single berth is approximately 258m. This includes an allowance for storage of a ship loader beyond the loading zone to accommodate for breakdowns/maintenance. Hence, the minimum required total quay length for two berths, including for crane buffers, is 540m.

3 1 8 The maximum quay length that could be developed along the Bran Sands frontage is estimated as 633m, although due to maintaining dredged areas within the site boundaries the useable length of quay by vessels will be less.

Quay width

3 1 9 The quay width is determined by the geometry of the equipment to be accommodated on the deck. The main items of equipment are the ship loader, with a rail gauge of between 12m and 70m, and the linked conveyor system.

3 1 10 Based on the equipment geometry and allowances for access, the overall quay width envelope is expected to be up to 65m.

Quay level

3 1 11 The level of the quay is set such that significant flooding or overtopping of the deck is not experienced during the design life of the facility.

[3] Deadweight tonnage

3.1.12 The maximum design water level based on the Highest Astronomical Tide (HAT) and anticipated sea level rise over the design life of the facility is +6.46m Chart Datum (CD). Typically a deck level approximately 2m above the high water level is sufficient for river berths where relatively low wave heights are experienced. Therefore, the estimated deck level of the structure is +8.45mCD.

Quay positioning

3.1.13 The concept design of the quay recognised that the positioning of the berth is constrained by the site boundary to the north and the river frontage line to the west. Operations at the Northumbria Water Ltd (NWL) Sludge Jetty ceased in 2009 when NWL changed from liquid sludge imports to dry imports. Phase 2 of the proposed scheme may ultimately involve the demolition of the NWL Jetty and dolphins, as it is anticipated that these structures would be within the footprint of the the fully developed Phase 2 berth.

3.1.14 Typically, the quay would be positioned as far out into the river as possible to take advantage of the deeper water near to the river channel in order to reduce dredging requirements or, in the case of the solid quay structure (see **Parapgraphs 3.1.23 to 3.1.28**), to balance the dredge and reclamation quantities.

3.1.15 In this case, the constraint relating to how far into the river the quay may be located is the river frontage line, which is defined by PD Teesport. The berth should also be orientated so that the predominant wind, wave and current have the least effects on the vessels, reducing mooring loads on the structure. In the river this typically means aligning the berth axis with the direction of water flow.

3.1.16 Given the above, the proposed quay line would be orientated approximately parallel to the river.

3.1.17 There are three alignment variations that are being considered for the quay line within the overall quay area envelope, shown on **Drawing PB1586-SK58**. Two of the quay alignment options are independent of the orientation of other adjacent quay structures. A variation on this alignment would enable a future extension of the Redcar Bulk Terminal (RBT) quay to result in the creation of a straight quay line, contiguous with the proposed YPL quay. It should be noted that the scheme proposed by YPL does not include for an extension of the RBT quay. The difference between the three alignments is not significant, with the latter alignment resulting in a marginally longer quay when compared with the alignments that are independent of the RBT quay.

Form of construction of the port terminal

Open quay structure

3.1.18 Under this option, the quay and access bridge structures would be suspended deck structures comprised of a reinforced concrete deck supported by approximately 200 driven steel tubular piles in Phase 1, with an additional 200 piles required for Phase 2. It is anticipated that the piles would be in the order of 0.9m diameter. The piles would support the concrete deck structures onto which the ship loader rails and supports for the conveyor would be fixed.

3.1.19 The quay structure footprint envelope is anticipated to be up to 85m wide by 280m long in Phase 1, increasing up to a total of 535m long in Phase 2. Access to the quay would be via approach bridge platform structures. Two of these access bridges would be constructed during Phase 1, allowing one to be used for the construction of Phase 2 whilst maintaining the other for operational access.

3.1.20 The storage capacity estimated to be required at the port is approximately 2000 tonnes. **Drawing PB1586-SK94** below shows cross sections of the open quay structure with a surge bin storage option.

3.1.21 It is estimated that one surge bin would be required for each conveyor and that these would be 7.5m in diameter and approximately 35m high. The conveyor system would need to be elevated to allow the product to be discharged into the top of the surge bins; the maximum height of the conveyor gallery is predicted to be approximately 20m. The foundation of the surge bins is proposed to be a reinforced concrete slab approximately 15m x 15m supported by piles.

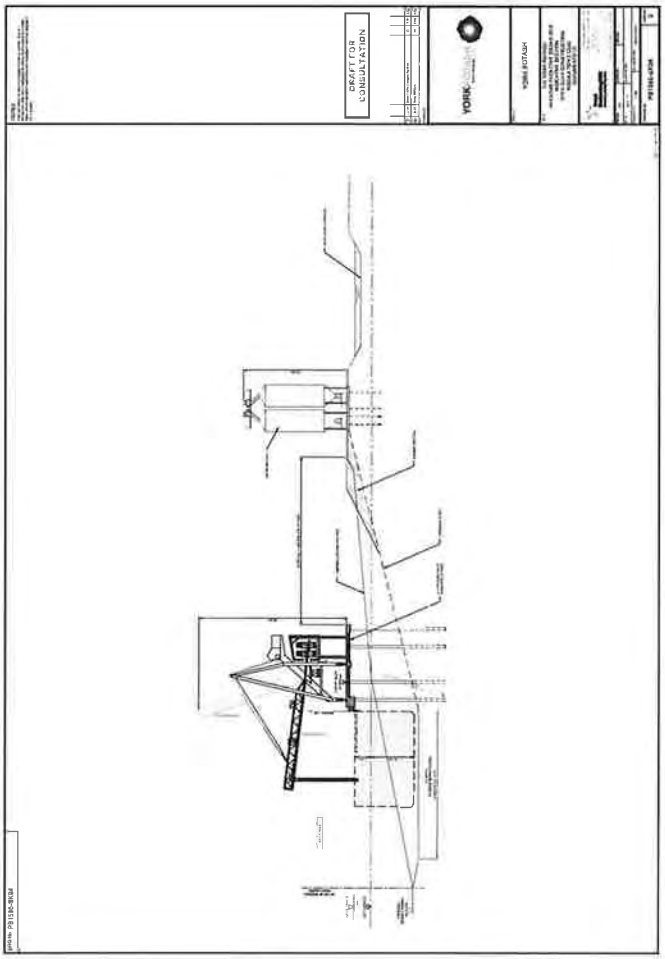
3.1.22 It is anticipated that in order to maintain the hydraulic connectivity between Bran Sands lagoon and the Tees estuary, the existing pipe which runs through the embankment between these two water features would be extended through the face of the revetment.

Solid quay structure

3.1.23 Under this option, the quay structure would be a combi-pile wall comprised of a line of steel tubular king piles linked by pairs of steel sheet piles. The king piles would connect via tie rods to a steel sheet pile anchor wall approximately 30 to 40m behind the berth line. The king piles would support a reinforced concrete cope beam onto which the waterside ship loader rails would be fixed. A piled beam would be required parallel to the cope beam to support the landside ship loader rails. The remaining area would be covered by a ground bearing concrete slab that would form the foundation for the conveying system.

3.1.24 For Phase 1, it is anticipated that the main wall would consist of 120 king piles (of approximately 2m diameter) with a plan length of approximately 180m of intermediate sheet piles. The anchor wall would consist of a plan length of approximately 210m of sheet piles. It is estimated that in the order of 40, 660mm diameter piles would be required for the cope beam to support the landside ship loader rails, installed between the tie rods that connect the king piles to the anchor wall.

3.1.25 For Phase 2, it is anticipated that the main wall would consist of an additional 90 king piles with a plan length of approximately 135m of intermediate sheet piles and the anchor wall would consist of an additional plan length of approximately 210m of sheet piles. A further 35, 660mm diameter piles would be required for the cope beam to support the landside ship loader rails.



3.1.26 The quay structure footprint envelope would be up to 85m wide by 280m long in Phase 1, increasing up to a total of 535m long in Phase 2. Access to the quay would be directly from the reclaimed area behind the quay wall.

3.1.27 The sizing of the surge bin storage facilities would be the same as described above for the open quay structure. **Drawing PB1586-SK92** shows cross sections of the solid quay structure with a surge bin storage option.

3.1.28 It is anticipated that in order to maintain the hydraulic connectivity between Bran Sands lagoon and the Tees estuary, the existing pipe which passes through the embankment between these two water features would be extended as the reclamation activities are being undertaken.

Dredging of the approach channel and berth pocket

Proposed dredge depth and volume (Phases 1 and 2)

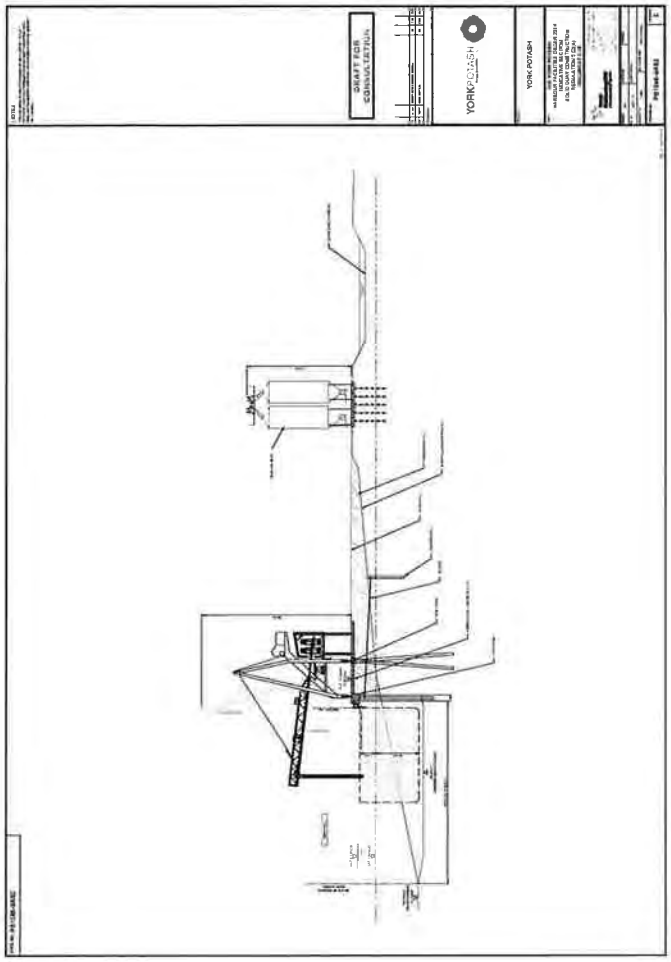
3.1.29 Capital dredging of the berth pocket (and approaches to the pocket) would be required in order to allow the maximum design vessels proposed access to the port terminal. This dredging would be undertaken in two phases and is linked to the phased construction of the quay. Dredging would also be required to create the stable slope beneath the quay for the open suspended deck option.

3.1.30 As part of the dredging for both Phase 1 and Phase 2, capital dredging would be required within the approach channel in order to provide the required access for vessels. The required extent of dredging is shown in **Drawing PB1586-SK58** and **Figure 3-1**.

3.1.31 Within the area that would require dredging in the current approach channel, the existing depth of the channel is 10.4m bCD. It is proposed that the approach channel in this area would be deepened to 14.1m bCD to match the depth of the remainder of the approach channel downstream of this point to the mouth of the Tees. The approach channel dredging required would be the same for both the open quay structure and solid quay structure.

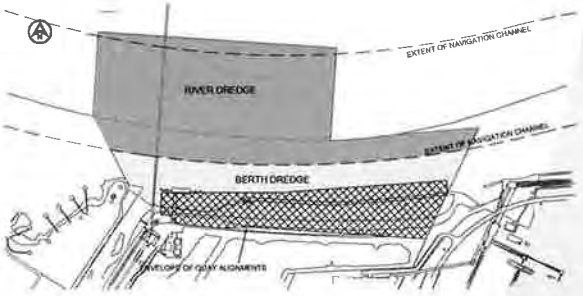
3.1.32 The existing level of the seabed within the footprint of the proposed berth pocket and between the proposed berth pocket and the shoreline varies between approximately 0.9m above CD and approximately 11.6m bCD. It is proposed that dredging to 16m bCD would be undertaken to create the berth pocket.

3.1.33 The total volume of material to be dredged is estimated at up to approximately 1.15Mm^3 to create the berth pocket and stable slope beneath the quay for the open suspended deck option. For the reclamation option, there is no requirement to create the stable slope and the dredge volume to create the berth pocket for this option would be approximately 700,000m^3. For both options, approximately 500,000m^3 of material would be dredged from the approach channel (100,000m^3 during Phase 1 and 400,000m^3 during Phase 2). The maximum dredge volume is therefore anticipated to be up to 1.65Mm^3 for the open quay structure and 1.2Mm^3 for the solid quay structure.



Royal HaskoningDHV

Figure 3-1 Outline of dredge footprint



Dredge material type and likely dredge plant required

3.1.34 The available geotechnical information suggests that the level of the top of the bedrock changes significantly along the Bran Sands river frontage, being at approximately 7.15m bCD at the upstream end (adjacent to the NWL Sludge Jetty) and at approximately 27.15m bCD at the downstream end. It is understood that the change in level occurs as a relatively steep step at approximately the centre point of the Bran Sands river frontage. The exact position of the change in bedrock level will be confirmed by undertaking ground investigation works during the detailed design phase.

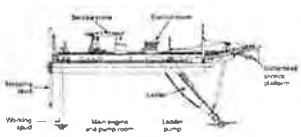
3.1.35 In the downstream section, existing borehole logs indicate that the required dredging would be entirely within the silts, sands, gravels and clays. In the upstream section, the dredging would generally require the removal of rock (marl). Consequently, the majority of the Phase 1 dredging is understood to be required in the sands and gravels and is likely to be undertaken by Trailing Suction Hopper Dredger (TSHD) (see **Figure 3-2**) due to the relatively large quantity of dredging. It is proposed that a backhoe dredger would be used for the harder marl for Phase 1. A Cutter Suction Dredger (CSD) could be used to dredge the marl, but this is considered unlikely for Phase 1 given the expected small quantity of marl that would require dredging.

Royal HaskoningDHV

Figure 3-2 Trailing Suction Hopper Dredger

The majority of the Phase 2 dredging is likely to be in the marls (rock). It is therefore proposed that Phase 2 dredging works would be undertaken by a CSD (similar to that illustrated in **Figure 3-3**). Dependent on the strength of the rock, it may be possible to dredge some of the material using a large backhoe dredger.

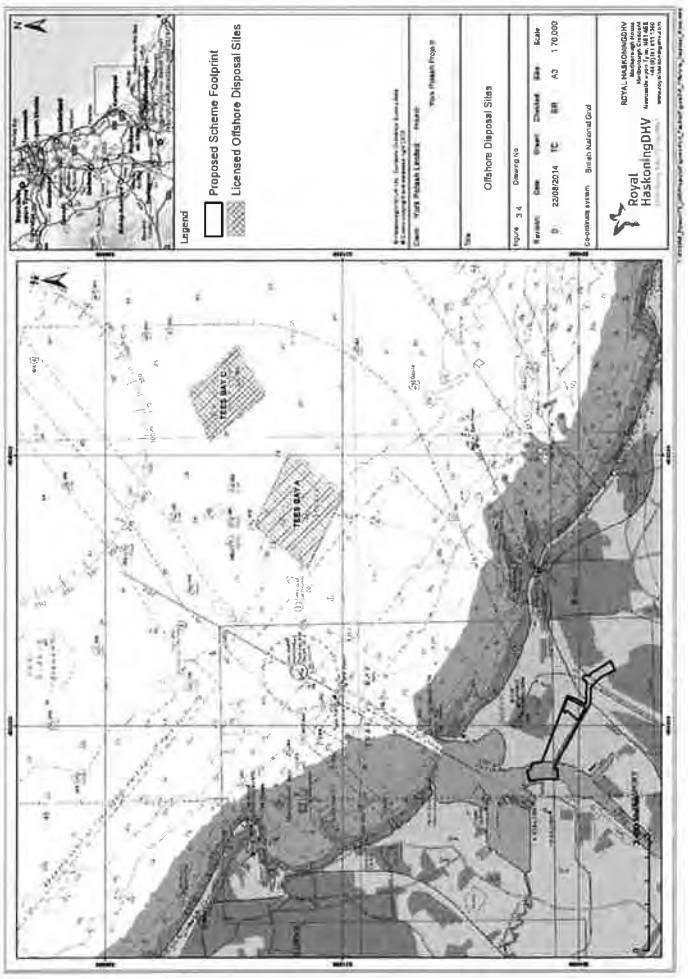
Figure 3-3 Cutter Suction Dredger



Disposal of dredged material

3.1.36 It is possible that the dredged material could be used within the reclamation area for the solid quay structure if it is found to be geotechnically and chemically suitable for this use (and should this option be progressed). Any material that cannot be used within the construction works is likely to be deposited at offshore dredged material disposal sites (subject to the assessment of chemical quality). However, it is a requirement of the marine licensing process that other options to manage the dredged sediment (either onshore or offshore) are considered prior to allowing material to be disposed of at sea. This is discussed further in **Section 3.4**.

3.1.37 There are two active disposal sites that could potentially accept dredged material: Tees Bay A (TY 160) and Tees Bay C (TY 150) (see **Figure 3-4**). Tees Bay C (the offshore site) has predominantly been used in the past for capital dredged material, but has received quantities of maintenance material in some years. Tees Bay A (the site closest to the shore) has been used in the past for soft non-cohesive maintenance material (ABPmer, 2005, cited in Royal Haskoning, 2006).



3.1.38 DEFRA records show that the volume of material disposed of at Tees Bay A fluctuated from 0.3 million to 2.4 million wet tonnes over a 15 year period, with a noticeable drop off in volumes post-1996. The largest volume deposited between 1996 and 2005 was in 2002, when 1.8 million wet tonnes were deposited (ABPmer, 2005, cited in Royal Haskoning, 2006).

3.1.39 DEFRA records from Tees Bay C show periodic small scale usage with a peak volume deposited in 1999 totalled some 1.9 million wet tonnes. However, the usual yearly volume is 0.1 million wet tonnes, with some years showing no usage at all.

Revetment along river embankment

3.1.40 The open quay structure would require the installation of a revetment on the re-graded slope. The revetment would either be placed on the re-graded slope prior to installation of piles, or placed following installation of the piles. The extent of intertidal area that would be affected by the revetment has been minimised to that required to create a stable slope. A revetment would not be required for the solid quay structure option.

3.1.41 It is anticipated that in order to maintain the hydraulic connectivity between Bran Sands lagoon and the Tees estuary, the existing pipe which runs through the embankment between these two water features would be extended as the revetment is being installed.

Conveyor system

3.1.42 As discussed within **Section 1.1**, the concept design and proposed alignment of the conveyor system is currently being refined, however decisions on how the conveyor would interact with existing infrastructure have been made. This PER has assessed (where possible) the likely environmental impacts arising from installation of a closed conveyor system within a conveyor route envelope from the MHF to the port terminal (as shown on **Drawing PB1586-SK58** and **PB1586-SK59**).

3.1.43 The conveyor system is proposed to consist of two parallel belt conveyors running in both combined and separate (depending on location) elevated conveyor bridges. The conveyor bridges are proposed to be enclosed from the Wilton Plant until the crossing of the A1085. After this point the conveyors will run on open trestles (except at crossings). The enclosed conveyor bridge would be approximately 4m in height.

3.1.44 The elevated conveyor bridges are proposed to pass over all existing infrastructure between the MHF and the port terminal, excluding the National Grid Power line, which is proposed to be under-passed. The working assumption is that the conveyor system would be designed and engineered in such a way that it would not adversely impact the operation of existing assets. The proposed route of the conveyor is described below.

3.1.45 The conveyor system would depart from the transfer tower (located to the east of the MHF) at Wilton in a north-westerly direction in a conveyor bridge. The conveyor system would be inclined to gain a maximum height of approximately 25m (at the top of the conveyor, including the conveyor bridge) to

feed into the transfer tower to the south of the A1085 (also at a maximum height of 25m). From there a second inclined conveyor bridge would run with a maximum height of 25m. After the A1085 crossing the conveyor is likely to switch to an open trestle structure.

3.1.46 The conveyor bridges would continue to bend westwards and pass over the Hot Metal rail bridge, remaining at a maximum height of approximately 25m.

3.1.47 It is proposed that the two conveyor bridges would continue westwards, parallel to and to the north of the existing pipe infrastructure. The conveyor bridges would pass under the National Grid power lines, over the SSI road bridge and the National Railway bridge. At these crossings, the conveyor is likely to run through fully enclosed bridge sections.

3.1.48 The conveyor route envelope from the MHF to the port terminal splits at the south-eastern corner of the Bran Sands landfill site, resulting in an envelope which runs either along the northern and southern boundary of the landfill site. Either route may require a transfer tower (at a maximum height of 25m) after the crossing of the National Railway bridge. The conveyor behind the transfer tower would subsequently decline to a maximum height of 19m until the conveyor reaches the next transfer tower at Bran Sands.

3.1.49 The southern route continues in a north-westerly direction towards a transfer tower or surge bin at the southern end of the port, at a maximum height of 19m for the majority of its length. The surge bin or transfer tower at this location would be a maximum height of 35m, meaning that the conveyor system would rise to a height of 35m to feed into the transfer tower / surge bin from the top. Supports for the conveyor bridges would be required within the upstream section of Dabholm Gut for the southern route.

3.1.50 The northern route would depart from the transfer tower in a northerly direction to another transfer tower north-east of the NWL sewage treatment works. From this transfer tower, the conveyor envelope would continue westward to a surge bin (with a maximum height of 35m) or transfer tower (with a maximum height of 25m) in approximately the centre of the proposed port terminal and a transfer tower (with a maximum height of 25m) at the northern end of the port terminal. For the purposes of assessment, it is assumed that the conveyor crossing over the Bran Sands lagoon 'finger' would require two supporting foundations within the lagoon; the need for these supports will be confirmed as the design of the conveyor evolves.

3.1.51 The transfer towers or surge bins would feed a conveyor system which in turn would feed the ship loader system. The ship loader conveyor system would consist of conveyor bridges, conveyor galleries and transfer towers (depending on the final design of the port terminal).

3.1.52 Illustrative images of the conveyor (and design options) as it crosses the A1085 road and a view of the conveyor past Dormanstown are presented in **Images 3-1 to 3-6**.

Image 3-1 **Conveyor crossing the A1085 road (looking towards Lord McGowan Bridge): 'simple' option**

Image 3-2 **Conveyor crossing the A1085 road (looking from Lord McGowan Bridge): 'simple' option**

Image 3-3 **Conveyor crossing the A1085 road (looking towards Lord McGowan Bridge): 'truss' option**

Image 3-4 **Conveyor crossing the A1085 road (looking from Lord McGowan Bridge): 'truss' option**

Image 3-5 **Conveyor between the MHF and the A1085 crossing, passing Dormanstown**

Image 3-6 **Enlarged section of Image 3-5 (conveyor passing Dormanstown)**

Personnel

3.1.53 It is anticipated that the construction phase of the proposed scheme (both Phase 1 and Phase 2) would employ the following personnel:

- Staff (management and technical specialists / engineers): 15 to 20.
- Labour and plant operatives: 50 to 70.
- Mechanical and electrical engineers: 20.

3.1.54 It is anticipated that five to 10 operatives would be required to undertake the dredging works.

Predicted plant and vehicle requirements

3.1.55 The following plant is envisaged to be required for the construction works:

- ready mix wagons;
- barges;
- low loaders;
- articulated flat beds;
- articulated bulk materials;
- private vehicles;
- earth moving equipment and lorries; and,
- cranes.

3.1.56 A summary of the construction related traffic movements per month for Phase 1 and Phase 2 for the open quay structure is provided below within **Table 3-1** and **Table 3-2** respectively. Traffic movements for the solid quay structure would be less than those associated with the construction of the open quay structure and, therefore, only these movements are presented as they represent a worse case.

Site access, transport of materials to site and parking

Site access and transportation of construction materials

3.1.57 Transport routes to the site are expected to predominately make use of major existing roads in the wider area. The proposed route to access the site from the A19 is via the A174, A1053 and then onto the A1085 trunk road. Beyond the major road network, access to the construction areas for the port terminal, conveyor system and surge bins would be via the A1085 roundabout. The A1085 roundabout would be used to provide access to both the Bran Sands Service Corridor Access Road as well as the Bran Sands Service Corridor Access Track. The Access Road and Access Track would be used to enable construction of the port terminal and conveyor system along the southern length of Bran Sands lagoon. The Access Track and Access Road would provide vehicular access to the northern section of Bran Sands lagoon, via the access road to the immediate south-east of the NWL sewage treatment works. This would enable construction of the conveyor system within the northern section of the conveyor route envelope.

3.1.58 The proposed construction phase access routes are shown on **Drawing PB1586-SK58** and **PB1586-K59**.

3.1.59 The Bran Sands Service Corridor Access Road runs from the Wilton site along the southern boundary of the proposed scheme footprint to the NWL Sludge Jetty. The Access Road is of tarmac construction and varies between 5m and 9m in width. A number of designated passing places are present along the route of the Access Road. The Bran Sands Service Corridor Access Track effectively runs alongside the Access Road, however, it is separated from the Access Road by the pipelines which feed from the Wilton site. The Access Track is of a crushed stone construction.

3.1.60 It is proposed that the combi-piles required for the solid quay structure only would be delivered by ship rather than vehicles using the existing road network. It is anticipated that less than five shipments would be required to transport the combi-piles. It has been assumed that all other construction materials and machinery would be delivered using the existing road network.

3.1.61 A load out facility complete with a land based crane in close proximity to the location of the proposed scheme would be required to transport construction equipment to the site. Potential locations include:

- Teesport Estate:
  - Riverside Ro-Ro;
  - Container Terminal;
  - NWL jetty;
  - Bulk Terminal; and,
  - Ferry Terminal.
- Teesport Commerce Park:
  - Heavy Lift Quay;
  - East West Quay; and,
  - Cargo Fleet Wharf.

3.1.62 Given its proximity to the site of the port terminal, the NWL jetty is the most preferable facility for import of construction materials and equipment. This would require the removal of the existing deck equipment (4 unloading arms, transfer pipework, power units and, potentially, the concrete plinths below the unloading arms). It is also expected that the adjacent berthing pocket would require maintenance dredging.

3.1.63 Construction material would be bought into the NWL jetty on barge vessels with equipment and materials loaded onto trucks for delivery to site.

Table 3-1 **Summary of maximum daily vehicle movements proposed during construction of Phase 1 of the proposed scheme**

Vehicle class	Month																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Concrete trucks (HGVs)	0	0	0	200	442	442	367	367	167	167	0	0	0	0	0	0	0
Cars	660	2,640	3,135	4,785	5,775	5,775	4,950	5,445	5,445	5,445	4,455	4,455	4,455	4,455	3,795	1,980	660
Deliveries (HGVs)	20	20	80	193	148	148	26	26.5	12.5	12.5	29	29	29	29	16.5	0	0
Abnormal loads	0	0	0	0	0	0	2	2	2	2	0	0	0	0	0	0	0
Total per month	680	2,660	3,215	5,168	6,364	6,364	5,343	5,842	5,626	5,626	4,484	4,484	4,484	4,484	3,812	1,980	660
Total movements per day	34	133	160	258	318	318	267	292	281	281	224	224	224	224	190	99	33

Table 3-2 **Summary of maximum daily vehicle movements proposed during construction of Phase 2 of the proposed scheme**

Vehicle class	Month																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Concrete trucks (HGVs)	0	0	0	200	442	442	367	367	167	167	0	0	0	0	0	0	0
Cars	660	2,640	3,135	4,785	5,775	5,775	4,950	5,445	5,445	5,445	4,455	4,455	4,455	4,455	3,795	1,980	660
Deliveries (HGVs)	20	20	80	193	148	148	26	26.5	12.5	12.5	29	29	29	29	16.5	0	0
Abnormal loads	0	0	0	0	0	0	0	2	2	2	0	0	0	0	0	0	0
Total per month	680	2,660	3,215	5,168	6,364	6,364	5,343	5,842	5,626	5,626	4,484	4,484	4,484	4,484	3,812	1,980	660
Total movements per day	34	133	160	258	318	318	257	252	281	281	224	224	224	224	190	99	33

Parking

3 1 64 During the construction works for Phase 1, a local parking capacity for approximately 100 to 150 cars would be required (requiring approximately 2,400m^2 to 3,600m^2), depending on the sequencing of the works, as well as the availability of project transport and public transport. During Phase 2, a local parking capacity for approximately 50 to 100 cars would be required (requiring approximately 1,200m^2 to 2,400m^2). The area identified for parking during Phases 1 and 2 is shown on Drawing PB1586-SK58 and PB1586-SK59

Site compound and laydown area

3 1 65 A site compound of approximately 200m x 150m would be required with a laydown area for piles of approximately 200m x 50m. The site compound is proposed to be located on the Bran Sands landfill site (discussed within **Section 6**). The proposed locations of these areas would be the same for Phases 1 and 2 and are shown in **Drawing PB1586-SK56** and **PB1586-SK57**).

3.1.66 In order to prepare the surface for the installation of the site compound, the following steps are envisaged (no piling would be undertaken on the landfill):

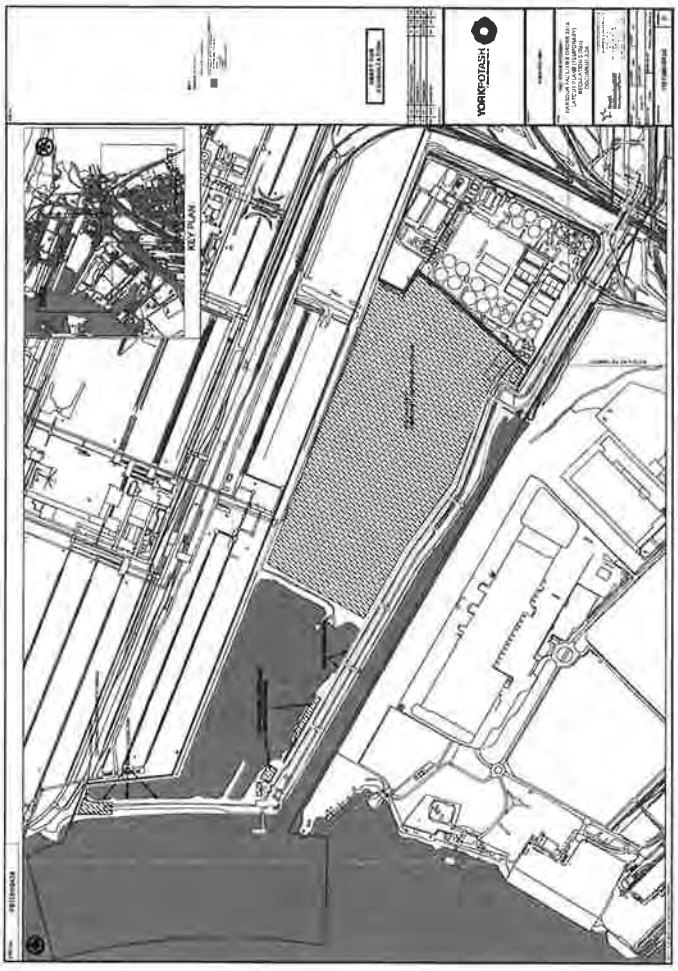
- Installation of a geotextile layer
- Placement of crushed rock above the geotextile
- Rolling and compressing the crushed rock to provide a working surface

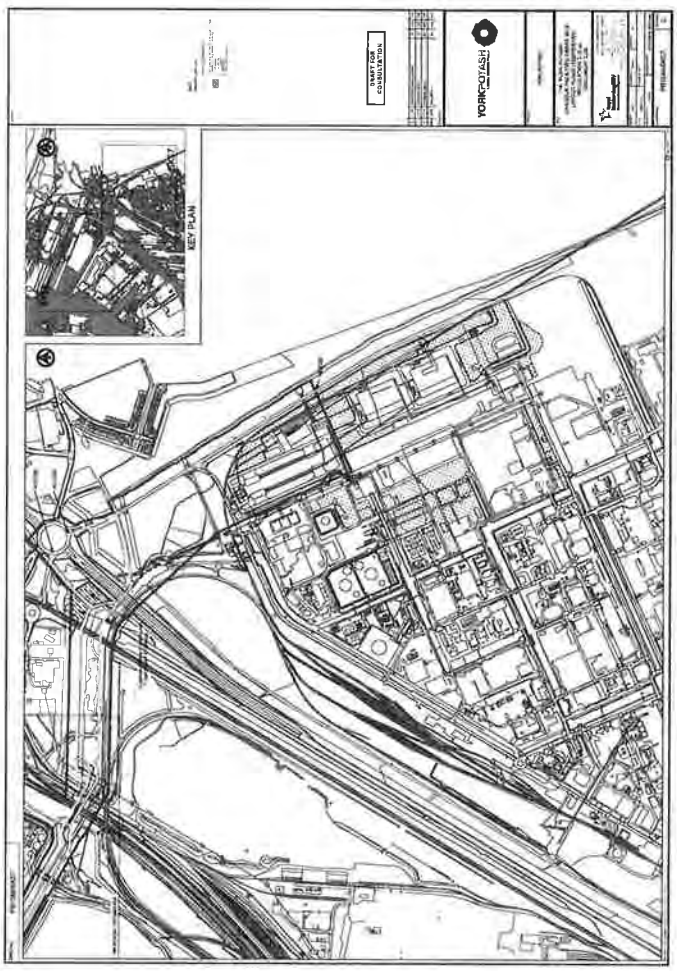
3 1 67 Surface water would be managed through the installation of a geotextile or installation of stone filled drainage channels in order to direct surface water into a collection system around the perimeter of the compound. Surface water would then be passed through an interceptor prior to discharging into Bran Sands lagoon.

3 1 68 The site compound is anticipated to provide the following:

- office facilities;
- storage facilities;
- welfare facilities;
- car parking;
- materials storage;
- equipment storage;
- plant storage; and,
- pre-assembly / fabrication areas (dependant on the construction methodology).

3 1 69 The office, storage and welfare facilities would be housed in portable cabins. Typically, these buildings would be installed onto pre-prepared levelled concrete footings.





Construction phasing and programme

3 1 70 It is envisaged that the construction sequence for the open quay structure, solid quay structure and installation of storage surge bins would comprise the following elements:

a) Open quay structure:

- mobilisation (including dredgers);
- demolitions and site preparation;
- dredging of the river berths;
- installation on the piles using floating plant;
- construction of the concrete deck;
- installation of fixtures and fittings;
- revetment of the river embankment;
- installation of mechanical and electrical services;
- installation of materials handling plant on the quay;
- commissioning; and,
- demobilisation

b) Solid quay structure:

- mobilisation (including dredgers);
- demolitions and site preparation;
- installation on the combi-pile wall using floating plant;
- partial reclamation;
- installation of anchor wall and crane beam using landside plant;
- remaining reclamation behind combi-wall;
- construction of the concrete deck;
- dredging of the river berths;
- installation of fixtures and fittings;
- installation of Mechanical and Electrical services;
- installation of materials handling plant on the quay;
- commissioning; and,
- demobilisation

c) Storage surge bins at the port terminal:

- mobilisation;
- demolitions and site preparation;
- raise and improve ground;
- installation on the piled foundation;
- construction of the storage surge bins;
- fitting out of the storage surge bins;

- commissioning; and,
- demobilisation

d) Conveyor system:

- mobilisation;
- demolitions and site preparations;
- raise and improve ground;
- piling, placement of (prefabricated) footings and realisation of foundations;
- erection of transfer towers and major support structures for conveyor bridges and galleries;
- erection of conveyor bridge supports;
- pre-assembly of conveyor bridges;
- installation of assembled conveyor bridge and gallery sections;
- installation of additional walkways and access platforms;
- installation of drives, idler frames, idlers, pulleys, tension stations and instrumentation and control components;
- installation of instrumental and control cables;
- pulling and splicing/vulcanisation of the conveyor belt;
- commissioning; and,
- demobilisation.

Construction programme

3.1.71 The current programme of works proposes that mobilisation of construction plant, machinery and personnel to site is to commence in January 2017 for a period of 2 months. Phase 2 works are programmed to commence within 6 years of completion of Phase 1.

3.1.72 The minimum construction period for Phase 1 works is 17 months for both forms of quay structure. The minimum construction period for Phase 2 works is also 17 months for both forms of quay structure. A breakdown of the durations of key construction elements for both the open and solid quay structure is provided in **Table 3-3** and **Table 3-4**.

Table 3-3 Summary of durations for each key construction activity required as part of the proposed open quay structure

Activity	Phase 1	Phase 2
Piling works (Marine)	13 weeks	12 weeks
Deck construction	29 weeks	26 weeks
Dredging works	14 weeks	12 weeks

Table 3-4 Summary of durations for each key construction activity required as part of the proposed solid quay structure

Activity	Phase 1	Phase 2
Piling works (Marine)	19 weeks	17 weeks
Deck (paving / pavement) construction	10 weeks	8 weeks
Dredging works	13 weeks	10 weeks

3.2 Description of the operational phase

Throughput and vessel mix

3.2.1 The port terminal has been designed for the throughputs shown in **Table 3-5** over the time periods indicated.

Table 3-5 Proposed throughputs of the port terminal during Phase 1 and Phase 2 of the proposed scheme

Operational phase	Operation period following end of construction	Throughput
Phase 1	0 to 6 years	6.5mtpa
Phase 2	6 to 50 years	13mtpa

3.2.2 Vessels using the port terminal would be bulk carriers up to 85,000DWT. **Table 3-6** summarises the anticipated vessel numbers required to achieve the Phase 1 and Phase 2 product throughput. It can be seen that during Phase 2, it is estimated that there would be approximately 191 vessel calls per year at the port terminal.

Table 3-6 Vessel numbers required to transport the anticipated volumes of product from the port terminal during Phase 1 and Phase 2 of the proposed scheme

Vessel size (DWT)	Vessel numbers anticipated in Phase 1 (per year)	Vessel numbers anticipated in Phase 2 (per year)
55,000	30	59
65,000	25	50
75,000	22	44
85,000	19	38

3.2.3 In the first 2 years of operation it is expected that there will be a low production volume of polyhalite and it may be preferable for YPL to export this through a temporary facility located at the existing NWL jetty. To enable this, new equipment would need to be installed to the unloading platform of the jetty. Vessels likely to export polyhalite during this period are small coasters and/or barges of up to 5,000 DWT. In order to maintain safe mooring of the vessel during all loading positions, it is expected that additional (temporary) spacing pontoons would be required at the existing outer mooring dolphin locations. Furthermore, an additional mooring dolphin may be required to the south side of the NWL jetty.

3.2.4 The polyhalite would be conveyed to the temporary by the newly built conveyor. The transfer tower that would connect the conveyor and the future tripper conveyor is also assumed to have been constructed at this time. From this transfer tower the polyhalite would be transferred onto a temporary conveyor placed on the access bridge of the NWL jetty and loaded into the vessels with a temporary (mobile) ship loader. Alternatively, the polyhalite could be transported to the waterside area utilising trucks. Figure 3-5 shows a sketch of the potential arrangement on the NWL jetty.

Personnel

3.2.5 YPL predicts an operational staff of six per shift during Phase 1, with a total of 26 operational staff over the duration of one day. It is predicted that there would be eight operational staff per shift during Phase 2, with a total of 34 operational staff over the duration of one day.

Access and parking

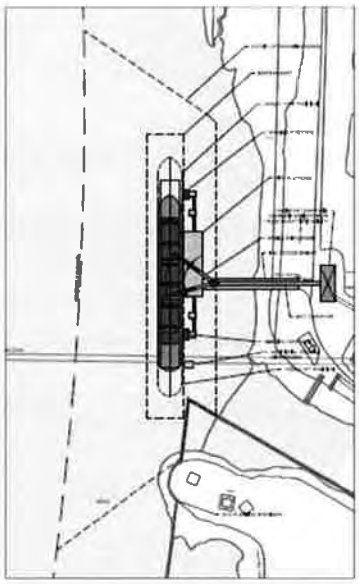
3.2.6 During the operational phase, local parking capacity for approximately 10 cars is envisaged. There is sufficient area available for the required parking provision at the location of the proposed port terminal and around the proposed storage surge bins. Operational phase access to the habour facility would be gained from the Bran Sands Access Road and / or Bran Sands Access Track.

Maintenance dredging

3.2.7 There is an existing requirement for maintenance dredging of the approach channel and various berth pockets in the Tees estuary. The existing maintenance dredging regime is implemented and managed by PD Teesport and the locations, volumes and frequency of dredging are well recorded.

3.2.8 As a result of the proposed scheme it is envisaged that the newly deepened sections of berth pocket and channel would need to be incorporated into the existing maintenance dredging strategy. The material from maintenance dredging would be disposed of at the existing disposal site within Tees Bay, as currently occurs. Any maintenance dredging requirements within the proposed dredge areas would be undertaken using standard PD Teesport maintenance dredging plant and procedures.

Figure 3-5 Layout of Temporary Ship Loading Equipment at the NWL Jetty



Waste water management

3.2.9 It is proposed that waste water generated from the welfare facilities would be treated on site in a treatment facility to be installed below ground. The treated water would be discharged into the River Tees.

3.3 Description of the decommissioning phase

3.3.1 The proposed port terminal is anticipated to be a long term infrastructure proposal, with no plans to decommission the terminal. As such, decommissioning of this aspect of the proposed harbour facility has not been considered further.

3.3.2 There is, however, a decommissioning plan for the proposed conveyor system from the MHF to the port terminal. The decommissioning of the conveyor system would comprise the complete removal of site infrastructure (including site wide utilities, concrete / steel structures, platforms, foundations and drainage systems) and remedial works in order to allow the site surfaces to blend into the surrounding environment. It would be the intention to ensure that materials are kept on site and used within the restoration works, where possible. Materials which are taken off-site would be recycled if suitable.

3.3.3 The information within **Table 3-7** provides a summary of the decommissioning works anticipated to be required for the conveyor system.

Table 3-7 Summary of decommissioning works for the conveyor system

Element of conveyor system	Decommissioning works
Conveyors	• Making safe power supplies to the mechanical conveyors. • Removal of any potential contaminants (e.g. gearbox oil) from site. • Disconnecting and removing electrical and control cables and removing from site. • Dismantling of mechanical conveyor motors and components and removal from site.
Conveyor platform and structure	• Removal of the conveyor belt. • De-connect walkways, conveyor bridges and support and lift by crane onto lorries for recycling off-site. • Breaking and crushing of concrete superstructure elements for re-use on or offsite or recycling.
Conveyor foundations	• Excavating the ground surface to expose the foundations. • Breaking foundations using a mechanical breaker prior to crushing for either on or offsite re-use or recycling.
Earthworks	• Filling voids from the conveyor platform foundations with appropriate backfill material. • Reinstatement of the ground surface to its previous condition.
Ancillary buildings	• Removing all buildings and foundations up to 2m below ground level or to rock head. • Any demolition material suitable for backfilling will be crushed and re-used.
Utilities	• Removing all utility apparatus and utility service trenches. • Reinstating service trenches.
Fencing	• Removing security fencing and transporting off-site for potential re-use. • Agricultural boundary fencing demarking the site boundary will be maintained.

3.4 Consideration of alternative options

3.4.1 As discussed above, there are elements of the proposed scheme for which options are being considered (that is, the port terminal form of construction (open or solid quay), quay alignment, and the conveyor system). These alternatives or options for the proposed scheme design have been assessed within this PER.

3.4.2 In addition, YPL considered the use of alternative ports along the eastern and north-eastern coast of England, prior to determining that a port in the Tees estuary would be the most suitable export facility; as well as considering alternative frontage locations. These alternatives are discussed briefly below.

Alternative ports for the marine terminal

3.4.3 The port at Hull was considered as an alternative solution; however, this would involve the MTS transporting the product approximately twice the distance from the minehead to the export facility as that required to export from Teesside (with greater associated disruption). The MTS would also be required to cross the Humber.

3.4.4 The port at Whitby was also considered for the export of product. However, this port is too small to accommodate the facilities required to export the planned volumes of polyhalite product. Whitby port can only accommodate fishing trawlers rather than large shipping vessels required as part of the proposed schemes.

3.4.5 Given this high level assessment, Teesport was selected as the preferred location for the export facility.

Alternative frontages considered within the Tees estuary to construct the marine terminal

3.4.6 Once the Tees estuary was confirmed as the preferred export location, YPL considered a number of different frontages within the Tees estuary for the marine terminal. Other potential locations which were considered prior to selecting Bran Sands as the preferred location for the marine terminal comprised the Northern Gateway Container Terminal (NGCT), Queen Elizabeth II Berth (QEII) and No.1 Quay within Tees Dock.

3.4.7 The consented (but not yet constructed) NGCT is a proposed container terminal on the southern bank of the Tees estuary. YPL has determined that the use of containers as a means of export of the product is not economically sustainable as a business case for the proposed export volumes. As such, this option was ruled out from further consideration.

3.4.8 No.1 Quay (owned by PD Teesport) has also been discounted as a potential option as PD Ports has indicated that it has other aspirations for the quay. The QEII Berth was discounted on technical grounds by YPL, as it is not possible to extend the berth to a size which would enable the export of 13mtpa of product.

Alternative designs and layouts for the storage of product at the port terminal

3.4.9 YPL initially considered the use of a flat storage shed immediately landward of the proposed port terminal to cater for hatch changes and other ship loading interruptions, prior to selecting the use of surge bins for this purpose. The proposed use of surge bins means that there is no requirement for the partial reclamation of Bran Sands lagoon, which would have been the case for a storage shed, which would have a significantly larger footprint than the surge bins.

Alternative options for disposal of dredged material

3.4.10 As part of the licencing process for the disposal of dredged material it is necessary to seek alternative uses for the material, with disposal at sea being the least preferred option. Alternative uses can include habitat creation or improvement and use in reclamation projects.

3.4.11 Capital dredged material, which typically is comprised of relatively coarse material compared to maintenance dredged material, is more suited to beneficial use as its behaviour once deposited is more predictable. In contrast, the fine material arising from maintenance dredging is less likely to remain at the disposal site and its potential for detrimental indirect ecological effects is increased (Cefas, 2011).

3.4.12 The options that have been identified in this case and will be considered in full during the EIA process with regard to the disposal of dredged material include:

- re-use of dredged material for reclamation purposes as part of the proposed scheme (for the solid quay option); and,
- habitat creation within the Tees estuary.

3.4.13 A full assessment of alternative options for the use of the dredged arisings is to be undertaken within the EIA once the chemical and physical properties of the dredged material are known.

Alternative forms of transport to the construction site

3.4.14 Sea routes present a realistic alternative (to road) by which to transport construction materials and equipment to the construction site. As noted above, it is assumed that combi-piles for the solid quay structure would be delivered by ship.

3.4.15 The method for transporting construction materials and plant is largely dependent on the contractor's preferred methodology. Hence other plant and materials could also be transported to the site by sea. However, the assessment presented within this PER has been based on transporting all construction material to the proposed scheme footprint using the existing road network, with the exception of the combi-piles that would be required for the solid quay structure option, on a precautionary basis.

Alternative alignments for the conveyor system

3.4.16 A total of 10 alignments for the overland conveyor were considered prior to selecting the preferred route. Four of the 10 options considered would travel underneath existing infrastructure, whilst the remaining six options would travel over infrastructure.

3.4.17 Consultation with RCBC identified that the Sembcorp Utility corridor has a significant flood risk (Class 3 risk). It is considered that additional tunnels (which would be required to install options one to four) would increase flood ingress risk; such a risk was not acceptable to RCBC (in principal) and therefore options one to four were dismissed on technical grounds.

3.4.18 Options six to 10 would all cross over the A1085 and would therefore be acceptable to RCBC from a flood risk perspective. However, consultation with RCBC also identified that the preferred location for the conveyour route to cross over the A1085 would be at a central point between the A1085 roundabout and Lord McGowan Bridge. Option 7 crosses the A1085 at this location, and was therefore selected as the preferred route from the MHF to the port terminal.

4 APPROACH TO THE ENVIRONMENTAL IMPACT ASSESSMENT

4.1 Introduction

4.1.1 The purpose of EIA is to provide an independent assessment of a project's potential environmental impacts to enable authorities, and the public, to understand the potential impacts of the project before making decisions on whether consent for the development should be granted.

4.1.2 This section sets out the approach for the assessment of impacts which has been adopted within this PER (where possible), and the approach that will be adopted during the EIA and presented within the ES for the proposed scheme. In summary, this section presents:

- The EIA process.
- A summary of the consultation undertaken in relation to the proposed scheme and how issues raised have been (and will be) addressed through the EIA process.
- The results of the scoping exercise undertaken to define the issues to be addressed by the EIA process and the approach to be taken to the assessment of these issues;
- The approach adopted to define the baseline environment (specific details are provided for each environmental topic considered in the relevant chapter).
- The generic approach taken to assess potential impacts, including the evaluation of significance (where a different approach has been adopted for a specific topic, this is set out in the relevant chapter).
- The generic approach taken to the derivation of mitigation measures and the assessment of residual impacts.
- The approach taken to the assessment of in-combination (YPP) and cumulative (other plans and projects) impacts.

4.2 Environmental Impact Assessment guidance

4.2.1 The EIA is being undertaken in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (as amended) and takes into account key policies, legislation, guidance and advice, including the following:

- The National Planning Policy Framework (NPPF), 2012;
- The National Planning Policy Guidance (NPPG), 2014;
- The Conservation of Habitats and Species Regulations 2010;
- The Wildlife and Countryside Act 1981;
- Department for Communities and Local Government (DCLG) "Environmental Impact Assessment: A Guide to Good Practice and Procedures" (2006);
- Institute of Ecology and Environmental Management (IEEM) "*Guidelines for Ecological Impact Assessment in the United Kingdom*" (2006);
- Institute of Environmental Management & Assessment (IEMA) "*Guidelines for Environmental Impact Assessment*" (2004); and,

- Landscape Institute and the Institute of Environmental Management and Assessment (IEMA) "*Guidelines for Landscape and Visual Impact Assessment*" 3rd Edition (2013).

4.2.2 It is noted that this list of guidance is not exhaustive and new guidance is frequently published. The EIA will draw on all available relevant guidance as it develops. The relevant guidance adopted for the assessment of each environmental parameter is described in the relevant topic chapter.

4.3 The Environmental Impact Assessment process

4.3.1 EIA is an iterative tool for systematically examining and assessing the impacts and effects of the construction, operation and decommissioning phases of the proposed scheme on the environment. The formal reporting mechanism for an EIA is the ES. In accordance with Schedule 4, Part 1 of the EIA Regulations, the ES should include such information as is reasonably required to assess the likely significant environmental effects of the proposed scheme and which the applicant can reasonably be required to compile, including (information that *must* be provided, in line with Schedule 4, Part 2, is shown in **bold**):

- **A description of the development.**
- **An outline of the main alternatives studied by the applicant and an indication of the main reasons for the applicant's choice, taking into account the environmental effects.**
- **The data required to identify and assess the main effects, which the development is likely to have on the environment.**
- A description of the aspects of the environment likely to be significantly affected by the development, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the inter-relationship between the above factors.
- A description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long term, permanent and temporary, positive and negative effects of the development, resulting from:
- The existence of the development;
- The use of natural resources;
- The emission of pollutants, the creation of nuisances and the elimination of waste.
- **A description of mitigation measures proposed to "prevent, reduce and where possible, offset any significant adverse effects on the environment".**
- **A non-technical summary (NTS) of the information provided under this Part of the EIA Regulations.**
- An indication of any difficulties encountered by the applicant in compiling the required information.

4.3.2 The following stages may be included in an EIA:

- Screening – to determine whether a development needs an EIA.
- Scoping – to determine the issues that the EIA should address.
- Ongoing consultation with stakeholders.

- Desk based data collection to establish the baseline environment.
- New data collection and surveys (where necessary) to supplement desk based information and to fill any data gaps.
- Impact identification and the evaluation of significance.
- Identification of mitigation measures (where required) to reduce the significance of, or avoid, any identified adverse impacts.
- The evaluation of impacts, post-mitigation, to determine the significance of residual impacts.
- The assessment of cumulative impacts with other past, present and reasonably foreseeable future developments, policies and plans.
- Identification of appropriate monitoring requirements.

4.3.3 The approach adopted in the EIA process for the proposed harbour facility for each of these stages is summarised in the following sections. It should be noted that these stages are not necessarily consecutive and may overlap. For example, iterative design changes may be made in light of emerging findings of the EIA process to prevent or reduce the significance of a potential impact. This would then require re-assessment of the potential impact, potentially informed by further survey work to adequately describe the baseline environment.

Screening

4.3.4 A screening opinion was not sought for the proposed scheme. It was assessed that the proposed scheme would constitute development of a type mentioned in Category 10(g) of Schedule 2 to the Regulations. Given this the applicant has chosen to voluntarily submit an ES for the proposed scheme in accordance with the relevant EIA Regulations.

Scoping

4.3.5 To inform this PER, YPL has completed the initial stages of the pre-application process for the proposed scheme which has involved the following steps:

- Production and submission of an Environmental Scoping Report (Royal HaskoningDHV, 2013) to PINS during December 2013 (**Appendix 1.1**).
- Receipt of a Scoping Opinion from PINS (PINS, 2014) for the proposed scheme during January 2014 (**Appendix 4.1**)

4.3.6 This PER has been produced to inform the statutory consultation (carried out pursuant to Sections 42 and 47 of the Planning Act, 2008).

4.3.7 The environmental scoping study was undertaken to identify the potential environmental issues associated with the proposed scheme and to determine the scope of work required for the EIA and preparation of the ES. The study consisted of the following tasks:

- a site visit;
- collation of existing environmental information;

- identification of potentially significant environmental impacts;
- consultation with statutory consultees; and,
- reporting of findings in an Environmental Scoping Report (see **Appendix 1.1**).

4.3.8 **Appendix 4.2** presents a summary of the Scoping Opinion.

Consultation

4.3.9 During the preparation of this PER, a wider (i.e. in addition to the consultation on the Environmental Scoping Report) informal consultation exercise has taken place, and this will be ongoing throughout the course of the EIA process. As well as the initial consultation carried out as part of the scoping study (see **Paragraph 4.3.5** above), topic specific consultation has been undertaken, including:

- a strategy meeting with Natural England on 28 March 2014;
- a meeting with the Environment Agency on 7 April 2014 regarding environmental permitting;
- a stakeholder workshop on 10 April 2014 (attended by Royal HaskoningDHV, Natural England, Environment Agency, the MMO and the Royal Society for the Protection of Birds (RSPB)), providing an update on the proposed scheme design and the proposed approach to the assessment of the proposed scheme on receptors; and,
- various emails and telephone conversations with regulators and stakeholders regarding the specification of the work.

4.3.10 The nature and outcome of topic specific consultation is discussed in the relevant sections of this PER.

Description of the baseline environment

4.3.11 A wide range of information has been gathered and activities undertaken to define the baseline environment for the harbour facility and likely receptors, including but not limited to the following:

- desk-based review of existing published data;
- data provided by consultees; and,
- field survey and site investigation information.

4.3.12 The term 'baseline environment' is used to describe the nature, scale, condition, and other relevant information to provide a detailed description of a given environmental receptor that falls within the scope of the ES. Within this PER, the description of the baseline environment consists of the following aspects:

- the spatial location and extent of the environmental features or receptors;
- a description of the environmental features or receptors and their character;
- the context of the environmental features or receptors in terms of rarity, function, and population at the local, regional and national level;

- the sensitivity of the environmental features or receptors in relation to physical, chemical or biological changes, and,
- the value of the environmental features or receptors (e.g. designated status).

4.3.13 Receptor 'sensitivity' and 'value' are considered further below.

Receptor sensitivity

4.3.14 All receptors will exhibit a greater or lesser degree of sensitivity to the changes brought about by the proposed development, and defining receptor 'sensitivity' as part of the definition of the baseline environment helps to ensure that the subsequent assessment is transparent and robust. The sensitivity of a receptor is a function of its capacity to accommodate change and reflects its ability to recover if it is affected, and is defined by the following factors:

- Adaptability – the degree to which a receptor can avoid, adapt to or recover from an effect;
- Tolerance – the ability of a receptor to accommodate temporary or permanent change.
- Recoverability – the temporal scale over and extent to which a receptor will recover following an effect.

4.3.15 In order to define the sensitivity of a receptor, the guidelines presented in **Table 4-1** have been adopted in this PER and the conclusions reached regarding the sensitivity of receptors has been presented in the baseline sections of each relevant environmental topic.

4.3.16 It should be noted that the sensitivity criterion is a composite one, combining value (a measure of the receptors importance, rarity and worth) with sensitivity. In some instances, the inherent value of a receptor is recognised by means of designation (see below), and the 'value' element of the composite criterion recognises and gives weight in the assessment to that designation. However, irrespective of the recognised value, all receptors will exhibit a greater or lesser degree of sensitivity to the potential changes brought about by the proposed scheme. It should be noted that the assessment of sensitivity is a matter of judgement applied by professional experts based on the receptors within the relevant study area.

Receptor value

4.3.17 The value of the feature or receptor is a function of a range of factors (e.g. biodiversity value, social/community value, and economic value). The value or potential value of a receptor or feature can be determined within a defined geographical context, for example, the following hierarchy to describe value is recommended by the Institute of Ecology and Environmental Management (IEEM) (2006) with respect to ecological receptors:

- International;
- UK;
- National (i.e. England / Northern Ireland / Scotland / Wales);
- Regional;

- County (or Metropolitan - e.g. in London);
- District (or Unitary Authority, City, or Borough);
- Local or Parish; and,
- Within zone of influence only (which might be the development site or a larger area).

Table 4-1 Generic guidelines used in the determination of receptor sensitivity

Sensitivity	Description
Very high	Receptor has very limited or no capacity to accommodate physical or chemical changes or influences. Receptor possesses fundamental characteristics which contribute significantly to the distinctiveness, rarity and character of the resource, is of very high importance and rarity that is international in scale (e.g. designated sites such as SACs, SPAs, Ramsar Sites, World Heritage Sites, Geological Conservation Review Sites, and Habitats Directive Annex II species), and has very limited potential for substitution / replacement.
High	Receptor has a limited capacity to accommodate physical or chemical changes or influences. Receptor possesses key characteristics which contribute significantly to the distinctiveness, rarity and character of the resource, is of high importance and rarity that is national in scale (e.g. designated sites such as SSSIs, NNRs, UK Biodiversity Action Plan (BAP) habitats and species, Areas of Outstanding Natural Beauty, Heritage Coasts, Scheduled Monuments, Grade I and II* Listed Buildings, Conservation Areas, etc.), and has limited potential for substitution / replacement.
Medium	Receptor has a limited capacity to accommodate physical or chemical changes or influences. Receptor possesses key characteristics which contribute to the distinctiveness and character of the resource, is of medium importance and rarity that is regional in scale (e.g. designated sites such as County Wildlife Sites (CWSs), Regionally Important Geological Sites, Grade II Listed Buildings, Local BAP, etc.), and has limited potential for substitution / replacement.
Low	Receptor has a moderate capacity to accommodate physical or chemical changes or influences. Receptor possess characteristics which are locally distinctive only, are of low to medium importance and rarity that is local in scale (e.g. designated sites such as Local Nature Reserves), and potentially can be substituted / replaced.
Very low	Receptor is generally tolerant of and can accommodate physical or chemical changes or influences. Receptor characteristics do not make a significant contribution to local character or distinctiveness, and are of very low importance and rarity, are not designated, and are easily substituted / replaced.

Impact identification and assessment

4.3.18 The preliminary EIA has been undertaken within a framework that allows for a transparent approach to the assessment and the resulting conclusions presented within this PER. This section sets out the assigned definitions that are used in the assessment process for the majority of topics. In addition, a description of the approach taken to the specific impact assessment for each environmental topic is provided (in each relevant chapter) so that it is clear to the reader how impacts have been defined, particularly where such an approach differs to that described within this section.

4.3.19 EIA provides an assessment of the impacts on sensitive receptors as a result of the effects of a development upon the environment. The terms 'effects' and 'impacts' have, in the past, been used interchangeably, but they are in fact different and one drives the other. Effects are physical changes in the environment that are set in motion as a consequence of a particular development or activity. Effects do not impact all receptors, as some receptors are not always sensitive to them.

4.3.20 Effects are measurable physical changes in the prevailing environment (e.g. volume, time and area) arising from construction and operation activities. Effects can be classified as primary (e.g. the physical presence of a built element of the development) or secondary (e.g. a change in the rate of discharge of surface water).

4.3.21 Impacts consider the possible changes in potentially sensitive receptors as a result of an effect. Impacts can be classified as direct or indirect, permanent or time-limited and beneficial or adverse.

4.3.22 The relationship between effects and impacts is not always straightforward. For example, a secondary effect may result in both a direct and indirect impact on a single receptor. Given this the EIA framework used herein is based on the 'source-pathway-receptor' model to provide a systematic and auditable approach to understanding the potential for effects to arise, the spatial extents of the effect-receptor interactions, impact pathways, and potential impact significance. The conceptual 'source-pathway-receptor' model is effective in the identification of potential effects and the means by which these can manifest themselves on the receiving environment and its sensitive receptors.

4.3.23 The term 'source' describes the origin of potential effects (e.g. construction activities) and the term 'pathway' describes the means (e.g. through air, water, or ground) by which the effect reaches the receiving sensitive 'receptor' (e.g. terrestrial habitats, archaeology and human receptors). If the source, pathway or receptor is absent, no linkage exists and thus there will be no potential for an impact to manifest.

4.3.24 For each effect, the assessment identifies receptors sensitive to that effect and implements a systematic approach to understand the impact pathways and the level of impacts on given receptors. The process considers the following:

- the magnitude of the effect;
- the sensitivity of a receptor to the effect;

- the probability that an effect-receptor interaction will occur;
- the determination and qualification of the level of impact on a receptor, considering the probability that the effect-receptor interaction will occur, the spatial and temporal extents of the interaction and the significance of the resulting impact; and,
- the level of certainty at all stages.

The magnitude of effect

4.3.25 The magnitude of an effect is typically defined by four factors:

- Extent – the area over which an effect occurs.
- Duration – the time for which the effect occurs.
- Frequency – how often the effect occurs.
- Severity – the degree of change relative to existing environmental conditions.

4.3.26 In order to help define impact magnitude, the criteria presented in **Table 4-2** have been adopted for the purposes of this EIA. While this table provides guidelines of a generic nature, it should be noted that more specific guidelines in relation to impact magnitude have been adopted for the topics assessed, where considered necessary.

Table 4-2 Generic guidelines used in the determination of magnitude of effect

Magnitude	Description
Very High	Loss of resource and/or integrity of the resource; severe damage to key characteristics, features or elements (Adverse). Permanent / irreplaceable change, which is certain to occur. Large scale improvement of resource or attribute quality; extensive restoration or enhancement (Beneficial).
High	Loss of resource, but not affecting integrity of the resource; partial loss of or damage to key characteristics, features or elements (Adverse). Permanent / irreplaceable change, which is likely to occur. Improvement to, or addition of, key characteristics, features or elements of the resource; improvement of attribute quality (Beneficial).
Medium	Minor loss of, or alteration to, one (maybe more) key characteristics, features or elements; measurable change in attributes, quality or vulnerability (Adverse). Long-term though reversible change, which is likely to occur. Minor improvement to, or addition of, one (maybe more) key characteristics, features or elements of the resource; minor improvement to attribute quality (Beneficial).

Magnitude	Description
Low	Very minor loss of, or alteration to, one (maybe more) key characteristics, features or elements; noticeable change in attributes, quality or vulnerability (Adverse). Short- to medium-term though reversible change, which could possibly occur. Very minor improvement to, or addition of, one (maybe more) key characteristic, feature or element; very minor improvement to attribute quality (Beneficial).
Very Low	Temporary or intermittent very minor loss of, or alteration to, one (maybe more) characteristic, feature or element; possible change in attributes, quality or vulnerability (Adverse). Short-term, intermittent and reversible change, which is unlikely to occur. Possible very minor improvement to, or addition of, one (maybe more) characteristic, feature or element; possible improvement to attribute quality (Beneficial).

The determination and qualification of impact significance

4.3.27 The significance of an impact is determined by combining the predicted magnitude of the effect with the sensitivity of the receptor; for example, as defined in **Table 4-3**. Impact statements carry a degree of subjectivity, as they are based on expert judgement regarding the effect-receptor interaction that occurs and on the data that is available. As such, impact statements should be qualified appropriately.

Table 4-3 Impact Assessment Matrix

Receptor Sensitivity (inclusive of value)	Magnitude of Effect				
	Very High	High	Medium	Low	Very Low
Very High	Major	Major	Moderate	Moderate	Minor
High	Major	Moderate	Moderate	Minor	Negligible
Medium	Moderate	Moderate	Minor	Minor	Negligible
Low	Minor	Minor	Minor	Negligible	Negligible
Very Low	Minor	Negligible	Negligible	Negligible	Negligible

4.3.28 The probability of an effect occurring (i.e. an effect-receptor interaction) should also be considered in the assessment process; capturing the probability that the effect will occur and also the probability that the receptor will be present. For example, the magnitude of the effect and the sensitivity of the receptor may have been established, and it may be highly probable that the effect will occur; however, the probability that the receptor will be present at the same time should also be considered.

4.3.29 In the context of the EIA Regulations, 'significant impacts' are taken to be those of moderate or major significance (as defined above); albeit that appropriate mitigation, where available, should be sought for all impacts.

4.3.30 It should be reiterated that, although this section sets out the overall approach adopted for this EIA (using, for example, magnitude and sensitivity to determine the level of impact), individual sections may take their own approach where industry standard methodologies are appropriate or another approach has been agreed with the relevant regulator. Where a different approach is taken, this is explained in the methodology section of the chapter in question.

Mitigation

4.3.31 Mitigation measures have been proposed, where they are available and practical, in those cases where adverse impacts have been identified. It is important to note that mitigation measures applied should be proportionate to the scale of the impact predicted.

4.3.32 As this PER presents the results of the preliminary impact assessment undertaken rather than the finalised impacts anticipated to arise as a result of the proposed scheme, the requirement for mitigation measures is largely unknown for a number of topics at this stage. As such, mitigation measures have not been discussed or agreed with the relevant regulatory authorities and stakeholders. This process is to be undertaken during the subsequent stage of the EIA process, once the impact assessment has been finalised.

4.3.33 'Mitigation through design' is an important factor in ensuring that the environmental impacts of a proposed scheme are minimised. Through the development of the project and the scheme proposals, and the iteration of the engineering and environmental impact studies, mitigation has been built into the design of the proposed scheme. This mitigation is described in Section 3 and the impact assessment has been undertaken based on the mitigated (through design) scheme. Where significant impacts potentially remain, further issue-specific mitigation measures are defined (where possible at this stage).

4.3.34 Whilst mitigation for minor or negligible impacts may not be specifically defined as a matter of course, industry standard or 'embedded' mitigation often applies in these cases (and is set out herein). It is also recognised that minor and negligible impacts could become significant when considered cumulatively with other pressures on a receptor and, in this event, mitigation may be required.

Residual impact

4.3.35 Where further mitigation measures are identified, the significance of the residual environmental impact (i.e. the post-mitigation impact) is assessed. Residual impacts have been presented in this PER where it has been possible to undertake the EIA in accordance with the above methodology at this stage.

Certainty, assumptions and limitations

4.3.36 Uncertainty regarding our understanding of the baseline or in the accuracy of techniques used to predict the magnitude of effects and the vulnerability of receptors, has been established and taken into account as part of this assessment process. Typically there are three levels of uncertainty, namely:

- Low uncertainty: Interactions are well understood and documented. Predictions and maps are based on interpretations supported by a large volume of data. Information/data has very comprehensive spatial coverage/resolution.
- Medium uncertainty: Interactions are understood and some documented evidence exists. Predictions may not be validated and/or calibrated. Mapped outputs are supported by a moderate degree of evidence. Information/data has relatively moderate spatial coverage/resolution.
- High uncertainty: Interactions are poorly understood and not documented. Predictions and maps are based on expert interpretation using little or no quantitative data. Information/data has poor spatial coverage/resolution.

4.3.37 Impact statements often have a degree of subjectivity associated with them, as they are typically based on expert judgement regarding the effect-receptor interaction that occurs and on the data that is available. As such, impact statements need to be qualified appropriately.

4.3.38 As set out above in the context of sensitivity, it should also be noted that decisions on impact significance can be a matter of judgement applied by professional experts (often based on the receptors within the study area of concern) rather than certainty. Where such judgement has been applied this is indicated.

4.3.39 With respect to information limitations, the EIA Regulations and relevant guidance require an ES to provide an indication of any difficulties (technical deficiencies or lack of know-how) encountered during the assessment process. Any such assumptions or limitations are also identified within the relevant topic section of this PER. Any limitations or assumptions will also be presented in the ES if required.

Impact inter-relationships

4.3.40 Council Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (the EIA Directive) states (in Annex III) that an ES should include "A description of the aspects of the environment likely to be significantly affected by the proposed project, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the inter-relationship between the above factors".

4.3.41 The YPL port facilities ES will therefore give due consideration to the potential for different residual impacts to have a combined impact on key sensitive receptors. The objective is to identify where the accumulation of impacts on a single receptor, and the relationship between those impacts, potentially gives rise to a need for additional mitigation.

4.3.42 Inter-relationships will be assessed within the relevant sections of the topic chapters of the ES, and would be summarised in an inter-relationships section.

In-combination and cumulative impacts

4.3.43 In-combination impacts are defined as those impacts that may arise due to the interaction of one element of the YPP with another element of the YPP (e.g. the mine and the MTS).

4.3.44 In line with IEMA's Guidelines for EIA (2004), cumulative impacts are defined as:

> *" the impacts on the environment which result from incremental impacts of the action when added to other past, present and reasonably foreseeable future actions "*

4.3.45 The EIA Regulations require that the likely cumulative impacts of proposed development(s) are assessed as part of an EIA.

4.3.46 There is no legislation that outlines how cumulative impact assessments (CIAs) should be undertaken. However the EIA and Habitats Directives and their associated regulations require the consideration of direct impacts and any indirect, secondary and cumulative effects of a project. Government guidance states that: "cumulative effects could refer to the combined effects of different development activities within the vicinity" (Department of Environment, 1999).

4.3.47 The EIA Regulations do not define 'cumulative' but guidance on cumulative effects assessment is provided in a number of good practice documents (e.g. the European Commission, 1999). This guidance is not prescriptive, but rather suggests various approaches which may be used, depending on their suitability to the project (for example the use of matrices, expert opinion, consultation, spatial analysis and carrying capacity analysis).

4.3.48 A tiered approach has been adopted for the YPP CIA, based upon the following definitions:

- **Site-specific (or within-development) inter-relationships** which arise from each of the YPP elements individually. These 'inter-relationships', as described above, have been documented within the topic chapters for each element (e.g. the additive impact of construction noise and traffic noise has been assessed within the Noise and Vibration Chapter for each element, and not in the CIA).
- **Project-wide in-combination impacts** which arise from the combined effects (additive or interactive) of the whole YPP; that is, the cumulative impacts of any part of the YPP with all other component(s) and associated development(s).
- **Wider cumulative impacts** which are the combined impacts (additive or interactive) that may occur between any component(s) of the YPP and any other 'non YPP' development(s) (i.e. other plans and projects).

4.3.49 In this case, cumulative impacts would arise when the impacts of the YPP (as a whole) are added to the impacts of other present and reasonably foreseeable plans and projects. With respect to 'past' projects, a useful ground rule in CIA is that the environmental impacts of schemes that have been completed should be included within the environmental baseline; as such, these impacts will be taken into account in the EIA process and, generally, can be excluded from the scope of CIA. However, the environmental impacts of recently completed projects may not be fully manifested and, therefore, the potential impacts of such projects should be taken into account in the CIA.

4.3.50 While predicted inter-relationships are considered herein, the project-wide and wider cumulative assessment is to be documented within a stand-alone YPP CIA. The proposed approach to the CIA is presented within **Section 22**.

Monitoring

4.3.51 Appropriate mitigation measures have been identified and recommended in this PER where the EIA process has identified an adverse impact and mitigation is available (see above). For some impacts, there may be a requirement for monitoring to be undertaken to ensure that the recommended mitigation measures are successful or where there is significant uncertainty with respect to important receptors. The requirement for monitoring would be considered as part of the subsequent stage of the EIA process.

5 HYDRODYNAMIC AND SEDIMENTARY REGIME

5.1 Introduction

5.1.1 This section of the PER describes the existing environment for the hydrodynamic and sedimentary regimes of the Tees estuary and the potential impacts associated with the construction and operational phases of the proposed scheme. It includes:

- A description of the methodology and studies that are being undertaken to inform the EIA process
- A description of the existing environment based on available data and the studies completed
- An assessment of potential effects based on the studies undertaken to date for the EIA, supported by results of other, earlier EIA studies where results from these studies are considered relevant to the proposed scheme.

5.2 Policy and consultation

National Policy Statement for Ports

5.2.1 The assessment of potential effects on the hydrodynamic and sedimentary regimes has been made with reference to the NPS for Ports (Department for Transport, 2012). The particular assessment requirements relevant to the hydrodynamic and sedimentary regimes / coastal processes, as presented within the NPS for Ports, are summarised in **Table 5.1**.

Table 5-1 Summary of NPS for Ports requirements with specific regard to coastal processes

NPS requirements	NPS reference
Where relevant, applicants should undertake coastal geomorphological and sediment transfer modelling to predict and understand impacts and help identify relevant mitigating or compensatory measures.	Section 5.3.4
The ES should include an assessment of the effects on the coast. In particular, applicants should assess: • the impact of the proposed project on coastal processes and geomorphology, including by taking account of potential impacts from climate change. If the development will have an impact on coastal processes, the applicant must demonstrate how the impacts will be managed to minimise adverse impacts on other parts of the coast; and • the implications of the proposed project on strategies for managing the coast, as set out in Shoreline Management Plans, any relevant marine plans, River Basin Management Plans and capital programmes for maintaining flood and coastal defences.	Section 5.3.5

NPS requirements	NPS reference
The decision-maker should not normally consent new development in areas of dynamic shorelines where the proposal could inhibit sediment flow or have an impact on coastal processes at other locations. Impacts on coastal processes must be managed to minimise adverse impacts on other parts of the coast. Where such proposals are brought forward, consent should only be granted where the decision-maker is satisfied that the benefits (including need) of the development outweigh the adverse impacts.	Section 5.3.9

Consultation

5.2.2 A summary of the responses received in the PINS Scoping Opinion (**Appendix 4.1**) of relevance to the hydrodynamic and sedimentary regimes is presented in **Table 5-2**.

Table 5-2 Summary of scoping responses received from PINS with regard to the hydrodynamic and sedimentary regimes

Comment	Section of PER in which comment has been addressed (or comment on how the comment is to be addressed)
The physical scope of the assessment should be clarified in the ES. It will be important to carefully justify the physical area for this assessment.	Section 5.3 (Paragraph 5.3.1 and Figure 5-1)
The applicant is advised to ensure that existing data sources to be drawn upon are relevant to the development and is up to date and representative of the existing baseline. Where data is not recent, justification should be provided in the ES to demonstrate how it remains relevant.	Section 5.3 (Paragraph 5.3.2 to 5.3.4)
Full copies of all reports from which data is drawn are to be provided in the ES.	To be provided as part of the ES.
The ES should provide the calibration and validation methods and copies of the modelling report.	To be provided as part of the ES.
The approach to wave modelling (which is dependent on the quay option to be selected) needs to be agreed with the MMO.	The approach to wave modelling has been discussed at consultation meetings. Wave modelling is being undertaken for both options for quay construction.
Effects resulting from sediment dispersion relating to quay construction are to be assessed as part of the EIA.	Section 5.5 (Paragraph 5.5.1 to 5.5.8)
The ES should provide an assessment of the impact on hydrodynamics and sedimentary processes resulting from maintenance dredging works that are intended to be carried out. The ES should include details of the proposed deposit locations for the spoil dredged as part of maintenance works.	To be assessed as part of the ES

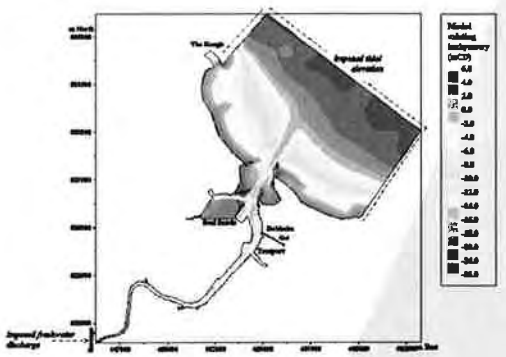
Comment	Section of PER in which comment has been addressed (or comment on how the comment is to be addressed)
Natural England would welcome detailed information on how the deepened estuary channel may act as a sediment trap, intercepting fine sediment and reducing the level of deposition at the intertidal areas of Seal Sands and South Gare and Coatham Sands SSSI. A potential hypothesis for decline of SPA birds in the estuary is a shift from fine sediments to coarse marine ones. The potential impact on sediment flows should be examined in detail.	Sections 5.6 (Paragraph 5.6.16 to 5.6.24)

5.3 Methodology

Study area

5.3.1 The study area for the assessment of hydrodynamic and sedimentary effects of the proposed scheme encompasses the tidal Tees estuary between Teesmouth and the Tees Barrage and Tees Bay, incorporating the existing dredged material disposal sites. The domain for the numerical modelling represents the study area for this aspect of the EIA and is shown in **Figure 5-1**.

Figure 5-1 Numerical modelling domain for the hydrodynamic and sedimentary studies



Methodology

5.3.2 The assessment of the hydrodynamic and sedimentary effects of the proposed scheme is based on numerical modelling tools first established and calibrated in support of the EIA for the consented (but not yet constructed) NGCT. This suite of modelling activities included tidal flow modelling, wave modelling, sediment transport, bed change modelling and modelling of sediment plume released from construction activities. The calibration effort put into these modelling tools means that the modelling suite is well calibrated and additional data collection and model validation was not considered necessary for the studies undertaken to support the proposed scheme. For the EIA process for the harbour facilities, new modelling studies are being undertaken (as described in this chapter) and the emerging findings of these studies are presented.

5.3.3 New data on bed sediment types anticipated to be dredged for the proposed scheme has been used in defining the detail of the dredging activity and so inform the modelling of the release of sediment during the dredging and disposal.

5.3.4 It should be noted that the implications of any predicted changes to / effects on the physical regime of the estuary will be assessed in terms of the significance of the potential impact on various environmental parameters (e.g. marine ecology, water quality, fisheries, etc.).

5.4 Existing environment

Historical context

5.4.1 Prior to the mid-19th century the Tees estuary was a wide, shallow estuary bordered by extensive wetlands and had tidal ingress for approximately 44km from the mouth. Since this time, the estuary has undergone substantial anthropogenic changes as the channel was trained, land was reclaimed and the channel deepened to its present depth.

5.4.2 Anthropogenic activities over the last 150 years have resulted in an estuary that is essentially a narrow 'canalised' channel bordered near the estuary mouth by sandy intertidal areas partly trained by various historic training works. Within this area, a remnant of the originally large Seal Sands, covering approximately 140ha, is divided from the other intertidal areas by Seaton Channel. Intertidal areas of 300ha remain at the estuary mouth. Approximately 15% of the intertidal area calculated for the pre-1800 situation remains.

5.4.3 The most recent major anthropogenic influence on the Tees estuary has been the construction of the Tees Barrage in the mid-1990s. The barrage (at Blue House Point) has truncated the tidal section (approximately 16.5km into the former estuary) and has reduced the tidal volume upstream of South Gare by about 7% (ABPmer, 2002).

Tides and water level

5.4.4 The tide at the mouth of the Tees estuary is observed to be very close to sinusoidal in shape with ranges of 4.6m and 2.3m for mean spring and neap tides respectively (UKHO, 2006). Mean High Water Spring (MHWS) tidal levels at the mouth of the Tees estuary are 5.50m above CD and 2.65m above OD respectively. The other tidal parameters of the estuary mouth are summarised in **Table 5-3** (ABPmer, 2002).

Table 5-3 Tidal levels for the Tees estuary

5.4.5 The variation between the astronomical maximum and minimum and the highest and lowest levels recorded indicate that the level can be influenced by meteorological effects, such as winds, surge and waves.

Fluvial flow

5.4.6 The River Tees has its source approximately 160km from the sea on Cross Fell in the Pennines and drains a catchment of 1,932km^2. The main freshwater input to the estuary is measured at Low Moor. HR Wallingford (1992) calculated the long term monthly mean flows for the period 1981 to 1988, which ranged from 9m^3/s in summer to 30m^3/s to 40m^3/s in winter. Lewis *et al* (1998), also looked at the flows at Low Moor and presented a long term average flow of 20m^3/s, a maximum recorded flow of 563m^3/s, a minimum of less than 3m^3/s and a 10% exceedence flow of about 47m^3/s.

5.4.7 The fluvial flow is further regulated by the Tees Barrage which is operated to maintain upstream water levels and prevent the upstream penetration of saline water. The flow through the Barrage is, therefore, very unlike the natural flow especially as the flows are no longer continuous.

Density effects

5.4.8 The regulated freshwater flow (as a result of the Barrage) enters the estuary and partially mixes with saline water entering through the estuary mouth. This partial mixing, the reduced tidal volume (and currents) and the associated longitudinal salinity gradient both contribute to a density driven gravitational circulation. This effect is a result of the density changing the vertical profile of the flow such that the ebb tide flows are strongest at the surface whereas the flood tide flows are more evenly spread through depth. The tidally averaged current tends, therefore, to be seawards in the surface waters and landwards in the waters closer to the bed.

5.4.9 In the Tees estuary, under many circumstances this effect becomes dominant such that continuous near-bed upstream (flooding) flows are observed. These effects are important in supplying sediment to the estuary from offshore (the main sediment supply).

Waves

5.4.10 Wave conditions in the Tees estuary are a combination of offshore swell and locally generated wind waves. The direction from which swell can enter the estuary is limited by the North Gare and South Gare breakwaters. The majority of offshore swell in the region has been found to come from a northerly direction (HR Wallingford, 2002).

5.4.11 An analysis of wind speeds observed at South Gare between 1999 and 2005 undertaken as part of the studies for the NGCT (HR Wallingford, 2006) shows the most common winds are from the south-west (210°N to 270°N) but the most common large wind events (> 40 m/s) are from the north.

5.4.12 From the wave climate observed at the waverider buoy north of Tees North Buoy the return periods for significant wave heights were calculated (see **Table 5-4**) (HR Wallingford, 2006).

Table 5-4 Calculated wave return periods at waverider buoy locations

Return period (years)	Significant wave height (Hs (m))
0.1	3.87
1	6.03
10	8.63
50	10.69

5.4.13 In the Tees estuary and around the site of the proposed scheme, only remnants of the swell wave energy combined with short period local wind waves (including those for winds from the south-west) occur due to the limitation in the penetration of swell waves into the estuary as a result of the North Gare and South Gare breakwaters.

Sediment

5.4.14 In general, suspended sediment concentrations are low within the estuary and within Tees Bay. The highest observed values tend to occur on spring tides. This relationship is not strong, but the extreme values are also attributed to either high rainfall or storm events. In general, the suspended sediment concentrations appear to be dominated by freshwater inputs above Middlesbrough Reach and marine influences further downstream.

5.4.15 In the vicinity of the proposed scheme, suspended sediment concentrations are, for the most part, less than 20mg/l with short-term peaks from 40mg/l to 80mg/l. In terms of the tidal sequence, the highest suspended sediment levels occur close to high water. After storm periods, higher concentrations of suspended sediment have been noted around the Shell Jetty, but with little penetration further up the estuary. On other occasions the reverse has been true, thus the effect of storm events is not consistent within the estuary.

5.4.16 Historic bed sampling results in the vicinity of the proposed scheme show bed sediments in the area to comprise predominantly (65% to 70%) silt, with some (20%) clay and the remainder sand and gravel (Halcrow, 1991). These observations match the particle size distribution results from bed grabs undertaken in this vicinity for previous studies (Royal Haskoning, 2009).

5.4.17 The sources of material into the Tees estuary system are fluvial inputs coming through the Tees Barrage, material entering from Tees Bay and any industrial inputs. These inputs are in addition to material eroded from the estuary bed. Of these sources, the main source of material is that entering the estuary from Tees Bay. This material comes in on the flood tide, particularly during times when concentrations in Tees Bay are raised by the resuspension of material from the sea bed during storm events. The coarser material, mostly sand, is then able to settle out in the lower estuary, whereas the finer material is drawn further up the estuary by the gravitational circulation.

5.4.18 Within the system, the driving forces for sediment transport are the tidal flows, density driven currents, wave induced currents, vessel induced forces and resuspension of material by dredging operations.

5.4.19 Maintenance dredging information from PD Teesport (pers. comm., reported in HR Wallingford, 2006) suggests that out of the 1.35 million m^3 of sediment that is dredged annually, 250,000m^3 is mud. Of the remainder, 80% is clean, fine sand (approximately 880,000m^3) and 20% silty sand (approximately 220,000m^3). Assuming the silty sands have 15% to 35% fines content, the total fine material input is 280,000m^3 to 330,000m^3 per year.

5.4.20 In the area around the proposed development footprint for the port terminal, the long term average annual infill rate is approximately 100,000m^3 per year, of which approximately 80% is mud.

5.5 Prediction of potential effects during construction

Sediment release during dredging

5.5.1 As described in **Section 3**, a TSHD is proposed for the main part of the dredging of Phase 1, with a backhoe dredger to be used where harder marl is identified. For Phase 2 of the proposed scheme, a CSD is anticipated to be used as a larger volume of marl would require removal.

5.5.2 The main issues which have the potential to arise with regard to sedimentation during the construction phase are:

- Increased turbidity due to release of sediments into the water column during the dredge.
- The effects of fine sediment run-off from the fill material used in the quay construction (this is relevant to the solid quay structure only)

5.5.3 A larger rate of sediment release would be anticipated from the TSHD or the CSD in comparison with the backhoe. This is due to the larger production rate of the TSHD and CSD compared with the backhoe, combined with the potential for overflow of the dredged material within the hopper in order to increase the density of material taken to the disposal site. Material arising from the backhoe remains close to its in-situ density and so allowing the material to overflow out of the hopper in order to increase the density of material (thereby reducing the water content) is not required.

5.5.4 Sediment plume modelling tests have been carried out for the proposed scheme to predict the effect of dredging. An example simulation of the average excess concentration and deposition due to a TSHD dredging at the proposed development site is shown in **Figure 5-2**. The modelling includes sediment release at the dredger drag head and overflow from the hopper. Overflow typically provides the largest sediment release rate, from a TSHD hopper or from a barge loaded from a CSD. A backhoe dredger would produce an effect at least an order of magnitude lower.

5.5.5 The simulations indicate a significant difference in excess concentrations from one side of the navigation channel to the other, with the most dispersion along the main direction of flow on the eastern side of the estuary. Furthermore, the highest amounts of deposition are predicted in the immediate area of the dredging operation. This is due to the relatively low currents in the estuary. The deposition indicated within the proposed dredged area would be removed by subsequent maintenance dredging operations.

5.5.6 The simulation shows that an area of elevated suspended sediment concentration, in the range of 10mg/l to 50mg/l above background may be anticipated in the channel, 1.5km either side of the dredging works. Larger excess concentrations are predicted in the immediate area of the dredger. Deposition rates of 1 to 2mm per day are predicted in an area 2km either side of the works shown in **Figure 5-2**. No average increase in suspended sediment concentration is shown over the intertidal areas, leading to a prediction of negligible sediment being able to deposit on the intertidal areas.

5.5.7 The predicted effect of sediment released due to the proposed dredging will be presented in full in the ES. The modelling used two sets of flow results to examine the fate of fine material dispersed into the water column during dredging of the berth pocket and approach channel for TSHD, CSD and backhoe dredgers. The low freshwater flow, spring tide flow simulation was used to demonstrate the maximum extent of the sediment plume and the high freshwater flow, neap tide conditions was used to show a minimal dispersion case. Results from these simulations, representing footprints of elevated suspended sediment concentrations and deposition arising from the plume, will be presented in a similar format to that shown in **Figure 5-2**.

Figure 5-2 **Simulated sediment release from TSHD dredging in spring tide, low river flow conditions a) average increase in suspended sediment concentration b) deposition after 3 tides of dredging**

Sediment release during disposal

5.5.8 The dredged material generated during the construction phase may (following a consideration of alternative uses) be disposed of at one or more offshore dredged material disposal sites. There are two disposal sites in Tees Bay and the offshore disposal of dredged material may have an effect on the hydrodynamic and sedimentary regime (e.g. effects on tidal currents and sediment transport). However, as both are licenced disposal sites, and the quantity of dredged material is significantly reduced in volume in comparison with the NGCT, based on the findings of previous EIA studies, it is not envisaged that there would be any significant effects on the hydrodynamic and sedimentary regime offshore. This will, however, be fully assessed within the EIA for the proposed scheme.

5.6 Prediction of potential effects during operation

Changes in tidal and density driven hydrodynamics

5.6.1 A TELEMAC-3D flow model was established to simulate currents in the Tees estuary and Tees Bay as part of the NGCT EIA. The model was calibrated against extensive current measurements made at 11 Acoustic Doppler Current Profiler (ADCP) transects distributed throughout the study area.

5.6.2 TELEMAC-3D is a state-of-the-art finite element flow model, originally developed by LNHE Paris, which uses a completely unstructured grid enabling the accurate simulation of water movement in complex shaped areas. TELEMAC-3D also includes vertical layers, enabling three-dimensional flow structures in the river to be accurately represented. Distribution of salinity, and its evolution, is also included to represent density driven flows and stratification effects.

5.6.3 The model's upstream limit is the Tees Barrage, extending approximately 6.5km offshore in Tees Bay and covering an area of approximately 80km^2. The mesh resolution varies from 800m at the seaward model boundary, to 50m over most of the estuary, and 30m in narrow sections.

5.6.4 The model has been used to simulate the proposed scheme, comprising the proposed dredging and both the open and solid quay options for the completed (Phases 1 and 2) quay, on the baseline (existing) case (the model does not include the NGCT given this project has yet to be constructed).

5.6.5 Simulation of the effects of the open quay structure has been included by representation of the additional drag force of the piles on the flow. For the solid quay option, the structure has been included as a solid block in the model setup. Both forms of construction were investigated to provide a view on the sensitivity of the flow regime to the form of construction of the port terminal.

5.6.6 Initial results from the flow modelling studies, predicted effect on depth average flows, are presented in **Figure 5-3** to **Figure 5-6**. In these figures, the currents at time of peak ebb and peak flood with the two forms of quay construction are compared with the baseline case. The complete outputs from the modelling will be presented within the ES.

5.6.7 It is considered that the majority of the effects illustrated in **Figure 5-3** to **Figure 5-6** are a function of the capital dredging, with currents predicted to be reduced within the deepened areas. Some current speed increases are predicted on the shoreline adjacent to the works, suggesting that the dredging is predicted to draw some of the flow to the south side of the estuary; although such effects are shown to be relatively localised to the proposed works.

5.6.8 Some current speed increases are shown between the open quay structure and the bank, most likely linked to the re-profiling of the estuary bed in this area. Away from the immediate area of the proposed scheme, the modelling work has predicted that the effect of the works is insensitive to the form of the port terminal (i.e. open quay or solid quay structure).

Figure 5-3 **Change in depth average currents due to dredging and open quay structure at time of peak ebb tide, spring tide, low river flow**

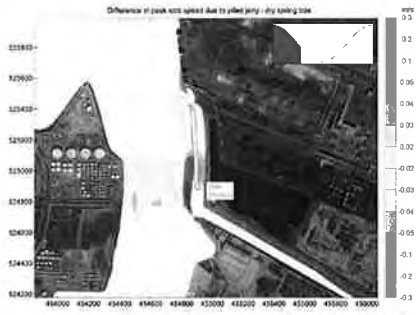


Figure 5-4 **Change in depth average currents due to dredging and the solid quay structure at time of peak ebb tide, spring tide, low river flow**

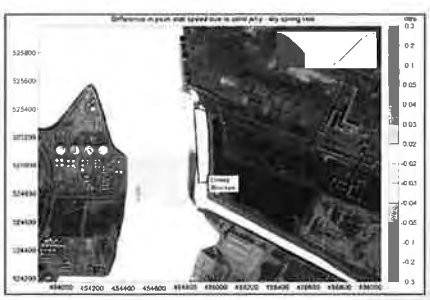


Figure5-5 **Change in depth average currents due to dredging and the open quay structure at time of peak flood tide, spring tide, low river flow**

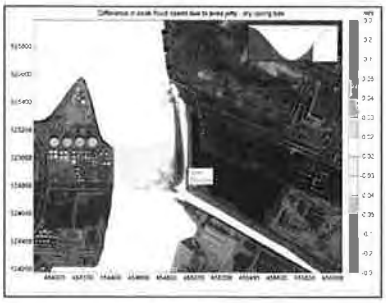
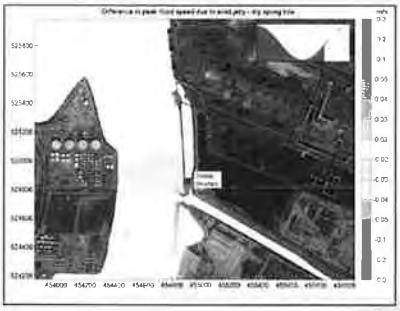


Figure 5-6 **Change in depth average currents due to dredging and the solid quay structure at time of peak flood tide, spring tide, low river flow**



5 6 9 As the density driven flows are an order of magnitude slower than the tidal flows, any effect of the proposed scheme on these flows can be expected to be significantly less than the effects described above

5 6 10 The limited area of dredging required for the proposed scheme suggests that there would be a negligible effect on tidal propagation and water levels, however, this will be confirmed as part of the EIA, with results presented in full as part of the ES. Phase 2 would represent the maximum effect of the proposed scheme, with Phase 1 having an effect over a small spatial extent compared with the complete (Phase 1 and 2) scheme

Changes in wave propagation

5 6 11 Given that no capital dredging of the approach channel is proposed between the location of the proposed scheme and the mouth of the Tees, no effect on the penetration of waves into the Tees estuary is anticipated. The primary focus of the wave modelling study is, therefore, to predict changes in wind generated wave conditions due to the change of the form of the coastline associated with the two options for the proposed port terminal. An open quay structure would have little effect on waves, although the proposed dredged slope and new revetment to the rear of the structure may have an effect. A solid quay structure would change the wave conditions locally due to increased wave reflections.

5 6 12 In order to model the wave transformation within the Tees estuary, a local SWAN (Simulating WAves Nearshore) numerical wave model has been used. SWAN is a third generation wave model representing the following processes acting on a complete directional wave spectrum

5 6 13 Simulations of the effect of the proposed dredging and both options for the quay were undertaken for three return period winds from two directions anticipated to generate waves from the SW and three return period for incoming waves from Tees Bay.

5 6 14 Wave modelling has been undertaken at both mean high water spring tide and mean low water spring tide to show the sensitivity of the modelled impacts to water level. Example plots for the effect of the works on waves from 215° at high water for winds with a 5 year return period are shown in **Figure 5-7** and **Figure 5-8**. The full results will be presented in the ES once the modelling exercise has been completed

5 6 15 These results presented in **Figure 5-7** and **Figure 5-8** indicates a relatively localised effect with regard to effect on existing wave heights. For return period winds less than 5 years, no effect of the open quay structure was shown. The effect of the solid quay structure in reflecting wave energy towards the north provides increases in significant wave height in the range 0.05m to 0.1m. No increases in wave energy over the designated intertidal areas at Teesmouth are shown, although some increases of very low magnitude may occur on the narrow spits located to either side of Seaton Channel. Phase 1 in isolation would have a lesser effect than the complete (Phase 1 and 2) development

Figure 5-7 **Change in wave height (m) due to dredging and open quay at high water, 5 year return period wind from 215°**

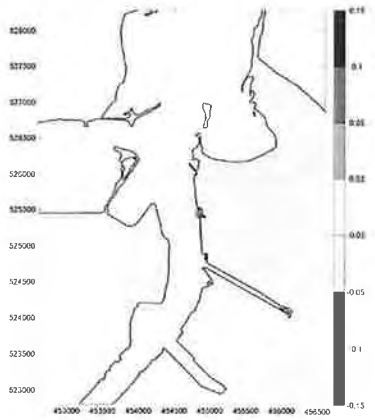
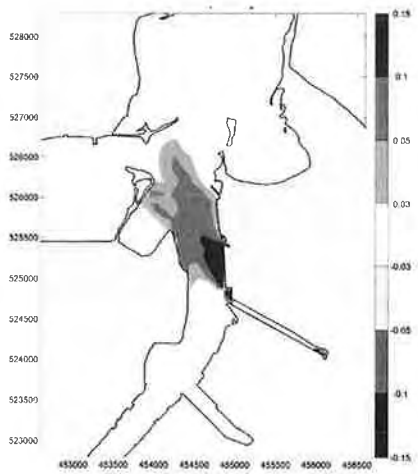


Figure 5-8 **Change in wave height (m) due to dredge and solid quay at high water, 5 year return period wind from 215°**



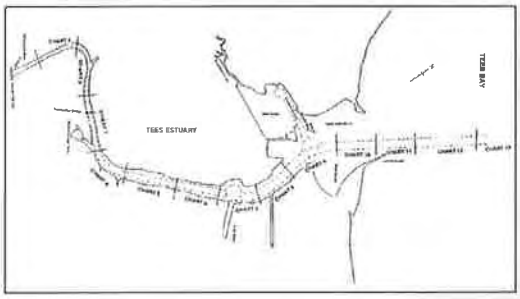
Changes to the local sediment regime including sedimentation in the dredged areas

5.6.16 It is anticipated that the proposed dredging, which does not include any changes to the outer sections of the approach channel, would not change the amount of sediment imported to the Tees from offshore (identified to be the largest sediment input). Consequently, the sediment transport modelling being undertaken is concerned with potential increased infill in the berth pocket, new dredged approaches and extended area of -14.1m CD channel. Furthermore, no changes to sediment transport in the predominantly sandy areas around Teesmouth are expected and so no effect on sand transport is anticipated.

5.6.17 Even so, cohesive sediment transport modelling has been undertaken as part of the EIA process for the proposed scheme. The baseline situation for sediment transport in the Tees is an average total infill rate of approximately 800,000m^3 per year. This total has reduced from historical levels due to the effects associated with the the Tees Barrage.

5.6.18 Within the estuary and approaches the areas of current maintenance dredging are divided into a series of Chart areas (**Figure 5-9**). The proposed port terminal is located within Chart area 8. This Chart area has had an average annual infill rate of approximately 84,000m^3 per year since the Tees Barrage was constructed in 1995. Bed sampling undertaken by Bridgland (shown in Halcrow, 1991) indicates that, in Chart area 8, 83% of the material dredged is in the fine silts and clay fractions. The most significant source of this fine material is marine sources. Fine sediment moved into suspension during storm periods is brought into the estuary by density induced, landward, near-bed flows. Once within the estuary, wave and tidal energies reduce and the material settles. Within the estuary reaches of the Tees (Chart areas 1 to 9), total fine sediment infill has been in the range 100,000 to 600,000m^3 per year, with an average of 300,000m^3 per year.

Figure 5-9 Tees estuary and approach Chart areas



5.6.19 The modelling methodology used for the hydrodynamic studies supporting the NGCT has been repeated for the proposed scheme, to show the effect of the proposed dredging on the import of fine sediment and the potential infill rate in the proposed dredged areas associated with both options for the proposed harbour facility.

5.6.20 The model simulated an overall import of fine sediment of 430,000m^3 into Chart areas 1 to 9, which is within the range observed since the Tees Barrage was installed. In Chart area 8 the model predicted 88,000m^3 per year of fine sediment infill, which is very close to the observed annual average value. All infill predictions are made assuming a representative density of 500kg/m^3.

5.6.21 The results for the post development cases show a negligible effect on the overall import of fine sediment into the estuary (less than 0.5%). This is to be expected because the width and depth of the channel at the entrance to the estuary would be unchanged by the proposed works; so the potential for changes to the amount of sediment imported though this route is also unchanged.

5.6.22 At the study site in Chart area 8, the predicted infill rate is predicted to reduce by 2 to 3% for the two development options compared to baseline conditions. This effect is associated with a small increase in fine sediment infill in Chart area 9 (approximately 1%). However, it should be noted that these changes are extremely small and are well within any natural variability in infill associated with, for example, variation in duration of storm wave conditions during any given year.

5.6.23 In the berth pocket and approaches for the proposed harbour facility the medium term average infill rates are predicted to be 5,100m^3 per year for the solid quay structure and 5,900m^3 per year for the open quay structure. This calculation included the foreshore surrounding the facility, as these areas may also act as a sediment supply into the berth pocket. Therefore it is not surprising that the solid quay structure (which 'removes' some foreshore) has less infill predicted than the open quay structure.

5.6.24 The predicted very small change in the overall fine sediment regime in the Tees overall would not alter the present frequency of or methodology used for maintenance dredging.

5.7 Summary

5.7.1 The existing environment of the Tees estuary is an over deep, canalised waterway with low tidal and wave energy allowing constant settling of any sediment supplied into the area.

5.7.2 Based on the results of the modelling undertaken to date, the predicted effects of the proposed works are relatively small and localised without any obvious implications for the overall regime of the Tees estuary. Phase 1 in isolation would have a lesser effect than the complete (Phase 1 and 2) development.

5.7.3 A full assessment of the modelling results will be undertaken as part of the EIA process, with the results to be presented within the Harbour Facilities ES.

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6 HYDROLOGY, HYDROGEOLOGY AND LAND QUALITY

6.1 Introduction

6.1.1 This section of the PER assesses the potential impacts of the proposed scheme on hydrology (surface water quality, levels, flows and land drainage) and hydrogeology (groundwater quality and levels), as well as the potential impact associated with land quality and how this could affect the health of site workers and site visitors during the construction and operational phases.

6.1.2 Contaminant linkages between soil/groundwater and sensitive receptors are an important consideration, as the construction and operation of the proposed scheme potentially could mobilise or interact with contaminant linkages.

6.1.3 Where potentially significant effects are predicted, appropriate mitigation measures are proposed.

6.1.4 This section of the PER is based on published data and information, and a Phase 1 Preliminary Risk Assessment (PRA) (Royal HaskoningDHV, 2014; **Appendix 6.1**).

6.1.5 It should be noted that the findings of this section have the potential to influence other sections within the PER, namely:

- Section 18 - Infrastructure and land drainage.
- Section 22 - Waste.

6.2 Guidance and consultation

Policy and guidance

6.2.1 The assessment within this section has been guided and informed by relevant policy, legislation, standards, guidance documents and consultation. This subsection summarises the key guidance and consultation relevant to geology, hydrogeology and land quality.

6.2.2 The assessment has been undertaken with due consideration of the following legislation (and amendments, where appropriate):

- European Union (EU) Water Framework Directive 2000/60/EC;
- Water Environment (Water Framework Directive) (England and Wales) Regulations (2003);
- Environmental Permitting (England and Wales) Regulations (2010);
- European Council (EC) Freshwater Fish Directive (2006/44/EC);
- European Council (EC) Dangerous Substances Directive (2006/11/EC);
- Surface Waters (Fishlife) (Classification) Regulations 1997;
- Land Drainage Act (1991);
- Contaminated Land (England) Regulations (2006) Statutory Instrument No. 1380; and,
- Construction (Design and Management) Regulations 2007.

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6.2.3 The assessment has also been undertaken with reference to the following statutory and general guidance:

- Environment Agency – Pollution Prevention Guidance (PPG) - 1 General guide to the prevention of water pollution (May 2001);
- Environment Agency PPG2 – Above ground oil storage tanks (August 2011);
- Environment Agency PPG3 – Use and design of oil separators in surface water drainage systems (April 2006);
- Environment Agency PPG5 – Works and maintenance in or near water (October 2007);
- Environment Agency PPG6 – Working at construction and demolition sites (March 2012);
- Environment Agency PPG7 – Refuelling facilities (July 2011);
- Environment Agency PPG21 – Pollution incident response planning (March 2009);
- Environment Agency PPG22 – Dealing with spills (April 2011);
- Environment Agency – Pollution Prevention Technical Information note, Major Pipelines (June 2011);
- Construction Industry Research and Information Association (CIRIA) publication C532 – Control of water pollution from construction sites (2001);
- Construction Industry Research and Information Association publication C650 – Environmental good practice on site (2005);
- Construction Industry Research and Information Association publication C515 – Groundwater Control – design and practice (2000);
- Construction Industry Research and Information Association publication C648 – Control of water pollution from linear construction projects (2006);
- Construction Industry Research and Information Association publication C503 – Environmental good practices – working on site (2000);
- Construction Industry Research and Information Association publication C502 – Environmental good practices on site (2000);
- Environment Agency Groundwater Protection: Principles and Practice, Version 1.1 (2013);
- Environment Agency Model Procedures for the Management of Land Contamination (Contaminated Land Report (CLR) 11) (2004);
- BS5930:1999 + A2:2010, The Code of Practice for Site Investigations (August 2010); and,
- BS10175:2011, Investigation of Potentially Contaminated Sites, (March 2011).

Consultation

6.2.4 A summary of the responses provided in the Scoping Opinion of relevance to hydrology, hydrogeology and land quality is presented in **Table 6-1**.

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Table 6-1 Summary of scoping responses received from PINS with regard to hydrology, hydrogeology and land quality

Comment	Section of PER in which comment has been addressed
The Secretary of State does not agree that the risk to soils, groundwater and surface water as a result of the construction of the new port terminal can be scoped out.	Section 6.3 (Table 6-2)
The baseline should explain in detail the extent of the study area and justify reasons for this.	Section 6.3 (Paragraph 6.3.1)
The Secretary of State is pleased that the approach to the assessment and need for a Phase 2 site investigation will be agreed with RCBC and the Environment Agency.	Discussions are on-going regarding the requirement for a Phase 2 site investigation to inform the ES.
The Secretary of State is pleased to note that a piling risk assessment will be carried out.	Section 6.5, (Paragraph 6.5.25)
The ES should include an assessment of the risk of contaminated material leaching into the ground during construction and operation and potential impacts on soil and land resources due to this.	Section 6.5 (Paragraph 6.5.20 to 6.5.25) and Section 6.6 (Paragprah 6.6.1 to 6.6.6)
Potential impacts associated with contamination risks should be addressed throughout the ES. Attention is drawn to Section 4 of the scoping opinion in relation to the potential need for a Health Impact Assessment.	Section 6.5 and Section 6.6.
The Environment Agency stated that an examination of landfill gas records from Bran Sands landfill identified that there is no previous evidence of landfill gas migration from the site that could affect the proposed development. This environmental monitoring data is available on the Environment Agency public register. The Environment Agency stated that the developer should be aware of the potential risk from landfill gas and the developer may wish to undertake a risk assessment to ensure the risk is adequately addressed.	Section 6.5 (Paragraph 6.5.11 to 6.5.14) and Section 6.6 (Paragraph 6.6.3 to 6.6.6)

6.3 Methodology

Study area

6.3.1 For the purpose of this assessment, and to aid the baseline description, two study areas have been defined to assess the impacts associated with the project:

- Development footprint – this encompasses the entire onshore area of the construction works, which includes the locations for the proposed port terminal, storage surge bins and conveyors that would be subject to direct impact.
- Buffer zone – this constitutes a 1km buffer around the development footprint where environmental receptors may be present but no physical works would take place.

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Existing environment

6.3.2 This section identifies the existing sensitivity of the geology, soils, human health, groundwater (hydrogeology) and surface water (hydrology) in the study areas and identifies the likely implications and effects upon them from the proposed scheme. The environmental baseline has been informed by data collated for the PRA (Royal HaskoningDHV, 2014) which is provided in **Appendix 6.1**. As part of the PRA, the following data sources were reviewed:

- An environmental sensitivity (Envirocheck™) report containing: historical and current Ordnance Survey maps, records from Environment Agency and Local Authority databases and contemporary trade directory entries.
- Observations from a site walkover conducted on 2 December 2013 by an environmental consultant from Royal HaskoningDHV.
- Anecdotal evidence from site operatives.
- Environment Agency groundwater and river quality data (www.environment-agency.go.uk).
- Borehole logs accessed from the British Geological Survey (BGS) online viewer.
- DEFRA (Department of the Environment and Rural Affairs) Industry Profiles.

Methodology for the assessment of potential impact

6.3.3 The methodology adopted for the assessment of potential impacts follows the generic EIA methodology set out in **Section 4** and is based on the following set of principles:

- the type of effect (long-term, short-term or intermittent, positive, negative or neutral);
- the probability of effect occurring;
- the sensitivity of the receptor (specific definitions in this context are provided in **Table 6-2**); and,
- the magnitude (severity) of the effect (specific definitions in this context are provided in **Table 6-3**.

Impact significance

6.3.4 The impact significance is determined by considering magnitude in relation to the sensitivity of the receptor impacted, as demonstrated by the matrix presented in **Section 4** and summarised in **Table 4-3**.

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Table 6-2 Definitions of receptor sensitivity

Criteria	Geology	Soils	Human Health	Hydrogeology (Groundwater)	Hydrology (Surface Water)
Very high	Sites designated at international level, e g World Heritage Sites	Deep naturally occurring soils, highly permeable and therefore highly susceptible to mobile contamination	Children present with a risk of long term constant exposure	Aquifer designation is 'Principal Aquifer' Groundwater flow supports an internationally designated site, such as a SAC or SPA Site located within a Source Protection Zone (SPZ) 1 Site within close proximity of a public water supply abstraction Site within close proximity of major industrial abstraction	Site assessed under the WFD as having high ecological quality and / or good chemical quality Site Protected under EC habitat legislation (SAC, SPA, Ramsar Site Surface water abstraction licence (large volume) and / or discharge consent within close proximity of the site
High	Deposit rare Deposit/strata value high (national importance/designation, e g SSSIs)	Naturally occurring soils, highly permeable and therefore highly susceptible to mobile contamination	Children present with a risk of long term exposure	Aquifer designation is "Secondary Aquifer" (A or undifferentiated) Baseline data indicate groundwater flow to nationally designated sites, such as Sites of Special Scientific Interest (SSSIs). Site within close proximity of private water supply groundwater abstraction Site located within a SPZ2	Site assessed under the WFD as having good ecological quality and / or good chemical quality Site Protected under UK habitat legislation (e.g. SSSI) Surface water abstraction licence (low volume, but no alternative source) and / or discharge consent within close proximity of the site

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Table 6-3 Definitions of magnitude of impact

Criteria	Receptor			
	Geology	Soils/Human Health	Hydrogeology	Hydrology
High	Disturbance or loss to protected geological attributes of a designated conservation site	Widespread contamination. High risk of exposure Multiple sources of pollution identified and multiple linkages to receptors	Major change from the baseline conditions Major permanent or long-term change to groundwater quality or available resource The quality and / or quantity of the existing resource is impacted beyond repair. Changes to quality or water levels will have a significant impact upon ecological designated sites.	Impacts result in widespread water quality deterioration resulting in a deterioration in the WFD status of the water body Significant change in water flow leading to damage to fisheries or sensitive habitats
Medium	Minor disturbance or loss to protected geological attributes of a designated conservation site	Localised contamination Unlikely to affect end users but may affect construction workers in close proximity	Changes to the local groundwater regime are predicted to have a slight impact on resource use but not derogate any existing abstractions. Minor impacts on local and regionally important ecological sites may result	Impact to water quality limited in spatial extent so that it does not constitute deterioration in the water body status with regards to WFD Change in water flow but limited in temporal extent so that there is no damage to fisheries or sensitive habitats.
Low	No significant changes to protected geological attributes of a designated conservation site	Very localised contamination No perceptible effect (no pollutant linkages)	Changes to groundwater quality, levels or yields will only have minor, short-term impact on existing resource use or ecology	Impact to water quality limited in spatial and temporal extent so that it does not constitute deterioration in the WFD water body status No measurable change in flow
Very Low	No significant changes to protected geological attributes of a designated conservation site	No contamination. No effect on receptors	Negligible change to groundwater baseline conditions approximating to a 'no change' situation	No discernable change in water quality No measurable change in flow

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Criteria	Geology	Soils	Human Health	Hydrogeology (Groundwater)	Hydrology (Surface Water)
Medium	Deposit localised Deposit/strata value medium (regional importance/designations)	Shallow natural soils. Permeable soils, therefore susceptible to mobile contamination	Children present with a risk of medium term exposure, or adults present with a risk of long term exposure	Aquifer designation is "Secondary Aquifer" (A or undifferentiated) Baseline data indicate discharge to surface water and/or aquifer used locally as source of supply Site located within the total catchment area of a SPZ	Site assessed under the WFD as having moderate ecological quality and / or good chemical quality Surface water supplies water to water sensitive sites of local importance, e g. Local Nature Reserve
Low	Deposit widespread Deposit/strata value low (local importance/designation) or no value	Made Ground. Some clay content therefore slightly susceptible to mobile contamination	Only adults present with a risk of short term exposure	Aquifer designation is "Secondary Aquifer" (B). Baseline data show that the aquiler unit is limited in spatial extent and thickness, and/or baseline data indicate limited interaction with surface water.	Site assessed under the WFD as having moderate ecological quality and / or a failure in chemical quality Surface water does not supply water to sensitive site
Very Low	Deposit widespread No deposit/strata value (no designation)	Made Ground containing anthropogenic material. High clay content, therefore not highly susceptible to mobile contamination	No human receptors present or very transient exposure (adults only)	Aquifer designation is "Unproductive Strata". Borehole data shows the geological unit to be 'dry'. No interaction with surface water	Site assessed under the WFD as having bad ecological quality and / or a failure in chemical quality Watercourse is a heavily modified drain of no ecological value

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6.4 Existing environment

Geology

Superficial geology

6.4.1 The BGS Geology of Britain Viewer and borehole logs (available from the BGS Geoindex tool) indicate that the majority of the site is underlain by Made Ground deposits, beneath which are superficial deposits. Information taken from the BGS Geoindex website describes Made Ground in the area, with a maximum recorded thickness of 6.5m below ground level (bgl), as 'slag'.

6.4.2 The superficial deposits underlying the landside footprint of the proposed port terminal and the conveyor routes are reported to comprise Tidal Flat deposits. The BGS describes Tidal Flat deposits as sand, silt and clay.

6.4.3 To the east of the proposed port terminal footprint, prior to the conveyor route entering the (**off-site**) MHF, the superficial deposits consist of Glaciolacustrine Deposits which are formed of clay and silt.

6.4.4 There is a small area of land within the western section of the proposed scheme footprint (**near to the** Tees estuary, traversing the Dabholm Gut) which is reported to contain no superficial deposits. The BGS reports that Made Ground deposits are present directly above the solid geology at this **location**.

Bedrock geology

6.4.5 The bedrock geology within the site comprises mudstone of various ages. The mudstone comprises (west to east) Mercia Mudstone, a narrow band of Penarth Mudstone and Redcar Mudstone Formation.

Borehole records

6.4.6 As discussed above, a number of borehole logs are freely available on the BGS **Geoindex website**. These logs (NZ52SE22/A and NZ52SE50 located adjacent to the Dabholm Gut, **NZ52NE60 located at** the Redcar Works and NZ52SE13551/12A located to the east of the Waste **Water Treatment Plant (WWTP)) have been summarised in Table 6-4.**

Soil geochemistry

6.4.7 The BGS Estimated Soil Geochemistry maps (see **Appendix 6-1**) indicate **concentrations of** arsenic within soils ranging from <15mg/kg to 25mg/kg to the east; cadmium **at concentrations <1.8mg/kg**; chromium at concentrations ranging from 60mg/kg to 90mg/kg; lead **concentrations ranging from** 150mg/kg to 300mg/kg and <150mg/kg to the west; and nickel **concentrations ranging from** 15mg/kg to 30mg/kg. These concentrations are considered to represent baseline conditions at this site.

Table 6-4 Summary of borehole log records

Geology	Depth (mbgl)	Description
Made Ground	Encountered from ground level to between 4 50 and a maximum of 6 50 mbgl	Slag
Superficial Deposits (Tidal Flat Deposits)	Encountered between 4 50 and a maximum depth of 9 00 mbgl	Brown, fine to medium Sand with occasional shell fragments, some silts
Superficial Deposits (Till)	Encountered between 7 60 and a maximum depth of 12 20 mbgl	Boulder Clay
Mudstone	Encountered between 9 00 and a maximum depth of 28 20 mbgl	Dark grey weak Mudstone

Designated sites

6 4 8 There are no sites designated for geological importance within the footprint of the proposed scheme

6 4 9 The Redcar Rocks SSSI is designated for its geological interest; however, the proposed scheme is located more than 6km from this SSSI

Sensitivity – geology

6 4 10 There are no Regionally Important Geology sites (RIGs) or, as above, SSSIs designated for geological interest within the proposed scheme footprint Furthermore, there is a high likelihood for Made Ground, comprising slag deposits to be present within the proposed scheme footprint As such, the site is considered to be of low very sensitivity for geology

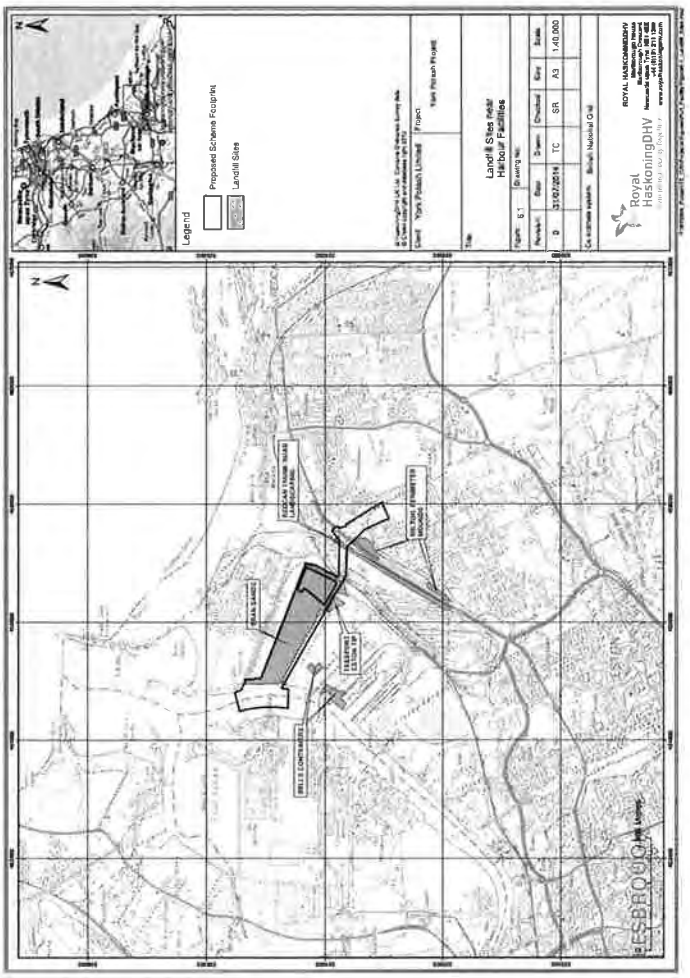
Soils (and human health – land quality)

6 4 11 A desk based PRA (Royal HaskoningDHV, 2014 (**Appendix 6.1**)) has been carried out, as discussed in **Paragraph 6.3.2**, and the results are detailed below

6 4 12 A large volume of Made Ground (generally thought to comprise slag) has been used to raise a significant portion of the scheme footprint and may represent a source of contamination. Slag has been recorded to a maximum depth of 6 5mbgl (BGS data). Given the industrial nature of the area, there may also be residual contamination associated with historical activities (e g leakages from fuel storage areas)

Landfill sites

6 4 13 The locations of historic and current landfills in relation to the site boundary are presented in **Figure 6-1** and discussed below



Bran Sands landfill

6 4 14 Environment Agency mapping indicates that the proposed scheme is to be located immediately adjacent to a currently permitted landfill (Bran Sands landfill)

6 4 15 The Waste Management Licence (reference EAWML60092) permitted the Bran Sands landfill site to accept controlled waste as defined by Section 75 of the Environmental Protection Act 1990 (as amended), including inert waste, general and biodegradable waste, metals, contaminated general wastes, asbestos and mineral wastes from thermal processes.

6 4 16 Waste is no longer deposited within the Bran Sands landfill as it has been capped with a composite capping system and is the subject of a closure plan as agreed with the Environment Agency Capping was completed in April 2007, with restoration completed in 2008 Data suggests that the cap comprises a 1m thick layer of clay with hydraulic conductivity not exceeding 1x10-9m/s, with a layer of soils to a minimum thickness of 1m. A surface water drainage system is in place to prevent excessive infiltration and damage to capping systems.

6 4 17 Leachate from the landfill site is collected from leachate extraction chambers located within the landfill site boundary It is then pumped to one of three leachate holding lagoons prior to being pumped to the sewer system for discharge Leachate is reported to meet discharge consent parameters.

6 4 18 A review of the annual monitoring reports for the Bran Sands Landfill was carried out by AMEC on behalf of YPL (AMEC, 2012) Environmental monitoring (groundwater, ground gas and leachate monitoring) is being carried out in accordance with the closure plan for the site It is reported that monitoring parameters, locations and frequency are in compliance with the permit and closure plan (AMEC, 2012) A sewage sludge treatment centre, operated by NWL, is located on the eastern side of the landfill site

Teesport Eston Tip landfill

6 4 19 To the south of Bran Sands Landfill, there is a historic landfill known as Teesport Eston Tip, which was operational from December 1977 to September 1993 According to the Environment Agency, waste deposited in this landfill comprised industrial wastewater, sewage sludge and chemical wastes mixed with municipal solid waste

Redcar Trunk Road landfill and Wilton Perimeter Mounds landfill

6 4 20 There are also landfill sites to the south east of the Bran Sands landfill site, namely Redcar Trunk Road and Wilton Perimeter Mounds. Waste was received at the Redcar Trunk Road landfill site from September 1977 to August 1979 and the site was licensed to receive inert and industrial waste.

6 4 21 There is potential for landfill gas and contaminated leachate to be generated within the landfill sites present within the vicinity of the proposed scheme footprint.

Sensitivity – soils (and human health - land quality)

6 4 22 Due to the previous historical use of the proposed scheme footprint there is a high likelihood that contaminants are present in localised areas on site that may present an unacceptable risk to site workers (during both construction and operation) Whilst the proposed scheme falls outside the area of the Bran Sands landfill, borehole logs indicate that the ground conditions could contain slag deposits However, access to the proposed scheme footprint is secure and only construction workers and site operatives would be present on site during the construction and operational phases Health and safety precautions will be adopted to protect workers from potential contaminants within near surface soils, groundwaters and surface waters, including use of appropriate personal protective equipment (PPE)

6 4 23 Given the nature of access by people not involved in construction works, and use of PPE by construction workers, the sensitivity of human health to the site is considered to be low

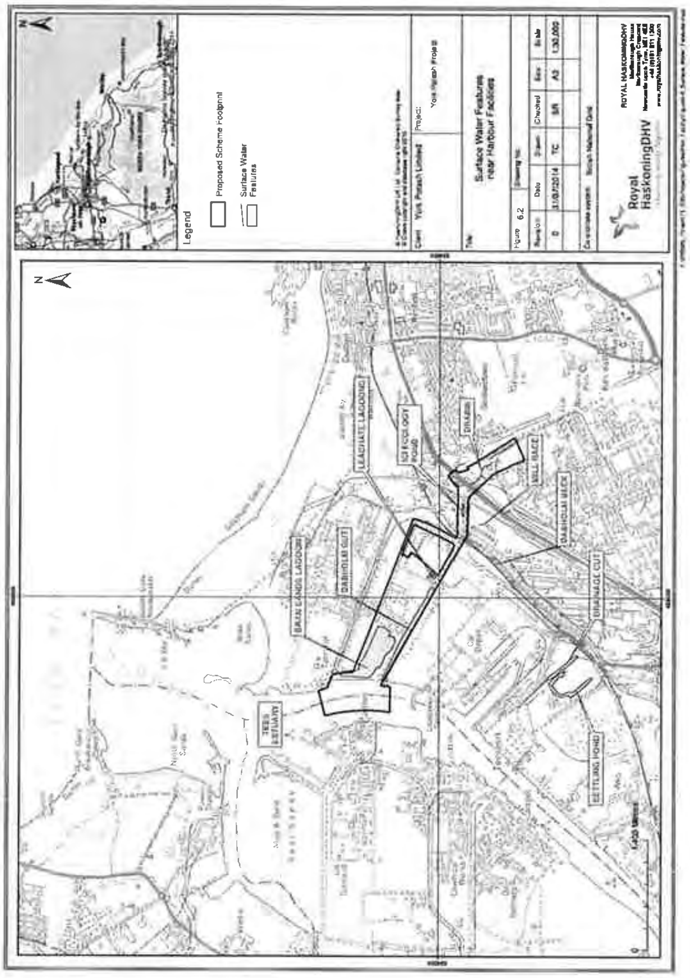
Hydrology (surface waters)

6 4 24 The proposed scheme footprint is located on the eastern bank of the Tees estuary, adjacent to a number of smaller surface water bodies including ponds, lagoons and drainage channels (as identified on **Figure 6-2** and discussed below)

6 4 25 According to the Environment Agency, under the WFD, the chemical status of the estuary for all contaminants is deemed to be 'good' with the exception of tributyltin (TBT) compounds and, as a result of this failing element, the overall assessment for chemical elements is classified as 'failing' TBT was used as a biocide in antifouling coatings on marine vessels and the main source of these compounds in marine sediments is considered to be as a result of leaching from these coatings However, the landside works associated with the proposed scheme would not result in the disturbance of sediments, and therefore the potential release of TBT (reference should be made to **Section 7**) The ecological status of the Tees estuary under the WFD has been defined as 'moderate', based on its overall biological quality and physico-chemical quality.

6 4 26 The local area is drained by Dabholm Gut, which is a locally important, tidally influenced drainage channel Historically this channel received untreated domestic sewage and industrial effluents which were discharged directly into the Tees estuary A watercourse named The Fleet drains the area to the north east of the proposed scheme footprint.

6 4 27 Under the WFD, the Environment Agency has classified Dabholm Gut (upstream of the normal tidal limit) as being of 'moderate' ecological status, however, its chemical quality fails. The tidal part of Dabholm Gut is identified under the WFD as the Wilton (Tidal Tees) Area The WFD has been considered further within **Section 23** of this PER



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6 4 28 With the exception of the Tees estuary, the largest surface water feature in the vicinity of the site is the Bran Sands lagoon The Bran Sands lagoon is within the boundary of the Bran Sands landfill Although no waste disposal has been reported within the lagoon area, the lagoon is regulated by the Environment Agency under the Environmental Permitting (England and Wales) Regulations (EPR) (Environmental Permit Reference: EA/EPR/MP3790ZW/V002) The lagoon is monitored in accordance with the Environmental Permit and Closure, Restoration and Aftercare Plan

6 4 29 Bran Sands lagoon is the sole remaining area left unreclaimed from a series of lagoons that were created using slag material in this area It is approximately 700m x 500m in size, surrounded on all sides by bunds formed from locally derived slag fill The water level in the lagoon varies due to the presence of a concrete pipe which links the lagoon to the Tees estuary The pipe allows limited tidal exchange between the estuary and the lagoon

Water abstractions

6 4 30 There are no surface water abstractions within the proposed scheme footprint However, there is one surface water abstraction licence (held by SSI), located approximately 500m to the north of the site boundary The water is reported to be abstracted from the Tees estuary and is used for cooling purposes

Discharge consents

6 4 31 There are a number of reported discharge consents within the proposed scheme footprint The majority of these consents have been revoked, with the exception of two licences associated with the off-site WWTWs which discharge treated effluent to the Dabholm Gut

Sensitivity - hydrology

6 4 32 The landside section of the proposed scheme footprint is bounded by the Tees estuary to the west and the Dabholm Gut to the south Treated effluent and site drainage does discharge to the Tees estuary However, there are no abstractions within the footprint of the proposed scheme The hydrological sensitivity of the site is, therefore, considered to be low

Hydrogeology

Aquifer classification

6 4 33 The Environment Agency has classified the superficial deposits within the western section of the landside part of the proposed scheme footprint (the quay and conveyor corridor) as a Secondary Aquifer (Undifferentiated) (Tidal Flat Deposits) The eastern section of the proposed scheme footprint has been designated as a Secondary A Aquifer (Glaciolacustrine Deposits) and unproductive strata, Glacial Till, to the far east of the conveyor corridor

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6 4 34 The underlying (Mudstone) bedrock has been classified by the Environment Agency as a Secondary B Aquifer, with the exception of the Penarth Group Mudstone, which is defined as a Secondary Aquifer (Undifferentiated)

Groundwater vulnerability

6 4 35 The vulnerability of the aquifer to accidental spillages / leakages of fuel or oil during construction and operation will be greatest where the superficial deposits are absent or where they are relatively permeable, for example, where there are sand deposits In the areas of silt and clay, the vulnerability of the bedrock aquifer to pollution will be relatively low The groundwater vulnerability in the western section of the site has been designated high where there is an outcrop of Mudstone The eastern area of the site is predominately underlain by Glaciolacustrine Deposits (clay and silt), therefore, its vulnerability to pollution will be low

Groundwater abstractions

6 4 36 There are no groundwater abstractions within, or in the vicinity of, the footprint of the proposed scheme

6 4 37 There is no groundwater SPZ within the footprint of the proposed scheme, or in the vicinity of the proposed scheme footprint

Groundwater quality

6 4 38 There is potential for leachable contaminants within the Made Ground (slag) deposits to have impacted the groundwater within the superficial deposits There is also the potential that mobile contaminants from the adjacent Bran Sands landfill may have been transported via groundwater flow to adjacent sites There is potential for a range of contaminants to be present within the Bran Sands lagoon including leachate from the Bran Sands landfill or runoff from the adjacent industrial areas

Sensitivity – hydrogeology

6 4 39 The majority of the site is covered by alluvial deposits which are defined as a Secondary Aquifer (Undifferentiated) and are considered to be of low sensitivity The bedrock aquifer has been designated as a Secondary B Aquifer, which is also considered to be of low sensitivity Furthermore, there are no groundwater abstractions or SPZs within the study area Consequently the groundwater sensitivity is considered to be low for both the shallow aquifer and the deep aquifer units

6.5 Assessment of potential impacts during construction

6 5 1 As outlined in **Section 3**, construction activities would include excavation and earth moving for the creation of the port terminal, product storage facilities adjacent to the port terminal and a conveyor system between the port terminal and the MHF at Wilton

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6 5 2 Full details on the activities proposed during the construction phase of the proposed scheme are provided in **Section 3** The activities considered likely to impact geology, soils, human health, groundwater and surface water quality are listed below

- Open quay structure
  - installation of the piles using floating plant;
  - construction of the concrete deck;
  - installation of fixtures and fittings;
  - revetment of the river embankment;
  - installation of mechanical and electrical services, and,
  - installation of materials handling plant on the quay
- Solid quay structure:
  - installation on the combi-pile wall using floating plant;
  - partial reclamation,
  - installation of anchor wall and crane beam using landside plant;
  - installation of materials handling plant on the quay;
  - installation of fixtures and fittings,
  - installation of mechanical and electrical services; and,
  - construction of the concrete deck
- Storage surge bins and conveyor system:
  - installation on the piled foundations for the storage surge bins,
  - raise and improve ground for the storage surge bins, and,
  - construction of the conveyor route likely to involve foundations, earthworks, levelling and an imported sub-base

6 5 3 The proposed installation of the site compound on the Bran Sands landfill also has the potential to impact upon geology, soils, human health, groundwater and surface water quality

Impacts to geology

6 5 4 There is the potential for construction activities to impact the geology of the study areas in a number of ways, including:

- removal of superficial/bedrock deposits,
- ground stability, for example subsidence, slope stability, compaction and failure; and,
- piling activities which are expected to exceed the depth of the superficial deposits

6 5 5 Piling works for the port terminal and storage surge bins have the potential to disturb the local geology However, the proposed construction area for these features would not necessitate the removal of

superficial or bedrock deposits. The proposed scheme is likely to require surface excavation, earth moving and compaction during site preparation and construction.

6.5.6 It is anticipated that imported material would be required to raise the existing ground level within the footprint of the proposed storage surge bins to an appropriate level, as well as filling the area behind the quay (should the solid quay design be selected as the preferred option for the port terminal).

6.5.7 With respect to ground stability issues relating to the affected superficial deposits, the planning, design and construction of the proposed scheme have taken into account the engineering characteristics of the ground. These works have a low potential to disturb the local geology.

6.5.8 There are no sensitive geological features identified within the footprint of the proposed scheme. Therefore, the sensitivity of the geological receptor is considered to be low and, although piling, excavation and dredging would take place, there would be no large scale loss of the non-designated geology, equating to a low magnitude effect. Consequently, the impact upon local geology during construction is anticipated to be negligible.

Impacts to soils

6.5.9 There is the potential for construction activities to impact the soil through accidental spillages or leakages of polluting substances, such as fuel or oils during the construction phase. Given that fuels, oils and chemicals would be stored on-site at certain phases of works, for example for the re-fuelling of machinery, spillages and leakages could occur. However, these potential spillages and leakages are likely to be localised and not result in significant losses given the on-site management protocols that would be adopted. If soils become contaminated as a result of spillages or leakages of fuels or contaminants, the soils may be unsuitable for use in the proposed scheme and, therefore, would require off-site disposal.

6.5.10 Given the history of the site and the large quantities of Made Ground present, the sensitivity of the soil is considered to be low. Given that any direct contamination of the soil is anticipated to be controlled, temporary, predominantly reversible and the volumes of potentially polluting chemicals in use at any time would be limited in quantity, the magnitude of effect is predicted to be low. Consequently, the potential significance of impacts on soil quality due to direct contamination is considered to be negligible.

Impacts to human health

6.5.11 There is the potential for the construction phase to impact human health in a number of ways, including:

- dermal contact;
- ingestion or inhalation of soil; and,
- inhalation of dust and any associated ground gases.

6.5.12 This potential exists due to the status of the existing land quality. Excavations within potentially contaminated soils in the footprint of the proposed port terminal area could result in the mobilisation of contaminants and activation of pollutant linkages between the potential contamination source and the receptor (construction workers).

6.5.13 The planned excavation and filling works across the quay area (for the solid quay structure only) may initially disturb and mobilise potential contaminants within the surface materials. However, the imported materials required to improve the ground or raise the ground levels would be proven suitable for use prior to placement and would ultimately reduce the hazard posed by existing potentially contaminated soils on site.

6.5.14 The only receptor considered to be at risk within this category is construction workers, who are considered to be of low sensitivity when adequate protective measures are put in place. The potential magnitude of effect is generally predicted to be moderate across the site. Disturbance, re-profiling and excavation of soils potentially containing contaminants is considered to be hazardous activity to the health of construction workers, and the overall significance of the impact is considered to be minor adverse.

Impacts to hydrology (surface waters and land drainage)

6.5.15 There is potential for the proposed scheme to impact nearby surface water bodies in a number of ways, including:

- increase of suspended solids; and,
- deterioration in surface water quality (via contaminated run off).

6.5.16 Excavation/re-grading of the proposed port terminal area in potentially contaminated soil could mobilise contamination.

6.5.17 During construction it would be necessary to strip and level soil across the site to create a level base for the placement of sub-base (in order then to lay the concrete deck) materials. The potential for pollution of surface water is principally limited to the construction phase when high levels of suspended solids and/or leachates from Made Ground have the potential to enter local watercourses. Due to the low lying coastal location of the site, there is the potential that soils could wash away during extreme weather events directly into the adjacent surface water features.

6.5.18 Given that fuels, oils and chemicals would be stored on-site during certain phases of works (for example, for the re-fuelling of machinery) spillages and leakages could occur. These potential spillages and leakages are likely to be localised; however, depending on location, they may present a risk to surface water quality. This is unlikely to result in significant pollution given the on-site management protocols that would be adopted.

6.5.19 The sensitivity of the surface water receptors in the study areas is considered to be low. The potential magnitude of the effect is predicted to be medium. Consequently, the significance of the impact to surface water is assessed as minor adverse without the incorporation of suitable mitigation methods (these will be considered in the EIA).

Impacts to hydrogeology (groundwater)

6.5.20 There is potential for the proposed scheme to impact hydrogeology in a number of ways, including:

- levelling and raising of site levels;
- alteration of groundwater flow around piled foundations; and,
- deterioration in groundwater quality (via contaminated run off, infiltration and leaching).

6.5.21 Excavations would not extend into the underlying bedrock aquifer, with the possible exception of piling for the port terminal and surge bin foundations. As a consequence of the construction works the ground level across the proposed construction area would be levelled and potentially raised through the use of dredged materials (for the solid quay structure only). The ground level would remain above the groundwater table and it is unlikely that groundwater would be encountered as part of these works (with the exception of piling), resulting in a low magnitude effect on the groundwater flow.

6.5.22 BGS records indicate that a significant depth of Made Ground has been identified in the vicinity of the proposed scheme footprint and, therefore, there is the potential for existing contamination to be present in the Made Ground and adjacent landfill, which could impact the groundwater through leaching and lateral migration.

6.5.23 Groundwater quality of the aquifer units may be affected by piling foundations. There is the potential to generate a viable pollutant linkage between the potentially contaminated shallow soils (Made Ground) and groundwater (perched or otherwise), which may impact upon the aquifer units below.

6.5.24 Given that fuels, oils and chemicals would be stored on-site during certain phases of works (for example, for the re-fuelling of machinery), spillages and leakages could occur. These potential spillages and leakages are likely to be localised, although they may present a risk to groundwater quality. However, this is unlikely to result in significant pollution given the on-site management protocols that would be adopted.

6.5.25 The sensitivity of the groundwater in the study areas is considered to be low, as the water is not used as a resource (i.e. there are no known groundwater abstractions in the area). The magnitude of the predicted effect on the groundwater receptors is also considered to be low. The significance of the overall potential impact on groundwater, therefore, has been assessed as minor adverse, without the incorporation of mitigation methods. This impact will be assessed further during the subsequent stages of the EIA process through the completion of a piling risk assessment, with the results presented in the ES.

6.6 Assessment of potential impacts during operation

6.6.1 There would be a number of potential contamination sources present on site during the operational phase of the proposed scheme. The bulk storage of polyhalite, which contains potassium, calcium and magnesium sulphate (K_2SO_4 $MgSO_4$ $2CaSO_4$ $2H_2O$), would cause significant pollution if it was to enter the environment in an uncontrolled manner. To a lesser extent, there is the potential that fuels stored on site, associated with the loading facilities, could result in pollution if leaks or spills occur.

6.6.2 The impacts arising from such operational activities could include the contamination of soil and potential impacts to surface water quality via contaminated run off, as well as potential impacts to groundwater quality via infiltration.

Impacts during operation on geology, hydrogeology, hydrology, soils and human health

6.6.3 The volumes of product proposed to be stored in the surge bins during the operational phase would be limited. Furthermore, physical controls would be in place in the form of enclosed storage areas for these materials. The impact to geology, soils, hydrogeology and hydrology during operation would be local, given the measures discussed above. Furthermore, pollutant linkages would be removed through the design of the proposed port terminal (concrete), reducing the risk to human health (future site users).

6.6.4 Surface water from the proposed development site will be collected, transferred and discharged through existing drainage systems during its operational phase. This will enable water to drain from the surface area of the proposed scheme without impacting upon the water quality within the Tees estuary.

6.6.5 Therefore the potential effects during operation are considered to be of a low magnitude.

6.6.6 Given a low sensitivity, and the long-term potential risk of soil contamination, an impact of negligible adverse significance is anticipated.

6.7 Potential mitigation measures during the construction and operational phases

6.7.1 During construction work, contractors would ensure that sound environmental practices are adopted. Health and safety precautions should be adopted to protect workers from potential contaminants within near surface soils, groundwaters and surface waters, including use of appropriate PPE.

6.7.2 Care would also be taken to prevent the run-off of waters that may contain suspended solids or fuels during both the construction and operational phase. Best practise techniques and due diligence would be executed throughout all construction activities to minimise the risk of pollution incidents. Further mitigation measures will be considered during the EIA.

6.8 Summary

6.8.1 Published literature indicates that the majority of the site is underlain by Made Ground deposits (described as slag with a maximum thickness of 6.5mbgl), beneath which are superficial deposits. The superficial deposits underlying the landside footprint of the port terminal and the conveyor route options are reported to comprise Tidal Flat deposits. The bedrock geology within the site comprises mudstone of various ages; the mudstone comprises (west to east) Mercia Mudstone, a narrow band of Penarth Mudstone and Redcar Mudstone Formation.

6.8.2 There are no sites designated for geological importance within the site boundary, however, Environment Agency mapping indicates that the proposed harbour facilities would be located immediately adjacent to a currently permitted landfill (Bran Sands landfill site).

6.8.3 As part of the EIA process, the existing ground investigation information and monitoring data that is available in connection with the Bran Sands landfill site is being assessed to further define the land quality status at the site. An assessment of potential impacts to human health, hydrology and hydrogeology with regard to the proposed placement of the site compound on Bran Sands landfill during the construction phase will also be undertaken. When this exercise has been undertaken, discussions will be held with the Environment Agency and RCBC to agree a strategy for managing risks to the environment and human health posed by land quality.

7 MARINE SEDIMENT AND WATER QUALITY

7.1 Introduction

7.1.1 This section of the PER describes the existing environment in relation to marine water and sediment quality and assesses the potential impacts of the construction and operational phases of the proposed scheme. Mitigation measures are detailed and a discussion of the residual impacts is presented where significant impacts have been identified.

7.1.2 This section has been informed by cross referencing to the information presented within **Section 5** (hydrodynamic and sedimentary regime) of this PER.

7.2 Policy, legislation and consultation

National Policy Statement for Ports

7.2.1 The assessment of potential impacts on marine water and sediment quality has been made with specific reference to the NPS for Ports. **Table 7-1** summarises the requirements of the NPS which are of relevance to this section of the PER.

Table 7-1 Summary of NPS for Ports requirements with regard to marine water and sediment quality

NPS for Ports requirement	NPS reference	PER reference
Infrastructure development can have adverse effects on the water environment, including groundwater, inland surface water, transitional waters and coastal waters. During the construction, operation and decommissioning phases, it can lead to increased demand for water, involve discharges to water and cause adverse ecological effects resulting from physical modifications to the water environment.	Section 5.6, paragraph 5.6.1	Section 7.5 and Section 7.6
There may be increased risk of spills and leaks of pollutants to the water environment. These effects could lead to adverse impacts on health or on protected species and habitats and could, in particular, result in surface waters, groundwaters or protected areas failing to meet environmental objectives established under the Water Framework Directive.	Section 5.6, paragraph 5.6.2	Section 7.5 and Section 7.6
Where the project is likely to have effects on the water environment, the applicant should undertake an assessment of the existing status of, and impacts of, the proposed project on water quality, water resources and physical characteristics of the water environment as part of the ES or equivalent.	Section 5.6, paragraph 5.6.3	Section 7.5 and Section 7.6

Relevant legislation

7.2.2 The principal European and International legislation used to inform the assessment of the potential impact on marine water and sediment quality for this proposed scheme includes:

- Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy (the WFD);
- Directive 76/464/EEC Water pollution by discharges of certain dangerous substances (Dangerous Substances Directive) and Priority Substances Directive,
- Directive 2008/56/EC establishing a framework for community action in the field of marine environmental policy (the Marine Strategy Framework Directive);
- Directive 2006/7/EC concerning the management of bathing water quality and repealing Directive 76/160/EEC (the Bathing Waters Directive), and,
- The International Convention for the Prevention of Marine Pollution by Ships (MARPOL Convention) 73/78.

7.2.3 The European Directives listed above are transposed into UK law through a number of regulations, set out below.

Water Framework Directive

7.2.4 As set out in **Section 2.5**, the WFD is a key piece of European legislation relating to the protection of water quality and the ecological status of freshwaters, transitional waters and coastal waters out to one nautical mile (nm).

7.2.5 The WFD provides a mechanism by which regulatory controls on human activites, that have the potential to impact on water quality, can be managed effectively and consistently. In addition to a range of inland surface waters and groundwater, the WFD covers transitional waters (estuaries and lagoons) and coastal waters out to 1nm.

7.2.6 Existing regulations that eventually will be subsumed by the WFD include the Freshwater Fish Directive (consolidated as 2006/44/EC), the Shellfish Waters Directive (consolidated as 2006/113/EC) and the Dangerous Substances Directive (76/464/EEC). The WFD is implemented in England and Wales primarily through the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 (known as the Water Framework Regulations).

7.2.7 UK surface waters have been divided into a number of discrete units termed 'water bodies', with typologies that relate to both their physical and ecological characteristics. Based on ecology and water quality, these water bodies have then been classified into different status classes which have specific objectives in relation to achieving good ecological status.

7.2.8 The WFD requires that all inland and coastal waters must reach at least 'good' status by 2015 and that the status of all surface water bodies should not deteriorate. Individual water bodies that have been

modified to the extent that it will not be possible for them to meet the WFD targets are categorised as Heavily Modified Water Bodies.

Dangerous Substances Directive/Priority Substances Directive

7.2.9 The Dangerous Substances Directive (76/464/EEC) and its daughter Directives are concerned with controlling the level of discharges that contain dangerous substances that may reach inland, coastal and territorial waters. The Directive identified substances for which limit values and Environmental Quality Standards (EQS) were established at European Level (List I).

7.2.10 Some of the EQS have not been superseded by standards established by the Priority Substances Directive 2008/105/EC for priority substances and priority hazardous substances identified in Annex X of the Water Framework Directive. Where this is not the case, limit values and EQS set by the 'daughter' Directives listed in Annex IX of the Water Framework Directive remain in force. The Priority Substances Directive is implemented in England and Wales by the River Basin Districts Typology, Standards and Groundwater Threshold Values (Water Framework Directive) (England and Wales) Direction 2010. Compliance with these standards forms the basis of good surface water chemical status under the WFD.

7.2.11 The Dangerous Substances Directive stipulates uniform emission standards (UESs, also known as limit values) and EQS as approaches for the control of List I substances. For List II substances, all member states are required to establish EQSs on a national level. EQSs for List II substances have been implemented in the UK by the Surface Waters (Dangerous Substances) (Classification) Regulations 1997 and 1998.

7.2.12 The EQSs under the Dangerous Substances Directive and Priority Substances Directive for selected List I substances are shown in **Table 7-2**.

Table7-2 Selected List I Dangerous Substances (Environment Agency, 2011)

Substance	EQS Type	EQS under Priority Substances Directive (annual average, µg/l)	EQS under Dangerous Substances Directive (annual average, µg/l)
Mercury (dissolved)	Annual average	0.05	0.3
Cadmium (dissolved)	Annual average	0.2	2.5
HCH (Lindane)	Annual average	0.002	0.02
Total DDT	Annual average	0.025	0.025
ppDDT	Annual average	0.01	0.01
Pentachlorophenol	Annual average	0.4	2
Aldrin	Annual average	Σ = 0.01	0.01

Substance	EQS Type	EQS under Priority Substances Directive (annual average, µg/l)	EQS under Dangerous Substances Directive (annual average, µg/l)
Dieldrin	Annual average	Σ = 0.01	0.01
Endrin	Annual average	Σ = 0.01	0.005
Isodrin	Annual average	Σ = 0.01	0.005
Total 'Drins'	Annual average	-	0.03
Hexachlorobenzene	Annual average	0.01	0.03
Hexachlorobutadiene	Annual average	0.1	0.1
Carbon tetrachloride	Annual average	12	12
Chloroform	Annual average	-	12
1,2-dichloroethane	Annual average	10	10
Trichloroethylene	Annual average	10	10
Perchloroethylene	Annual average	-	10
Trichlorobenzene	Annual average	0.4	0.4

7.2.13 The EQSs for selected List II substances under these are shown in **Table 7-3** which also includes the relevant EQSs under the Priority Substances Directive (where applicable).

Table 7-3 Selected List II Dangerous Substances (Environment Agency, 2011)

Substance	EQS Type	EQS under Priority Substances Directive (annual average, µg/l)	EQS under Dangerous Substances Directive (annual average, µg/l)
Arsenic (dissolved)	Annual average	-	25
Chromium (dissolved)	Annual average	-	15
Copper (dissolved)	Annual average	-	5
Lead (dissolved)	Annual average	7.2	25
Nickel (dissolved)	Annual average	20	30
Tributyl tin (TBT)	Maximum concentration	0.0002	0.002
Zinc (total)	Annual average	-	40

Marine Strategy Framework Directive

7.2.14 The objective of the Marine Strategy Framework Directive (2005/56/EC) (MSFD) is to achieve "good environmental status" in Europe's seas by 2020, to enable the sustainable use of the marine environment and to safeguard its use for future generations.

7.2.15 The MSFD establishes a comprehensive structure within which EU Member States are required to develop and implement the cost effective measures necessary to achieve or maintain "good environmental status" in the marine environment.

7.2.16 The Directive establishes European Marine Regions and requires Member States to apply an ecosystem based approach to the management of human activities. The timetable for implementation of the strategy is from July 2010 through to December 2016. In the UK, the Directive is implemented via the Marine Strategy Regulation, 2010.

7.2.17 In coastal waters out to 1nm, both the WFD and the MSFD apply. However, in these areas, the MSFD only applies for aspects of good environmental status that are not already addressed by the WFD. These include issues such as the impacts of marine noise and litter, and certain aspects of biodiversity, but not water quality.

Bathing Waters Directive

7.2.18 The Bathing Waters Directive (76/160/EEC) is implemented through the Bathing Waters Regulations 2008. The Environment Agency monitors and assesses bathing water quality at each designated bathing water in England and Wales between May and September. A resulting annual water quality classification is then allocated for every season. This classification is calculated from 20 samples on the basis of concentration of bacteria in each of the following groups:

- Total coliforms.
- Faecal coliforms.
- Faecal streptococci.

7.2.19 Designated bathing water also come under the umbrella of protected areas as identified by the WFD and this Directive will be replaced by the revised Bathing Waters Directive (2006/7/EC) in 2015. This new directive aims to set more stringent water quality standards and also puts a stronger emphasis on beach management and public information. General parameters to be assessed and reduced and the bacterial parameters listed above are replaced by:

- *Escherichia coli*.
- *Intestinal enterococci*.

7.2.20 It also puts in place three new compliance categories – excellent, good and sufficient, as well as the existing poor quality. The Government will be required to ensure that all bathing waters are of sufficient

standard by 2015 and that appropriate measures are taken to increase the numbers classified as excellent or good. Classification will be based on four years' worth of data.

MARPOL Convention

7.2.21 The UK is also a signatory to the International Convention for the Prevention of Pollution from Ships (the MARPOL Convention 73/78) and all ships flagged under signatory countries are subject to its requirements, regardless of where they sail. The convention includes regulations aimed at preventing and minimising pollution from ships, both accidental and that arising from routine operations.

Consultation

7.2.22 A summary of the responses received from PINS through the Scoping Opinion of relevance to marine sediment and water quality are presented in **Table 7-4**.

Table 7-4 Summary of consultation responses

Comment	Section of PER in which comment has been addressed
The EIA should provide results of sediment quality testing from the berth pocket and dredge channel.	Section 7.3 (Paragraph 7.3.5 to 7.3.8)
The commitment to undertake a WFD compliance assessment was welcomed. It was recommends that this is presented in a separate section within the ES.	Section 23
The MMO considers that the potential impacts on marine sediment and water quality must be assessed with relation to sensitive marine receptors such as shellfisheries, spawning and nursery areas, benthic ecology and migratory routes. The MMO concurs with the list of analyses proposed.	Section 8.5 (Paragraph 8.5.9 to 8.5.15) Section 11.5 (Paragraphs 11.5.1 to 11.5.12) Point noted regarding the list of analyses proposed.
Further information on the chemical and thermal natures of the discharge from the materials handling facility, and where/how it will be discharged should be provided to enable assessment of impact on habitat quality for Special Protection Area (SPA) qualifying features*.	See footnote below table
If there is potential for release to the environment, the effects of polyhalite/potash on the marine environment should be fully assessed.	Section 7.5 (Paragraph 7.5.14 to 7.5.16). Section 7.6 (Paragraph 7.6.7).
An appraisal of dredging techniques and their associated impacts on the marine environment in relation to water quality and suspended sediment concentrations (SSC) and designated sites should be presented in the EIA.	Section 7.5 (Paragraph 7.5.1 to 7.5.8)

* The discharge of brine from the MHF was linked to the initial proposal to transport product from the mine to the MHF through the pipeline as a slurry. The current proposals comprise transporting dry material from the mine via the MTS to the MHF and, therefore, there is currently no requirement to discharge brine from the MHF.

Consultation undertaken following receipt of the Scoping Opinion from PINS

7.2.23 In addition to the formal consultation as outlined above, Royal HaskoningDHV produced a separate document in November 2013 which contained a specification for a proposed sediment quality (and benthic ecology) survey. The specification outlined proposed sampling methodologies (equipment and depths of samples), locations and a list of contaminants for analysis. The specification was issued to Natural England, the Marine Management Organisation (MMO) and the Environment Agency in order to reach agreement on it.

7.2.24 **Table 7-5** provides a summary of consultation responses received on the scope of the benthic ecology and sediment quality survey. On the basis of the comments received, a revised specification was developed (which also reflected changes to the scheme design since the original specification was produced) in March 2014 and final agreement was reached on the scope of the surveys in April 2014.

7.3 Methodology

Study area

7.3.1 For marine sediment and water quality, the study area comprises the likely maximum extent over which potentially significant environmental impacts of the proposed scheme may occur. This was informed by the hydrodynamic modelling and was based on the maximum extent over which hydrodynamic impacts may occur (including sediment plumes from construction and effect on tidal currents during operation for example).

Existing environment

Existing sediment quality data from the Tees estuary

7.3.2 There is no recent site-specific sediment quality data available for the proposed scheme footprint. However, a number of other sediment quality surveys have been undertaken within the Tees estuary to inform EIAs and the results of such surveys have been assessed herein. Details of the previous sediment quality surveys undertaken within the Tees estuary are provided below.

7.3.3 A sediment quality survey was undertaken in December 2008 to inform the EIA undertaken for the consented (but not yet constructed) QEII berth, proposed to be located approximately 1.5km upstream of the proposed port terminal. A sediment quality survey was also undertaken within the Tees estuary to inform the EIA for the NGCT in 2006.

7.3.4 Although the above information was not obtained within the footprint of the proposed scheme, the information has been reviewed to provide background context for the PER with regards to water and sediment quality given that the sediment quality survey for the proposed scheme has not yet been undertaken (see below).

Table 7-5 Summary of consultation responses on the scope of the sediment quality survey

Comment	Royal HaskoningDHV response	Follow up response (reflected in revised specification where appropriate)
Natural England		
Ensure that the reason for excluding Bran Sands from sediment sampling is explained in the ES.	Noted.	Not applicable.
Post dredging monitoring of Seal Sands should be taken from the same location as the baseline samples so to identify new deposits as a result of dredging activities. If dredging is found to be detrimental, additional mitigation may be required.	Noted.	Not applicable.
MMO		
Additional sampling than that described may be required to determine the extent of any contamination should some of the material exceed Cefas Action Level 2.	Noted.	Not applicable.
The laboratory and methods used to analyse samples need to meet criteria as set out by the MMO.	Asked for a Cefas approved list of laboratories.	The criteria that Cefas approved laboratories must meet in order for their methodologies and results to be acceptable for Marine Licensing purposes are provided on the MMO's website.
The berth pocket samples should be taken at surface and at depths ranging from 1m to 6m. Five sample locations, as opposed to 4 should be adopted. Moving sample locations 2 and 4 will also give a more representative view of the dredged area.	Proposed change has been noted; however there is no existing berth pocket. Require clarification from Cefas as to the whether this will alter the advice given regarding the additional sampling and relocation of sampling locations 2 and 4.	The corners of the proposed berth are adjacent to a jetty and a natural area of sedimentation, back by a seawall. Sediment would be expected to settle out as the flow slows in these areas, therefore, Cefas still recommend the changes.

Comment	Royal HaskoningDHV response	Follow up response (to be added in revised specification where appropriate)
The particle size analysis (PSA) of the samples will follow the guidelines of DLTR (2002); however, a more detailed methodology should be provided	Awaiting confirmation as to whether Cefas require further details in the PEIR or in the ES.	This is not an immediate requirement and can be dealt with by reporting in the ES. The applicant may wish to consult Cefas (through the MMO) further prior to the final submission of the ES to ensure that the methodologies are appropriate and follow standard and best practice procedures.
It is unclear what the sample size for the PSA will be, depending on the size, it may compromise the faunal sample	The PSA sub-sample will be taken in accordance with advice from Cefas. A small core (cut-off 100ml) syringe will be used to remove sediment from undisturbed surface for PSA analysis	Noted
The results of the PSA should be reported using full particle size distribution, as opposed to only reporting percentage of gravel, sand and silt/clay.	Noted	Not applicable
The MMO welcomes the applicant's use of the OSPAR guidelines	Noted	Not applicable
The MMO recommend that the applicant take samples at the surface and every 0.5m down to the maximum depth to be dredged at each sample location.	Noted	Not applicable
Environment Agency		
The proposed sampling strategy is acceptable	Noted	None

Proposed site-specific sediment quality survey

7.3.5 In order to define the sediment quality baseline, a site-specific survey was commissioned and undertaken in July 2014. As discussed in **Paragraph 7.2.23, 7.2.24** and **Table 7-5,** the sediment quality sampling and analysis strategy was agreed with Natural England, the Environment Agency and the MMO (**Appendix 7.1**)

7.3.6 For the berth pocket and location of the port terminal, six vibrocores were proposed, with two vibrocores proposed from the adjacent approach channel that would be deepened as part of the scheme. The locations of all eight proposed vibrocore locations within the context of the proposed scheme are shown on **Figure 7-1**

7.3.7 During the survey, the position of vibrocore VC05 and VC07 (which had been agreed with Natural England, the Environment Agency and the MMO) had to be modified on-site due to insufficient water depth for the survey vessel. In addition, five of the proposed vibrocore locations had to be very slightly modified on-site from the previously agreed position due to poor sample recovery during the initial vibrocore attempt (the very slightly revised positions are marked within an "A" in **Table 7-6**). The actual location of each vibrocore advanced during the survey is illustrated on **Figure 7-2**. Vibrocores marked with an "A" in **Table 7-6** were located within 10m of the location of the first vibrocore attempt, and therefore have not been illustrated on **Figure 7-2**

7.3.8 Sub-samples were taken from the surface and the base of the core, and at 1.0m intervals through the core down to maximum proposed dredged depth (or until bedrock was reached). Where recovery of sediment within the vibrocore was low, samples were recovered at 0.5m intervals. A summary of the samples collected and the ground conditions encountered during the survey is presented in **Table 7-6**

Table 7-6 Summary of samples collected and ground conditions encountered during the sediment quality survey

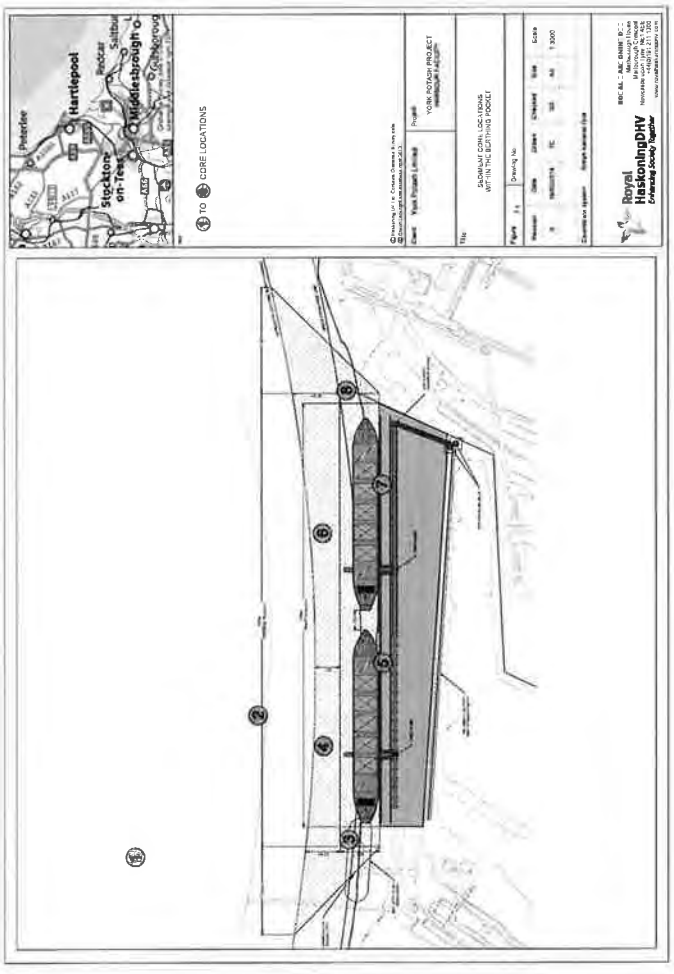
Vibrocore	Date	Sample depths	Composition of sediment recovered
VC01	31 July 2014	No samples able to be recovered	-
VC01A	31 July 2014	0m, 1m, 1.6m	Sandy mud in all samples
VC02	27 July 2014	No samples able to be recovered	-
VC02A	27 July 2014	0m, 0.66m	Sandy mud in all samples
VC03	24 July 2014	No samples able to be recovered	-

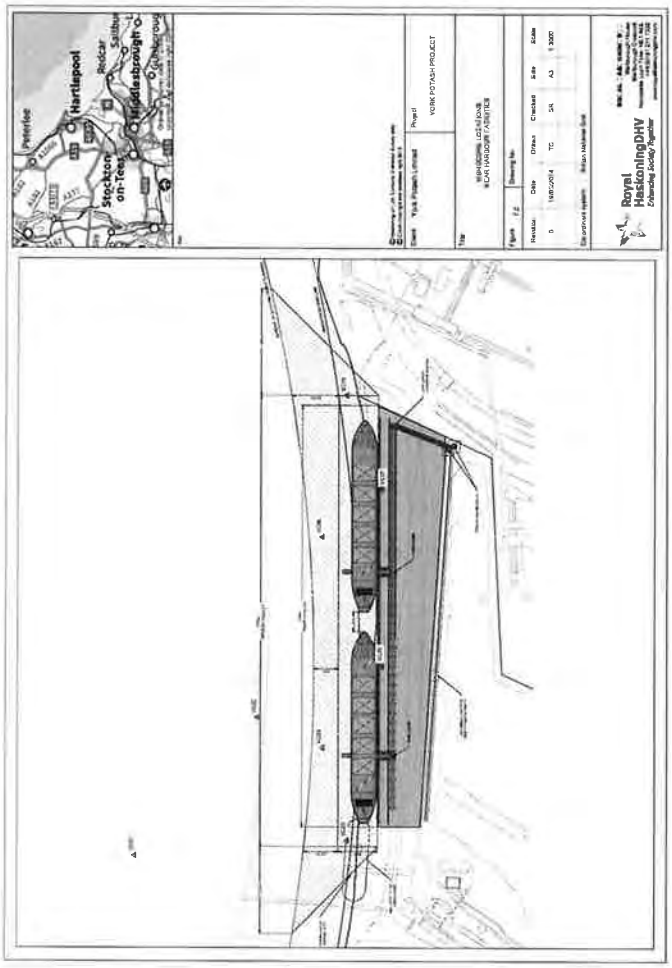
Vibrocore	Date	Sample depths	Composition of sediment recovered
VC03A	24 July 2014	0m, 0.7m 1.24m, 1.79m	Sandy mud at 0m and 0.7m Muddy sandy gravel at 1.24m Sandy clay at 1.79m
VC04	26 July 2014	0m, 1m, 2m, 3m, 4m, 4.53m	Sandy mud in all samples from 0m to 4m Muddy sand at 4.53m
VC05	30 July 2014	0m, 1m, 2m, 3m, 3.48m	Sandy mud in all samples
VC05A	31 July 2014	3.78m	Sandy mud
VC06	26 July 2014	0m, 1m, 2m, 3m, 4.16m	Sandy mud in all samples
VC07	31 July 2014	0m, 1m, 2m, 3m, 4m, 4.87m	Sandy mud in all samples
VC08	26 July 2014	0m, 1m, 2m, 2.8m	Sandy mud in all samples
VC08A	27 July 2014	0m, 1m, 2m, 3m, 4m, 4.68m	Sandy mud at 0m to 3m Muddy sand at 4m and 4.68m

7.3.9 The sediment samples are to be analysed by a United Kingdom Accreditation Service (UKAS) accredited laboratory for the following parameters:

- total organic carbon;
- particle size analysis;
- metals (arsenic, cadmium, chromium, copper, mercury, nickel, lead and zinc);
- polychlorinated biphenyls (25 congeners including ICES 7) (PCB);
- polycyclic aromatic hydrocarbons (PAH);
- total hydrocarbon content (THC);
- organotins (tributyl tin and dibutyl tin); and,
- organochlorine pesticides.

7.3.10 The data from the laboratory analyses are to be compared to the Cefas Action Levels and Canadian Sediment Quality Guidelines.





Methodology for assessment of potential impacts

7.3.12 The methodology used to assess the significance of the potential environmental impacts associated with the proposed scheme is described in **Section 4**. This methodology has been used in this section where sufficient site-specific and relevant information is available to allow an impact assessment to be undertaken at this point in the EIA process.

7.3.13 Given that the results of the site-specific sediment quality survey are not currently available, it is not possible to fully assess the potential impacts of the proposed scheme on marine water and sediment quality as part of this PER. However, the proposed approach to the sediment quality assessment and potential impacts has been discussed.

7.3.14 The assessment of potential water quality impacts will be based on the EQSs outlined in the WFD and Dangerous Substances Directive, or comparison of concentrations to the baseline environment where ESQs do not exist (for example, suspended solid concentrations).

7.3.15 The context for the contaminants within the sediments of the proposed development site is established through the use of recognised guidelines and action levels. These are:

- Cefas Guideline Action Levels for the disposal of dredged material (http://www.marinemanagement.org.uk/licensing/how/sample_analysis.htm); and,
- Canadian Sediment Quality Guidelines for the Protection of Aquatic Life (Canadian Council of Ministers of the Environment, 2002).

7.3.16 The Cefas Action Levels are used as part of a 'weight of evidence' approach to assessing the suitability of dredged material for disposal at sea, but are not themselves statutory standards. These Action Levels are to be used in conjunction with a range of other assessment methods (e.g. bioassays) and data to assess the risk to the environment. Selected current Action Levels are set out in **Table 7-7**.

Table 7-7 Selected Cefas Action Levels

Contaminant	Action Level 1 (mg/kg)	Action Level 2 (mg/kg)
Arsenic	20	100
Cadmium	0.4	5
Chromium	40	400
Copper	40	400
Nickel	20	200
Mercury	0.3	3
Lead	50	500
Zinc	130	800

Contaminant	Action Level 1 (mg/kg)	Action Level 2 (mg/kg)
Organotins (TBT, DBT)	0.1	1
PCBs (sum of ICES 7)	0.01	None
PCBs (sum of 25 congeners)	0.02	0.2

7.3.17 Cefas guidance indicates that, in general, contaminant levels below Action Level 1 are not considered to be of concern and are, therefore, likely to be approved for disposal at sea. Material with contaminant levels above Action Level 2 are generally considered to be unsuitable for disposal at sea. Dredged material with contaminant levels between Action Levels 1 and 2 requires further consideration and testing before a decision can be made. Comparison of results from sediment analysis therefore provides a good indication regarding the risk of the material to the environment.

7.3.18 The Canadian Sediment Quality Guidelines (CSQG), however, involved the derivation of Interim marine Sediment Quality Guidelines (ISQGs) or Threshold Effect Levels (TEL) and Probable Effect Levels (PEL) from an extensive database containing direct measurements of toxicity of contaminated sediments to a range of aquatic organisms exposed in laboratory tests and under field conditions (CCME, 2002). As a result, these guidelines provide an indication of likely toxicity of sediments to aquatic organisms. However, these guidelines should be used with caution as they were designed specifically for Canada and are based on the protection of pristine environments. In the absence of suitable alternatives, however, it has become commonplace for these guidelines to be used by regulatory and statutory bodies in the UK, and elsewhere, as part of a 'weight of evidence' approach.

7.3.19 Selected Canadian guidelines are presented in **Table 7-8** and comprise two assessment levels. The lower level is referred to as the TEL and represents the concentration below which adverse biological effects are expected to occur only rarely (in some sensitive species for example). The higher level, the PEL, defines a concentration above which adverse effects may be expected in a wider range of organisms.

Table 7-8 Selected Canadian Sediment Quality Guideline Values (taken from CCME, 2002)

Contaminant	Units	TEL	PEL
Arsenic	mg/kg	7.24	41.6
Cadmium	mg/kg	0.7	4.2
Chromium	mg/kg	52.3	160
Copper	mg/kg	18.7	108
Mercury	mg/kg	0.13	0.7

Contaminant	Units	TEL	PEL
Lead	mg/kg	30.2	112
Zinc	mg/kg	124	247
Acenaphthene	µg/kg	6.71	88.9
Acenaphthylene	µg/kg	5.87	128
Anthracene	µg/kg	46.9	245
Benz(a)anthracene	µg/kg	74.8	693
Benzo(a)pyrene	µg/kg	88.8	763
Chrysene	µg/kg	108	846
Dibenz(a,h)anthracene	µg/kg	6.22	135
Fluoranthene	µg/kg	113	1,494
Fluorene	µg/kg	21.2	144
Napthalene	µg/kg	34.6	391
Phenanthrene	µg/kg	86.7	544
Pyrene	µg/kg	153	1,398

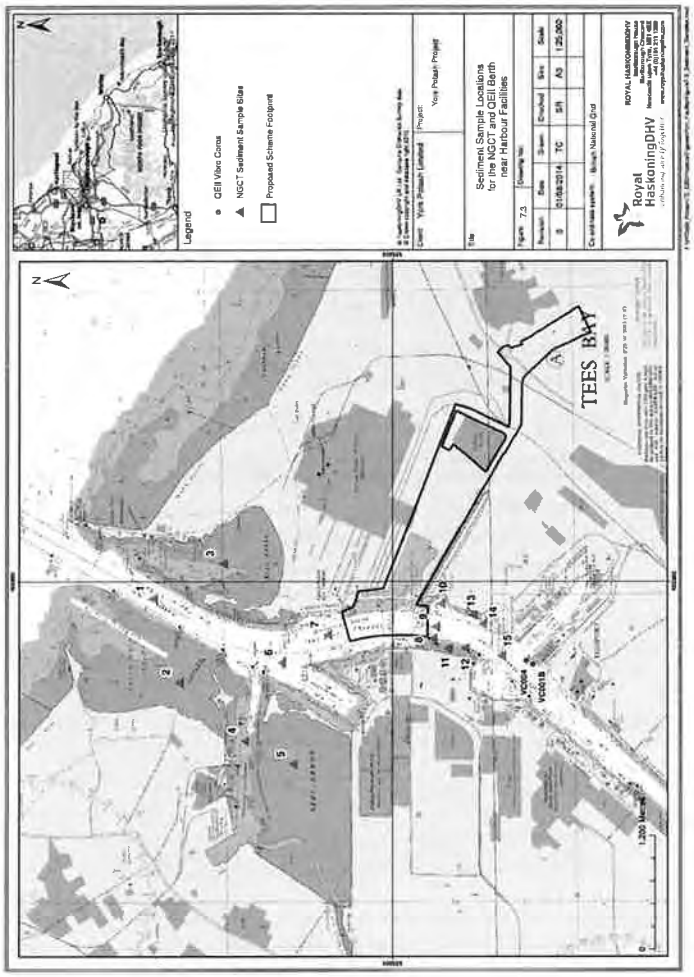
7.4 Existing environment

Sediment quality

7.4.1 The Tees estuary has historically received a considerable amount of waste discharges containing contaminants due to the heavily industrialised nature of the surrounding environment. Whilst significant improvements have been made to waste management and waste water discharges, this legacy of contamination remains in areas of estuarine sediments that remain undisturbed. This is less of an issue where sediment is regularly removed by maintenance dredging, such as within the existing navigational channel.

7.4.2 There have been a number of sediment quality studies undertaken in the Tees estuary over the years which have generally shown decreasing levels of contaminants within the sediments (Tansley, 2003).

7.4.3 Sediment samples were collected as part of the EIA for the NGCT during 2006 (Royal Haskoning, 2006) along the approach channel (downstream of the Tees Dock area) and within the area proposed for the container terminal. The sediment sampling locations for this survey are presented in **Figure 7-2**. Overall, the chemical data indicated some level of contamination within the samples, particularly in terms of heavy metals. However, levels were not deemed high enough to prohibit the material from being disposed of to sea. As a result, a licence was issued for disposal of dredged material at the designated offshore disposal sites in Tees Bay.



7 4 4 An additional sediment quality survey was carried out in December 2008 to characterise the area that is proposed to be dredged as part of the QEII berth refurbishment project. Two vibrocore samples were taken from 4m below Ordnance Datum (OD) or as deep as the core reached. The two samples (VC004 and VC001B) were taken from within the development footprint to build upon the sediment quality data obtained from the NGCT (**Figure 7-3**).

7 4 5 The results from the vibrocores identified that all metals analysed within the sediments exceeded Action Level 1. Concentrations of dibutyl tin (DBT) and tributyl tin (TBT) were also analysed, however, all concentrations were below Action Level 1. Concentrations of mercury (Hg), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb) and zinc (Zn) in the two samples also exceeded Action Level 2. Exceedance of the TEL by acenaphthene was also recorded in sample VC001B.

7 4 6 As well as identifying highly contaminated sediments, the sediment quality survey also indicated a pattern of increasing contamination with depth. As a result of the contamination levels, the fine material was not accepted for disposal to sea and only the Mercia mudstone constituent of the proposed dredge was licensed for offshore disposal. Alternative methods of disposal therefore needed to be sought as part of this scheme.

7 4 7 Site-specific sediment quality data will be collected as part of the vibrocoring survey to be undertaken in the proposed berth area and adjacent channel and the results will be reported in the ES.

Water quality

7 4 8 Improvements in water quality in the Tees estuary in the last 30 years are primarily due to a reduction in the amount of discharged effluent with a high biochemical oxygen demand (BOD), from over 500 tonnes per day in 1970, to around 25 tonnes per day in 2003 (Environment Agency, 2005). A decrease in the inputs of ammonia, organic chemicals and metals was also achieved over a similar period.

Water Framework Directive

7 4 9 The study area and proposed development falls within the Tees WFD water body (GB103025099900). This is a 'heavily modified' water body due to flood protection, navigation and quay line works that are present within it and is currently classified as having 'moderate potential'. This classification relates to the status of phytoplankton and the presence of dissolved inorganic nitrogen and phenol. However, general improvements to water quality throughout the Tees estuary are reflected in the high status dissolved oxygen classification associated with the Tees water body. Dissolved inorganic nitrogen and phenol levels are, however, identified as being at moderate status and therefore the overall classification for physico-chemical supporting elements is moderate.

7 4 10 In terms of chemical contaminants, this water body is classified as failing due to TBT concentrations. The aim for this water body is to achieve 'good ecological potential' by 2027 and 'good chemical status' by 2027.

Bathing Waters Directive

7 4 11 There are six designated bathing waters within the study area (Seaton Carew North, Seaton Carew Centre, Seaton Carew North Gare, Redcar Coatham, Redcar Lifeboat Station and Redcar Granville). However, they are all located on the coastline outside of the Tees estuary. Modelling undertaken for the NGCT EIA studies, which proposed dredging of 4.8million m^3, however, did not predict any impacts on the designated bathing waters associated with the dredging plumes.

Water quality monitoring

7 4 12 As part of the Clean Seas Environmental Monitoring Programme (CSEMP) (previously known as the National Marine Monitoring Programme (NMMP)), the Environment Agency collects water quality data annually at various sites within the Tees estuary and tributaries. This programme aims to detect long-term trends in physical, biological and chemical variables at selected estuarine and coastal sites.

7 4 13 Water quality monitoring data collected between 2012 and 2013 for dissolved metal concentrations has been summarised as mean values in **Table 7-9** for five sites located along the estuary from the mouth at The Gares to the Tees Barrage.

Table 7-9 Average concentration of metals recorded in water samples from the Tees estuary between 2012 and 2013 (Environment Agency, 2013)

Substance (dissolved)	Priority substance directive EQS (annual average µg/l)	Dangerous substance directive EQS (annual average µg/l)	Concentration at sampling site (µg/l)				
			The Gares	Redcar Jetty	Smiths Dock	Transporter Bridge	Tees Barrage
Arsenic	-	25	1.18	1.23	1.00	-	1.00
Chromium	-	15	0.5	0.5	0.56	0.52	0.5
Copper	-	5	0.66	1.11	1.02	1.18	1.46
Lead	7.2	25	0.42	0.87	1.28	1.24	2.55
Nickel	20	30	1.04	1.70	1.57	1.88	1.86
Tributyl tin	0.002	0.002	0.0005	0.0005	0.0005	0.0005	0.0005
Zinc	-	40	3.16	4.90	4.78	4.16	5.29

7 4 14 The information in **Table 7-9** indicates low levels of metal contamination within the water of the Tees estuary between the period of 2012 and 2013. No exceedances of the EQS have been recorded.

7 4 15 Additional water quality data for the years 2006 to 2011 was provided by the Environment Agency for other contaminants which have been averaged for the period in **Table 7-10**. During this period, concentrations of Lindane and total concentration of Drins exceeded the EQS at all three stations, with concentrations of ppDDT and TBT matching the EQS.

Table 7-10 Average dangerous substances data recorded in water samples recovered from the Tees estuary between 2006 and 2011 (Environment Agency, 2011)

Substance	EQS under Priority Substances Directive (annual average, µg/l)	EQS under Dangerous Substances Directive (annual average, µg/l)	Concentration at Sampling site (µg/l)		
			The Gares	Redcar Jetty	Smiths Dock
Lindane	-	0.002	0.003	0.003	0.003
ppDDT	0.01	0.001	0.001	0.001	0.001
Drins: total	-	0.003	0.006	0.006	0.006
Pentachlorophenol	0.4	2	0.971	0.135	0.091
Chloroform	-	12	0.109	0.259	0.148
Carbon tetrachloride	-	12	0.100	0.101	0.100
TBT	0.0002	0.002	0.002	0.002	0.002
Hexachlorobenzene	0.01	0.03	0.001	0.001	0.001
Hexachlorobutadiene	0.1	0.1	0.003	0.003	0.003

7.5 Assessment of potential impacts during construction

Potential impact on water quality associated with the re-suspension of sediment during dredging and piling

7.5.1 Disturbance and re-suspension of sediments would occur during dredging of the berth pocket (and, for the open quay option, the intertidal area at the location of the port terminal) and the approach channel, and the construction of the port terminal itself would disturb sediment into the water column (e.g. through the installation of piles). In addition, for the solid (reclamation) option, run-off of water containing suspended sediment would occur. As a result, sediment plumes would be created during the construction works.

7.5.2 An increase in total suspended sediment (TSS) concentration in the water column would increase turbidity and reduce the depth to which light can penetrate in the water column, thus impacting the amount of light available for primary production (see **Section 8**). Additionally, increases in TSS concentrations could give rise to high oxygen demands, thus reducing the levels of dissolved oxygen within the water.

7.5.3 The tidal exchange within the Tees estuary would remain unrestricted during the construction phase and peaks in suspended solids concentrations are only expected on a short term basis during Phase 1 and Phase 2. During dredging, the silts and clays disturbed would rapidly disperse away from the location of the dredge due to the relatively high current speeds in the unconfined area. In terms of impacts on dissolved oxygen concentrations, sediment plumes induced by dredging are considered to pose only a limited risk to water quality (and subsequently marine ecological species), since the affected water usually has the capacity to accommodate an increased oxygen demand, particularly where dredging takes place in open sea or estuaries (CIRIA, 2000).

7.5.4 As discussed in **Section 5.5**, sediment plume modelling undertaken for the proposed scheme indicates an area of elevated TSS in the range of 10mg/l to 50mg/l above background in the channel, stretching 1.5km either side of the proposed dredging works. This temporary increase in TSS is considered likely to be acceptable given the temporary nature of the effect and the intermittent nature of the peaks related to both tidal influence and the location of the dredge within the estuary.

Potential mitigation measures

7.5.5 The main mitigation measure to limit sediment plume creation due to dredging is the selection of the dredging method. As noted above, dredging works are to be undertaken by a combination of TSHD, CSD and backhoe. Mitigation measures associated with all three forms of dredging are presented below.

7.5.6 Limiting re-suspension of sediment during TSHD can be achieved through the following good practice measures:

- Trailing velocity, position of the suction mouth and the discharge of the pump can be optimised with respect to each other.
- Any reduction in the intake of water by the suction head means a more dense pay load, thus reducing or avoiding the need for overflowing. This can be achieved by directing the flow lines of the suction stream to the actual point of excavation, thus making better use of the erosive capacities of the flow of water into the suction head.

7.5.7 Backhoe dredging is the most environmentally acceptable approach, as this would result in a significantly lower release rate of sediment to the water column compared with, for example, typical CSD or TSHD. The main measure that can be adopted to minimise losses of sediment to the water column during dredging activities with a backhoe dredger is to use an experienced operator, as control over the dredging equipment is one of the main factors affecting sediment disturbance during backhoe dredging. Other measures that limit plume generation comprise limiting the swing of the backhoe over water, thereby reducing the time when sediment can leak out of the bucket. In addition, the practice of smoothing the excavated area by dragging the backhoe bucket along the bottom should be avoided (CIRIA, 2000).

7.5.8 The re-suspension of sediment caused by CSD can be reduced through optimising the cutter speed, swing velocity and suction discharge, shielding the cutter head or suction head and optimising the design of the cutter head.

Reduced water quality due to the re-suspension of contaminated sediment

7.5.9 As discussed in **Section 7.3**, the sediment quality analysis has yet to be undertaken and, therefore, sediment contamination levels are currently unknown.

7.5.10 Given that the majority of the Phase 2 dredging and a proportion of the dredging for Phase 1 is likely to be in the marls (rock), the potential for contaminants to be present within this material is considered to be low given its presence beneath superficial deposits.

7.5.11 The majority of material to be dredged during Phase 1 is anticipated to comprise of silts, sands and gravels, which contaminants do not readily adsorb to in comparison with finer silts and clays.

7.5.12 A full assessment of the risks associated with disturbance to potentially contaminated sediment will be undertaken as part of the EIA once the sediment quality analysis has been undertaken.

Potential mitigation measures

7.5.13 The mitigation measures outlined within **Paragraph 7.5.5** to **7.5.8** are also of relevance to this impact.

Impact from accidental spillage of oils, fuels and chemicals from vessels and plant during construction

7.5.14 During construction, a wide range of plant would be required, ranging from ready mix wagons, barges, low loaders, articulated flat bed, articulated bulk materials, private vehicles, earth moving equipment, lorries and cranes and dredging vessels. There is, therefore, potential for accidental spillages or leakages of substances (e.g. fuels, oils, etc.) to occur during the operation of such machinery, which have the potential to adversely effect water and sediment quality through direct input to the estuary or runoff.

7.5.15 To minimise the risk of spillage or leakages from occurring, best practise techniques and due diligence would be executed throughout all construction activities. All working practises would adhere to the Environment Agency's Pollution Prevention Advice and Guideline (PPG) 5: Works and maintenance in or near water (Environment Agency, 2007) and all vessels would adhere to the requirements of the MARPOL Convention Regulations.

7.5.16 In addition, appropriate preventative and control measures would be adopted, such as the placement of drip trays under all parked vehicles and bunded areas to store the substances as well as ensuring that a spill kit is kept on site. PD Teesport is also a spill responder for the Tees estuary and, as such, there are plans in place to ensure spillages or leakages can be rapidly and effectively managed.

Potential mitigation measures

7.5.17 As a result of control measures being inbuilt, no further mitigation measures are expected to be necessary in this context.

Reduced water quality during disposal activities

7.5.18 Disposal of dredged material at the offshore disposal sites would cause a temporary and short lived increase in turbidity in the water column. Tees Bay A (TY 160) and Tees Bay C (TY 150) are both licensed offshore disposal locations which could potentially accept the dredged material.

7.5.19 Simulations were undertaken for disposal activities over an entire spring-neap tide cycle at both the maintenance disposal site (Tees Bay A) and the capital disposal site (Tees Bay C) as part of the EIA for the NGCT. The modelling predicted that dispersion under calm conditions would be limited, with most fines remaining close to the point of disposal. Concentrations were predicted to increase by approximately 5mg/l within an area 2km from the boundary of the disposal area. No peak deposition depths greater than 1mm were predicted outside the boundary of the disposal area during the simulation.

7.5.20 The NGCT EIA concluded that, in the context of the existing disposal of maintenance dredging, the effect of the disposal of fine material at the disposal sites would be of minor significance. The capital dredging was predicted to result in far lower rates of introduction of fines to the disposal sites than occurs during maintenance dredging. Therefore, the physical effects of the material disposed at the site during capital dredging would be lower. There would be some short-term build-up of fine sandy sediment and it was predicted that this would be dispersed over time. Some longer term accumulation of coarser sediments arising from the dredging of stiff clay was also predicted to occur on the seabed.

7.5.21 The proposed scheme requires the disposal of a significantly reduced volume of sediment in comparison with the previously consented NGCT scheme. Based on the results of the NGCT EIA, it is anticipated that the disposal of sediment dredged as part of the proposed scheme would not result in unacceptable impacts to water quality. However, this impact will be fully assessed as part of the EIA once the results of the sediment quality analysis are available and hydrodynamic modelling is complete.

7.6 Assessment of potential impacts during operation

Increased suspended sediment concentration due to maintenance dredging

7.6.1 During the operational phase, maintenance dredging within the berth pocket and approach channel would be required to maintain the dredged depth. Such maintenance dredging would likely lead to an increase in TSS concentrations within the water column.

7.6.2 The EIA undertaken for the consented NGCT identified that there would be no impact to water quality as a consequence of maintenance dredging for that particular scheme, given that the overall volume of material requiring dredging would not be significantly increased within the estuary (compared to the

maintenance dredging that already occurs), its composition would be of very similar nature to that already dredged and there would be no increase in the frequency of maintenance dredging required.

7.6.3 The modelling undertaken specifically for the proposed scheme has predicted that there would be a negligible effect on the overall import of fine sediment into the estuary during operation. The model has predicted a slight decrease in the infill rate in the zone of the estuary where the proposed scheme would be located; however, the predicted change is extremely small and well within any natural variability in the estuary system. The predicted very small change in the overall fine sediment regime in the Tees is not predicted to alter the frequency of or methodology used for maintenance dredging. On this basis, it is anticipated that maintenance dredging would not represent a significant impact to water quality.

7.6.4 It is anticipated that any maintenance dredging required would be included within PD Teesport's wider maintenance dredge campaigns.

7.6.5 The impacts to water quality arising from maintenance dredging will be fully assessed within the EIA, with the results presented in the ES.

Potential mitigation measures

7.6.6 It is not envisaged that any specific mitigation is required with regard to the maintenance dredging operations.

Impact from accidental spillage of oils, fuels and chemicals from vessels

7.6.7 During operation, there is the potential for accidental spillages or leakages of substances to occur (e.g. fuels, oils, the product (polyhalite)) which could adversely impact water and sediment quality.

Potential mitigation measures

7.6.8 To minimise the risk of such spillages/leakages from occurring, the control measures described in **Paragraphs 7.5.14** and **7.5.16** would also be applicable to this impact.

Potential impacts on existing land drainage

7.6.9 Surface water from the port terminal would be discharged from the quay to the Tees estuary. For the solid reclamation option, drainage would be via outfalls through the quay face. It is proposed that interceptors would be included within the drainage system in areas where oil and diesel is handled. This would enable surface water to drain without impacting land drainage and, therefore, no impact on surface water quality is predicted.

7.7 Summary

7.7.1 Previous sediment quality surveys undertaken in the Tees estuary have identified elevated concentrations of some heavy metals above Action Level 1, with some heavy metals present at concentrations exceeding Action Level 2. Water quality, however, has shown improvements over the last 30 years, which is reflected by data obtained from the CSEMP where very few sites exceeded the contaminant EQS.

7.7.2 The chemical composition of the sediments present within the footprint of the proposed scheme was unknown at the time of writing this PER. A full assessment of the sediment quality data specific to the proposed scheme will be undertaken as part of the EIA process.

7.7.3 A number of potential impacts have been identified which could arise during the construction and operational phases of the proposed scheme, including reduced water quality associated with the re-suspension of sediment and associated sediment-borne contaminants. It is not possible to assign significance to the potential impacts in the absence of site-specific sediment quality data and the impacts, therefore, will be fully assessed within the ES.

8 MARINE ECOLOGY

8.1 Introduction

8.1.1 This section of the PER describes the existing environment in relation to marine ecology, prior to presenting the potential impacts of the construction and operational phases of the proposed scheme on the existing environment. Mitigation measures are detailed where significant impacts have been identified and where it has been possible to undertake a full impact assessment based on the environmental information available at the time of writing. The requirement for the implementation of the potential mitigation measures identified within this PER, will be determined once all baseline information is available and significance has been determined for all identified impacts.

8.1.2 This section of the PER does not address impacts on birds or fish populations. These are addressed within **Section 9** and **Section 11** respectively.

8.2 Guidance and consultation

Policy and guidance

National Policy Statement for Ports

8.2.1 The assessment of potential impacts on marine ecology has been made with reference to the NPS for Ports. The particular assessment requirements relevant to marine ecology, as presented within the NPS for Ports, are summarised in **Table 8-1**.

Table 8-1 Summary of NPS for Ports requirements with specific regard to marine ecology

NPS requirements	NPS reference
Where the development is subject to EIA, the application should ensure that the ES clearly sets out any effects on internationally, nationally and locally designated sites of ecological or geological interests	Section 5.1.4
The applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests	Section 5.1.5
The ES should include an assessment of the effects on the coast. In particular, the applicant should assess the effects of the proposed project on marine ecology, biodiversity and protected sites	Section 5.3.5
The applicant should be particularly careful to identify any effects on the integrity and special features of Marine Conservation Zones, Special Areas of Conservation (SAC) and candidate SACs, Special Protection Areas (SPA) and potential SPAs, Ramsar sites, actual and potential Sites of Community Importance and Sites of Special Scientific Interest (SSSI).	Section 5.3.7

National Planning Policy Framework

8.2.2 The NPPF sets out the Government's planning policies for England and how these are expected to be applied. The planning system should contribute to and enhance the natural and local environment by:

- recognising the wider benefits of ecosystem services; and,
- minimising impacts on biodiversity and planning net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future processes.

8.2.3 The NPPF also states that when determining planning applications, planning authorities should aim to conserve and enhance biodiversity by applying the following principles:

- if significant harm resulting from a development cannot be avoided, adequately mitigated or, as a last resort, compensated for, planning permission should be refused;
- proposed development on land within or outside a SSSI likely to have an adverse effect on SSSI should not normally be permitted; and,
- opportunities to incorporate biodiversity in and around developments should be encouraged.

Redcar and Cleveland Borough Council Local Plan

8.2.4 Development Plan Document policies of relevance when considering the proposed scheme in relation to marine ecology include:

- Policy CS24 (Biodiversity and geological conservation): the Borough's biodiversity and geological resource will be protected and enhanced. Priority will be given to:
  - protection of the integrity of the European sites in and near the Borough;
  - conserving and enhancing biodiversity and geodiversity sites and features in line with PPS9[4];
  - improving the integrity and biodiversity value of wildlife corridors particularly along the coast, around the Teesmouth estuary and linking with the North York Moors;
  - meeting the objectives and targets in the UK and Tees Valley Biodiversity Action Plan (recently disbanded and replaced by the Tees Valley Nature Partnership);
  - encouraging management of landscape belts for nature conservation;
  - protecting ancient woodland and veteran trees;
  - strengthening populations of protected species; and,
  - improving site management and increasing public access to wildlife sites.

[4] Section 11 of the NPPF effectively replaces PPS9

Tees Valley Nature Partnership

8.2.5 The Tees Valley Nature Partnership (TVNP) is a cross sector Tees Valley wide partnership that has been formed to take a strategic overview of the natural environment, and to investigate ways to manage, enhance and promote the natural environment so that the needs of nature, people and the economy are met. The TVNP was formed as a response to the Natural Environment White Paper (NEWP) (2011), in which the government invited new and existing partnerships to come together to form Local Nature Partnerships (LNP). The TVNP received Government recognition as the LNP for the Tees Valley in July 2012. The TVNP has a number of key priorities, namely:

- raise the profile of the Tees Valley as an attractive place to live, work or visit;
- continue to work to protect and enhance the geodiversity and biodiversity of the Tees Valley ensuring the conservation, restoration and creation of key landscapes and habitats; and,
- seek positive outcomes for both nature and the local economy by working closely with the economic sector.

Guidance documents

8.2.6 The principal guidance documents which have been used to inform the baseline characterisation and the assessment of impacts with respect to marine ecology are as follows:

- Marine Monitoring Handbook (JNCC, 2001).
- Guidelines for ecological impact assessment in Britain and Ireland (Institute of Ecology and Environmental Management (IEEM) 2010) (these guidelines are specifically relevant to marine and coastal ecological impact assessment).

Consultation

Formal consultation

8.2.7 A summary of the responses provided by PINS in the Scoping Opinion which are of relevance to marine ecology are presented in **Table 8-2**.

Consultation undertaken following receipt of the Scoping Opinion from PINS

8.2.8 Royal HaskoningDHV produced a specification for a benthic ecological survey for the proposed scheme during November 2013, and a revision in March 2014 to take account of comment received and changes to the proposed scheme design (**Appendix 7.1**). The specification was issued to Natural England, the MMO and the Environment Agency requesting comments on the proposed approach prior to the survey being undertaken. **Table 8-3** provides a summary of the responses received from the above stakeholders with regard to the scope of the benthic ecological survey. These comments were taken into account in the March 2014 revision.

Table 8-2 Summary of comments received within the Environmental Scoping Opinion with regard to marine ecology

Comment	Section in which comment is addressed
There a number of ecologically designated sites within the vicinity of the proposed scheme. In addition Seal Sands is an important seal habitat and potential impacts on this site should be assessed.	Sections 8.4 (Paragraph 8.4.17 to 8.4.30), Section 8.5 (8.5.2 to 8.5.7) and Appendix 2.1
The EIA should consider effects on marine ecology relating to, inter alia, increased disturbance and displacement, habitat loss and construction and operational activities including piling, lighting and dredging.	Sections 8.5 and 8.6
Detailed information should be included in the ES regarding the dredging and piling works in order to contribute to the marine ecology assessment.	Refer to Section 3 (Project Description)
Development should not encroach into the intertidal environment. The Environment Agency is committed to no net loss of intertidal and subtidal habitat. The Environment Agency would welcome further discussion regarding this option (combi piled wall retaining fill material). When encroachment is shown in plans, considerable justification together with details for mitigation and compensation would need to be included to secure support.	Section 8.5 (Paragraph 8.5.1 to 8.5.7)
The issues of coastal squeeze needs to be incorporated into the design to mitigate for sea level rise and habitat creation.	Noted
The Environment Agency advised that the lagoon should be assessed for geological value including benthic invertebrates and fish. The effect of any works on benthic invertebrates, fish, sets and water quality should be assessed.	See note below[4]
Natural England would expect the ES to quantify habitat loss not only in the lagoon but also at the intertidal frontage which would be lost to the new quay.	Section 8.5 (Paragraph 8.5.1 to 8.5.7)
The EIA will need to consider impacts upon local wildlife and geological sites. Contact the Tees Valley Wildlife Trust, local geoconservation group Tees Valley RIGS group or local sites body in this area for further information.	Section 8.4
The ES should thoroughly assess the impact of the proposals on habitats and/or species listed as Habitats and Species of Principal Importance within the England biodiversity list. Consideration should also be given to LBAP species and habitats.	Section 8.5.1. This impact will be further investigated once the results of the benthic ecological survey are available.

[4] The Scoping Opinion from PINS was based on a proposed scheme which required partial reclamation of the lagoon to provide a platform for the construction of a storage shed landward of the port terminal. Partial reclamation of the lagoon is no longer proposed as storage at the port terminal would be within surge bins rather than a shed, which have a significantly reduced footprint compared to a shed. As such, we do not intend to undertake an ecological assessment of Brian Sands lagoon as part of the EIA process.

Initial comment	Royal HaskoningDHV response to comment	Follow up response from stakeholder	Outcome
• It is unclear where some of the areas which are referred to in the report are located (e.g. North and South Gare, Bran Sands, Seal Sands). For clarification, a map of these locations should be provided. Assuming that these samples are to be taken to provide data regarding the types of assemblages that are likely to be impacted, i.e., they do not form the basis of a monitoring plan, and no sample is to be regarded as impact and control. The concentration of stations in the region of the proposed new terminal is also suitable. The collection of data regarding the biological assemblages at Seal Sands and Bran Sands (both are predicted to experience direct and/or indirect loss/change) is suitable, but as these areas are not known I am unable to provide specific advice as to whether they are sufficiently sampled. Figure 8 did not see specifically pertaining to Bran Sands.	• Points noted • Further clarification was requested regarding the comment on Figure 8 which shows sampling in Bran Sands lagoon	• There seems to have been misunderstanding between the advice provided and that sent to the applicant. Provided that Figure 8 provides details of the sample locations, there is no further need to clarify this point and that the stations are suitably located.	• No further action required in response to the remaining points

Table 8-3 Summary of consultation responses on the scope of the benthic ecological survey

Initial comment	Royal HaskoningDHV response to comment	Follow up response from stakeholder	Outcome
Environment Agency			
• The proposed sampling strategy is acceptable.	• None required	None	• Environment Agency content with approach for benthic ecological survey
• Sampling should follow the guidance outlined within the 'Practitioners Guide to the Infaunal Quality Index, Water Framework Directive Transitional and Coastal Waters, Version 09 (Environment Agency 2012)	• Sampling would be undertaken in accordance with the Environment Agency's guidance	None	
Natural England			
• Further clarity was required on the extent of intertidal habitat to be lost. For the suspended deck option, a stable slope would need to be created through the foreshore area.	• The extent of intertidal area affected would be minimised. This will be quantified as the design work progresses and reported in the ES. We propose to take samples as far up the foreshore as the vessel draft allows.	• As the creation of a stable slope would create a larger footprint, a map showing the total area of the proposed dredge in the context of the lower estuary would be of help.	• A figure showing the total area affected by the capital dredging and quay construction to be included in the ES.
• Confirmation was required on the dredge volumes. The new worst case dredge is 1.2Mm^3 which is an increase of 150,000m^3 on the previous design.	• The initial estimate of total dredge (1.05Mm^3) as stated in the original version of the specification was made early in the design process. During the concept design, the total dredged volume was updated to 2.05Mm^3. The revised estimated maximum dredged volume is 1.85Mm^3 (worse case, based on the open quay structure).	• This is large dredge in the context of the Tees estuary. It is worth noting that this is the same if not more than the annual maintenance dredge for the whole tidal river system.	• Point noted.

Initial comment	Royal HaskoningDHV response to comment	Follow up response from stakeholder	Outcome
• It is unclear what is being proposed for the trawl surveys. The applicant should confirm the mesh size and whether specimens will be counted or weighed.	• We propose undertaking trawls at 20 locations across the whole survey zone. They are in addition to the grab samples and do not replace taking grabs at any location. • We proposed using 20mm mesh size with 5mm cod end. It is proposed that specimens would be counted.	• The sampling strategy and the trawl details are acceptable for the purpose. A detailed methodology should be included in the final ES.	
• Following sub-sampling, the sample can be placed onto a sieve and photographic and other information / notes taken. With regards to the PSA sub-sampling of the intertidal cores, I would recommend using a syringe for the PSA and taking the sample adjacent to the macrofaunal core.	• Point noted. This was built into the survey design.	• Point noted.	

Initial comment	Royal HaskoningDHV response to comment	Follow up response from stakeholder	Outcome
• Confirmation is required as to whether Seal Sands is included in the sampling specification.	• We do not propose to sample Seal Sands as no capital dredging would occur in the lower Tees estuary. It is considered unlikely that sediment that is suspended by the current proposed capital dredging would affect Seal Sands.	• Seal Sands is a sensitive receptor and Natural England would need more information on what this assertion is based on.	• Additional justification was provided to Natural England in the form of sediment dispersion plots from the NGCT EIA, which predicted negligible sediment deposition at Seal Sands. Natural England confirmed this justification was satisfactory.
• Natural England noted that maintenance dredge volumes would be predicted during the EIA process. However, consideration should also be given to the interruption of sediment transport in the lower estuary resulting from this process.	• Point noted. The sediment transport studies to be undertaken as part of the EIA process would inform this.	• None	• No additional discussion on this point required.
MMO			
• The systematic sampling design proposed is suitable for the project.	• None required.	• None required.	• The MMO was content with the approach to the survey.

8.2.9 Consultation undertaken with the Environment Agency during April 2014 identified that it has undertaken benthic ecological monitoring throughout the Tees estuary (downstream of the Tees Barrage) for a number of years. This data was requested from the Environment Agency during April 2014.

8.3 Methodology

Study area

8.3.1 The study area for this section of the PER covers the area which would be directly affected by the proposed marine works (dredging and port terminal construction), and the adjacent areas which have the potential to be indirectly affected (e.g. through sediment deposition). The study area, therefore, comprises the tidal Tees estuary between Teesmouth and the Tees Barrage.

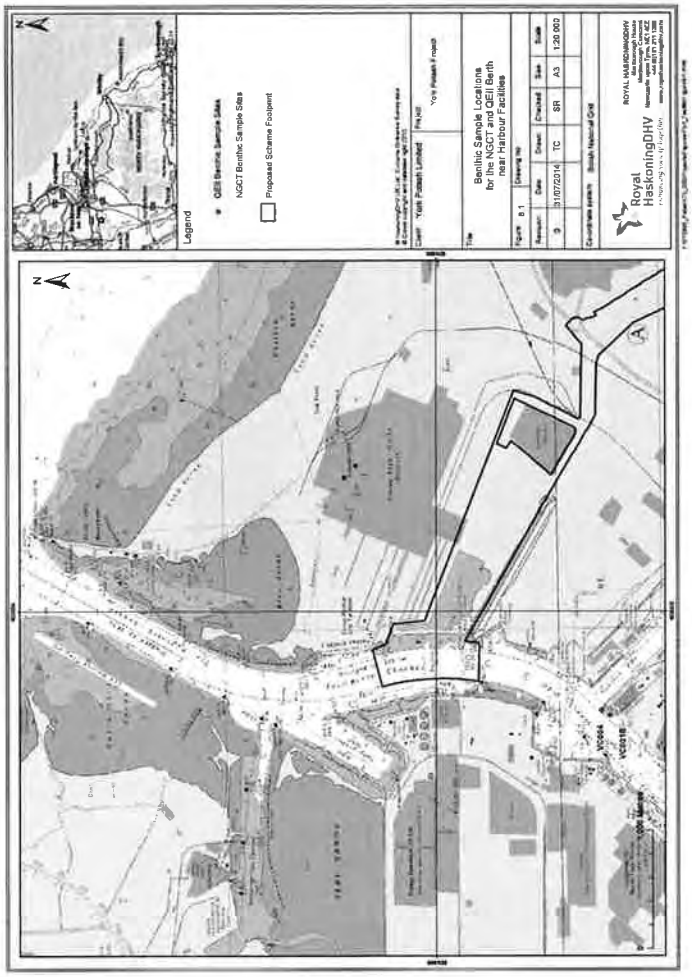
Existing environment

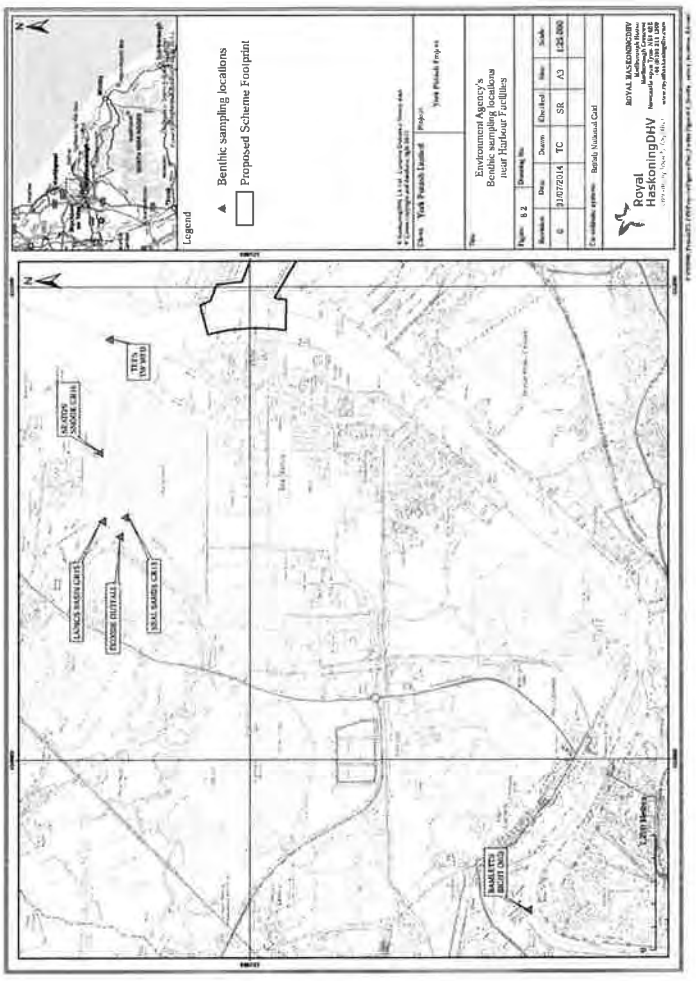
Existing benthic ecological data from the Tees estuary

8.3.2 There are no recent site specific existing environment data with regard to the benthic invertebrate community or condition of habitat within the dredge and port terminal footprint for the proposed scheme.

8.3.3 The results of a benthic survey undertaken in December 2006 as part of the EIA for the consented QEII jetty refurbishment scheme, located approximately 1.5km upstream of the proposed port terminal at Bran Sands, and the 2006 NGCT studies are contextually relevant to the current proposals, although it recognised that the information is several years old. **Figure 8-1** illustrates the location of samples recovered during benthic surveys to inform the EIAs for both NGCT and the QEII jetty refurbishment.

8.3.4 An initial review of the Environment Agency's benthic ecological monitoring data recovered throughout the Tees estuary for a number of years has been undertaken as part of this assessment. The locations of the Environment Agency sampling are shown in **Figure 8-2**. This data will be fully assessed during the next stage of the EIA process, with the data to be presented in the ES.





Site specific benthic ecological survey and particle size analysis

8.3.5 In order to determine the existing environment within and adjacent to the footprint of the proposed scheme, a total of 36 subtidal 0.1m^2 Day grab samples were proposed within the Tees estuary (24 within and adjacent to the approach channel and 12 along and adjacent to the approach channel), as shown on **Figure 8-3** and **Figure 8-4**. The proposed sampling locations covered the area to be directly affected by the marine works (piling, dredging and the quay construction) and the adjacent areas most likely to be indirectly affected (e.g. through sediment deposition). For the purposes of establishing a widespread baseline, one sample was proposed to be taken from each location.

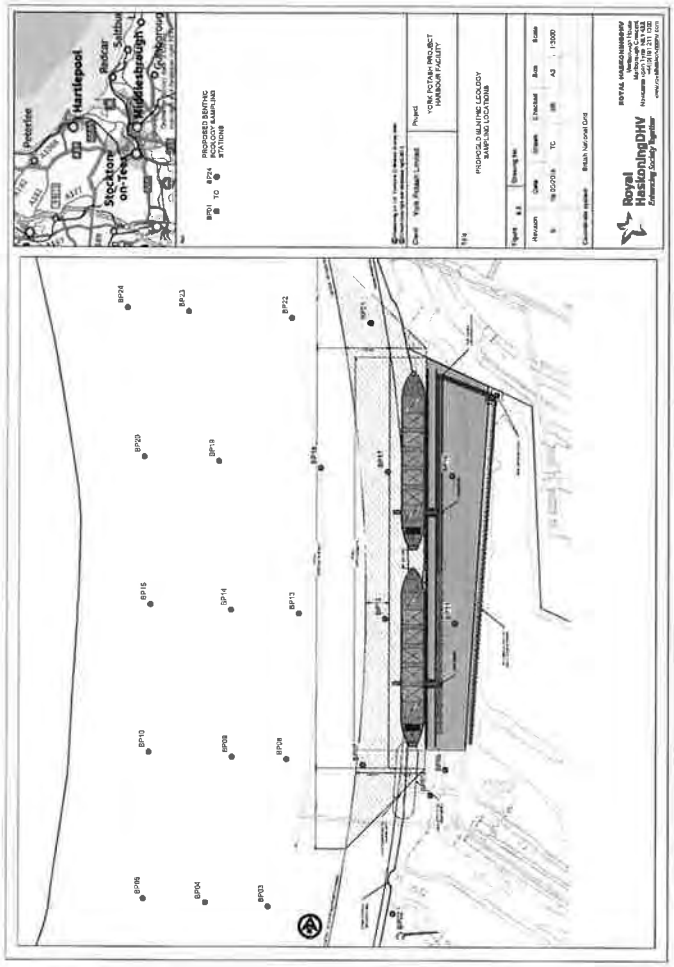
8.3.6 The site specific benthic ecological survey was undertaken during July 2014 by FugroEmu. Three of the proposed 24 grab samples within the berth pocket could not be recovered due to insufficient water depth for the sample vessel (BP06, BP11 and BP16). One of the proposed grab samples within the approach channel (AC03) could not be recovered as the ground conditions meant that no sample could be recovered (after five attempts to recover a sample). A total of 32 Day grab samples were therefore recovered during the survey.

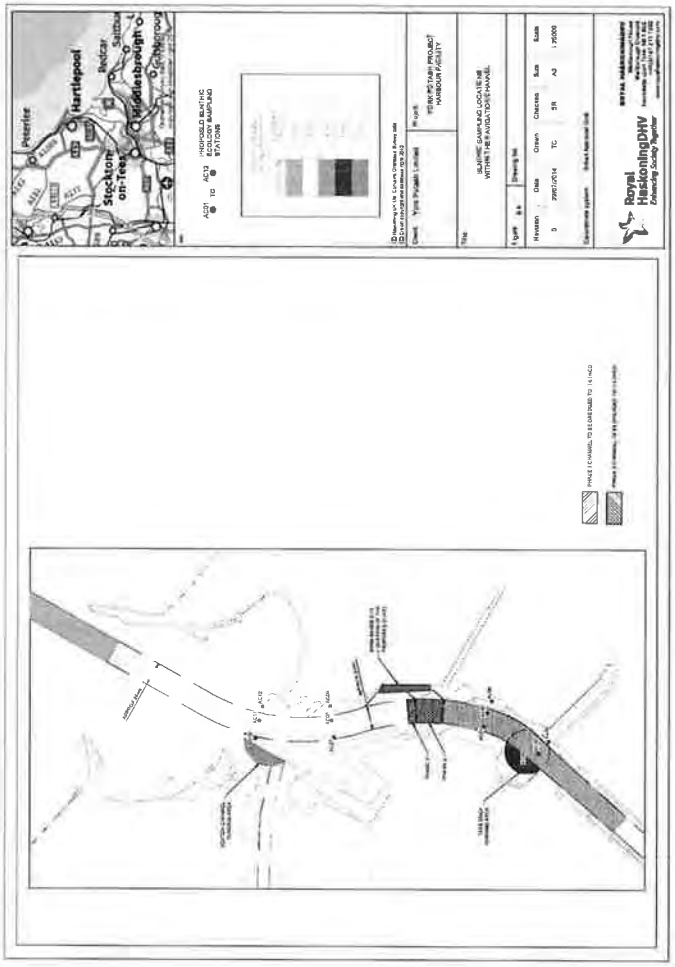
8.3.7 Upon retrieval, the samples were released onto a 0.5mm mesh stainless steel sieve and examined for suitability and photographed to determine sample volume, visual characteristics of the sediment and presence of anoxia and epifauna. A sub-sample of the sediment was retained for particle size analysis (PSA) to enable any sediment community associations to be determined. The sub-sample for PSA analysis was recovered using a small core (a cut-off 100ml syringe) to remove sediment from the undisturbed surface of the sample. This PSA sub-sampling techniqueslandardised the amount of sediment recovered from each core, standardised the sampled sediment depth profile between sampling stations, minimised bias of sampling of certain sediment types and reduced the volume of sediment required for PSA analysis.

8.3.8 The remainder of the sample was back-washed through the sieve and collected in a storage vessel, where it was preserved in formalin prior to further sieving and laboratory analysis. The analysis was undertaken by FugroEmu.

8.3.9 In addition to the above sampling regime, a benthic trawl was deployed at 10 of the 32 sampling locations (in addition to the Day grab samples) using a 20mm mesh with a 5mm cod end, with the trawls evenly distributed across the sampling area. Fish, shrimp and other commercial invertebrates were counted and measured whilst all other epifauna were identified and recovered using a modified SACFOR scale based on trawl area, length and efficiency.

8.3.10 The results of the benthic ecological survey were not available at the time of writing, and as such, it has not been possible to undertake a full assessment of the potential impacts to marine ecological receptors at this stage. Impacts to marine ecological receptors will be fully assessed within the EIA.





Royal HaskoningDHV

Methodology for the underwater noise survey

8 3 11 Measurements of underwater background noise within the Tees estuary were taken by Subacoustech Environmental on 2 April 2014 and 3 April 2014. This was undertaken to inform an underwater noise modelling exercise that has been undertaken in response to comments made by Natural England in the Scoping Opinion which stated that this exercise is required to inform the assessment of potential impact on designated sites. This noise modelling has been used to inform a number of areas of the EIA, namely marine ecology, fisheries and waterbird populations. As illustrated on **Figure 8-5**, the estuary was divided into four sections for the purposes of the underwater noise survey, with each section considered to have its own soundscape. The four sections were:

5. Transporter bridge to Tees Dock;
6. Tees Dock to the turning circle;
7. Seaton channel; and,
8. The area downstream of the turning circle to the mouth of the Tees estuary.

8 3 12 Measurements were taken at mid-water depth throughout the survey area, however measurements were concentrated in the area of the proposed scheme footprint. A static monitor buoy was also deployed during the survey at the locations shown in **Figure 8-5**.

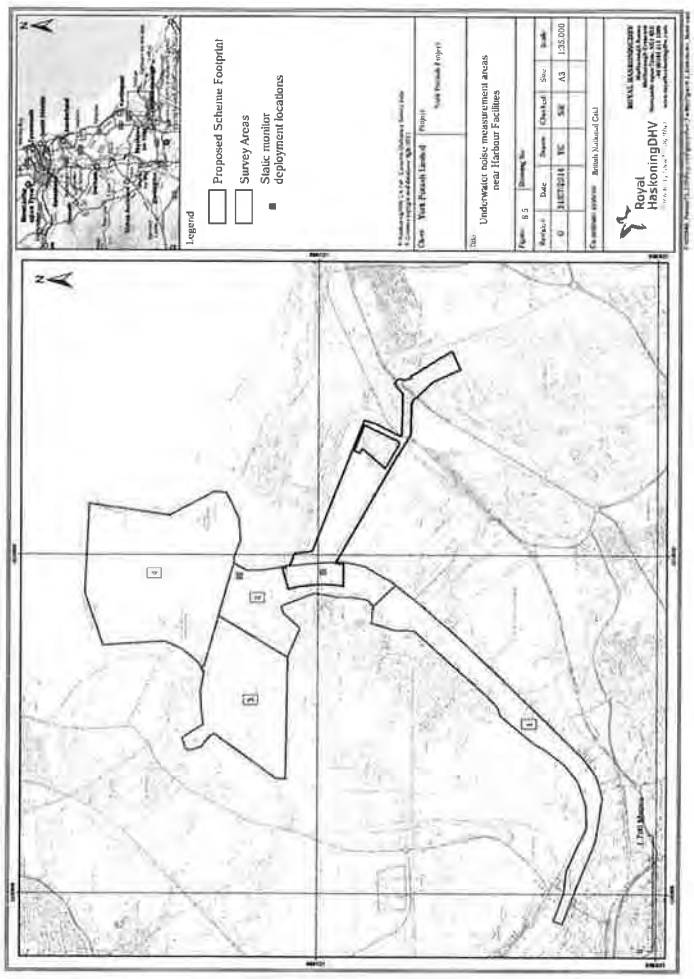
Measurement equipment

Vessel based monitoring

8 3 13 All underwater sound vessel based measurements conducted as part of this study were undertaken using a Brüel and Kjær Type 8106 low noise hydrophone, which is able to measure underwater sound to levels well below sea state zero noise.

8 3 14 The Brüel and Kjær Type 8106 hydrophone has a linear sensitivity to underwater sound over the frequency range from 7 Hz to 80 kHz. The calibration chart for the sensor, traceable to International Standards, is provided in **Appendix 8.1**. Brüel and Kjær also provide sensitivity data outside of the linear range, from 0.25 Hz to 150 kHz, so that the acoustic data can be extended well beyond the linear frequency range specified above. This was corrected for on all the frequency spectra presented in this report.

8 3 15 All vessel-based underwater sound recordings undertaken in the course of the survey were digitised and stored on a portable laptop computer system at a sample rate of 350,000 samples per second. This provided useful acoustic data to a frequency of 175 kHz to be used. Subsequent analysis of the acoustic data was conducted over the frequency range from 1 Hz to 100 kHz. Spectral levels of noise have been presented over the frequency range from 1 Hz to 100 kHz.



Fixed location monitoring

8.3.16 All fixed location monitoring undertaken during the underwater noise survey was carried out using an Ocean Sonics icListen HF digital hydrophone. The icListen HF is also a low noise hydrophone that is able to measure underwater sound to levels well below sea state zero. The icListen HF hydrophone detects underwater sound pressure, amplifies and digitises the analogue signal storing the recorded sample as waveform and FFT (Fast Fourier Transform) data. The icListen HF was set up to sample 5 minutes of data every 15 minutes at a sample rate of 200 kHz, as well as automatically logging FFT data every second for frequencies up to 6 kHz.

8.3.17 Fixed location monitoring undertaken during this survey was carried out using an icListen HF suspended from a surface buoy which in turn was anchored by a weight resting on the seabed via a rope. It was placed at the edge of the dredged channel so that it did not interfere with shipping.

Measurement conditions

8.3.18 The survey was undertaken on board a chartered vessel, the J.B.1. The survey vessel was loaded with equipment and boarded near to the Transporter Bridge. **Table 8-4** shows the details of the tides for the days and times that the survey was undertaken. On both days the time of low tide was in the middle of the day. At high tide some of the area around Bran Sands was underwater as well as a larger area around Seaton Channel, compared to low tide. Low tide was in the middle of the day, so these areas were not accessible during the survey.

Table 8-4 Tide times and level above LAT during the underwater noise survey

Date	Tide	Time	Level above LAT (m)
02/04/2014	Low tide	00:09	0.4
	High tide	06:06	5.4
	Low tide	12:22	0.6
	High tide	18:18	5.6
03/04/2014	Low tide	00:45	0.7
	High tide	06:44	5.3
	Low tide	12:59	0.8
	High tide	19:00	5.3

8.3.19 Visibility was low during the survey due to mist, and as such, visibility of passing vessels was often limited. The wind speed was measured at regular intervals during the survey using a small handheld anemometer. A summary of the wind speeds recorded is shown in **Table 8-5**. The measured windspeed was fairly consistent throughout the two days of the survey, not exceeding 3m/s. On the morning of the second day the windspeed increased so that crests and wavelets were present. No

windspeed measurements were able to be taken after 10:00am on 3 April 2014 to confirm this due to a malfunctioning anemometer. On the first day the icListen was deployed at 11:34am (all times in BST) and retrieved at 3:28pm, and on the second day it was deployed at 8:46 am and retrieved at 1:32pm.

Table 8-5 Details of measurements and prevailing conditions recorded during the survey

Date	Time	Wind speed	Direction
02/04/14	9:33	2.5	Westerly
	10:31	2.2	Westerly
	10:43	1.6	Westerly
	10:54	2.3	Westerly
	11:56	2.3	Westerly
	12:40	2.6	Westerly
	14:40	2.8	Westerly
03/04/14	9:08	2.3	Westerly
	9:45	2.7	Westerly

8.3.20 The results of the underwater noise assessment (presented in **Section 8.4**) have been, and will be, used to inform the impact assessment.

Underwater noise modelling

8.3.21 Underwater noise modelling was undertaken by Subacoustech during June 2014 to predict and assess the environmental impacts of underwater noise likely to be produced during the construction phase of the proposed scheme. The methodology adopted for the underwater noise assessment was consistent with the latest guidance currently being developed as part of the implementation of the EU Marine Strategy Framework Directive.

8.3.22 That is, in order to estimate the underwater noise levels likely to arise during the construction of the proposed scheme, predictive underwater noise modelling was undertaken. The modelling was carried out using Subacoustech's INSPIRE model for impact piling. The openly available RAMSGeo software package was used to provide a comparison to INSPIRE, as well as modelling the underwater noise from dredging.

8.3.23 The INSPIRE model is a semi-empirical underwater noise propagation model based around a combination of numerical modelling and actual measured data. It is designed to calculate the propogation of noise in shallow, mixed coastal water, typical of coastal conditions around the UK. The

model provides estimates of unweighted peak, peak-to-peak and Root-Mean-Sound (RMS)[5] level of noise along 180 equally spaced radial transects. Two modelling positions were chosen in order to show the greatest spatial range of results (i.e. the northern and southern extremities of the proposed port terminal, referred to as the North and South Position). The modelling assumed a pile diameter of 914mm and a hammer energy of 125kJ.

8.3.24 The RAMSGeo acoustic model is based on the well known and much used Range-dependant Acoustic Model (RAM) software package (Collins 1994 and Collins *et al.* 1996). RAMSGeo is a fully range dependant parabolic equation model that performs underwater acoustic transmission loss calculations. RAMSGeo is a purely theoretical model based solely around the physical acoustic processes that occur underwater. The software is widely used for the modelling of noise propagation since it:

- models low frequency propagation well;
- allows for the incorporation of variable bathymetry; and,
- allows for the incorporation of complex estuary bottom types.

8.3.25 The variation of temperature throughout the water column can impact upon sound propagation. However, as the depth of water within the Tees estuary is relatively shallow and is well mixed, a uniform temperature profile was assumed within the RAMSGeo model. A representative sound speed of 1,470m/s was used within the underwater noise calculations. It was assumed within the model that the bed substrate was comprised of 65 to 70% silt, 20% clay, with sand and gravel providing the remainder (Halcrow, 1991). Consequently, the physical parameters presented within **Table 8-6** were used, as presented by Jensen *et al.* 1994.

Table 8-6 Physical parameters assumed within the RAMSGeo model

Parameter	Value
Sound speed ration C_b / C_w	1.1
Density ratio ρ_b / ρ_w	1.7
Compressional wave attenuation ∂_p	1.0
Shear wave attenuation ∂_s	1.5

Methodology for assessment of potential impacts

8.3.26 The methodology used to assess the potential environmental impacts associated with the proposed scheme is provided within **Section 4**. This methodology has been used herein where sufficient site-specific and relevant information is currently available to allow an impact assessment to be undertaken.

[5] The RMS level is used to describe continuous sound and vibration, or signals that vary in level as opposed to impulsive sound. RMS levels are normally appropriate for characterising noise and vibration of a continuous nature such as drilling and background sea and river noise levels.

8.3.27 The results of the site-specific benthic ecological survey were not available at the time of writing and, therefore, it was not possible to fully assess the potential impacts of the proposed scheme on marine ecological receptors in accordance with the method outlined in **Section 4** for the purposes of the PER. Professional judgement has been used to determine potential environmental impacts which could arise during the construction and operational phases of the proposed scheme based on our existing knowledge of the sensitivity of the Tees estuary, gained from previous EIAs undertaken (i.e. NGCT, QEII Berth and Tees Dock No.1 quay). Where potential environmental impacts have been identified, the nature of the impact has been described but an impact significance has not been assigned at this stage.

8.3.28 The findings of the EIA with regard to the hydrodynamic and sedimentary regime, marine sediment quality, water quality and noise are of relevance to this section and reference to these topics is made in this section.

Criteria used to assess the environmental effects of underwater noise arising from impact piling and dredging

8.3.29 In order to assess the environmental effects that impact piling and dredging activities are likely to have (with regard to underwater noise impacts to marine ecological species), the following metrics were used (discussed further below):

- Unweighted metrics (Parvin *et al*, 2007).
- The dB_{ht} (species) (Nedwell *et al*, 2007).
- M-Weighted SELs (Southall *et al*, 2007).

8.3.30 Parvin *et al* (2007) presents a comprehensive review of information on the lethal and physical impacts of underwater noise on marine receptors, and proposes the following criteria to assess the likelihood of these effects occurring:

- A lethal effect may occur where the peak noise level exceeds 240 dB re 1 µPA.
- Physical injury may occur where the peak noise level exceeds 220 dB re 1 µPA.

8.3.31 Unweighted noise metrics do not provide an indication of the impact that the sound would have upon a particular species. This is of fundamental importance when considering the impact of underwater noise on marine ecological receptors, as this is associated with the perceived loudness of the sound by that species. The same underwater sound, therefore, will affect marine species in a different manner depending upon the hearing sensitivity of that species.

8.3.32 The dB_{ht} (species) metric (Nedwell *et al*, 2007) incorporates this concept of 'loudness' for a species. The metric is built around a species' hearing ability by referencing the sound to the species' hearing threshold, and hence evaluates the level of sound a species can perceive. The perceived noise levels of source measured in dB_{ht} (species) are usually significantly lower than the unweighted levels as the sound would contain frequency components that the species could not detect. The species upon which

the dB_{ht} (species) analysis was conducted as part of the underwater noise assessment was based upon regional significance, and also upon the availability of a good quality, peer reviewed audiogram. The marine mammal species considered within the assessment was harbour seal.

8.3.33 The assessment criteria presented in **Table 8-7** were published by the Department of Business, Enterprise and Regulatory Reform (BERR) (Nedwell *et al*, 2007) to assess the potential impact of underwater noise on marine species. In essence, Nedwell *et al* (2007) suggests the use of criteria which follow a similar approach as used to assess human response to noise.

Table 8-7 Assessment criteria used to assess the potential impact of underwater noise of marine species

Noise level in dB_{ht} (species)	Effect
Above 130	Possibility of traumatic hearing damage from a single event
90 and above	Strong avoidance reaction by virtually all individuals
75 and above	Some avoidance reaction by the majority of individuals, but habituation or context may limit effect *
*In the presence of another biological imperative (such as migration to breeding or feeding grounds or avoiding a predator) individuals may not exhibit any behavioural reaction to the noise source	

8.3.34 Southall *et al* (2007) presents a set of interim criteria for the levels of underwater noise that may lead to auditory injury in marine mammals based on M-weighted sound exposure levels (SELs) and peak Sound Pressure Levels (SPLs). Instead of using species specific audiograms to determine hearing sensitivity in marine mammals (as is the case of the dB_{ht} (species)), the criteria proposed by Southall *et al* (2007) groups marine mammals into four main M-Weighting groups. These groups are low, mid and high frequency cetaceans and pinnipeds (in water). The criteria are presented in **Table 8-8**.

Table 8-8 Proposed injury criteria for various marine mammal groups (Southall *et al*, 2007)

Marine mammal group	Sound type		
	Single pulse	Multiple pulse	Non-pulses
Low, mid and high frequency cetaceans			
SPL	230 dB re 1 µPa (peak)	230 dB re 1 µPa (peak)	**230 dB re 1 µPa (peak)**
SEL	198 dB re 1 µPa2s (M)	198 dB re 1 µPa2s (M)	**215 dB re 1 µPa2s (M)**
Pinnipeds (in water)			
SPL	**218 dB re 1 µPa (peak)**	218 dB re 1 µPa (peak)	**218 dB re 1 µPa (peak)**
SEL	186 dB re 1 µPa2s (M)	186 dB re 1 µPa2s (M)	**203 dB re 1 µPa2s (M)**

8.4 Existing environment

8.4.1 The Tees estuary comprises intertidal sand and mudflats, rocky shore, saltmarsh and sand dunes. The estuary has been significantly modified over the last 150 years by activities such as land claim, construction of breakwaters and training walls. Over 80% of the intertidal sedimentary habitats of the Tees estuary have been reclaimed over this period.

Summary of QEII jetty refurbishment benthic survey

8.4.2 A benthic survey undertaken during December 2008 in support of the QEII Berth EIA demonstrated that the biological communities within the footprint of the proposed QEII Berth development were of relatively low diversity, broadly characterised of chemically or physically disturbed conditions and very similar in faunal composition to previously surveyed fine sediment locations within the estuary (Royal Haskoning, 2009). The results indicated light to moderate levels of existing pollution impact, with the infaunal communities possibly undergoing a slow recovery from a prolonged period of historical impacts from past use in the vicinity. Samples contained no vulnerable or rare species, or any of known conservation interest.

Summary of the NCGT benthic survey

8.4.3 A benthic survey of the lower Tees estuary was undertaken during 2006 to inform the EIA undertaken for the NGCT. The survey identified that subtidal sediments comprised high silt/clay content in the main approach channel, becoming more sandy at the mouth of the estuary. The invertebrate infauna in the main channel was dominated by polychaetes, with *Chone* sp. and *Ophryotrocha* sp. present. Bivalves, including *Abra alba*, were also present at locations within the dredged channel. The infaunal community in the main channel was dominated by a low number of species suggesting that this assemblage is largely made up of opportunistic species which colonise the area in between maintenance dredging programmes. At near-shore and undredged locations, the opportunistic *Ophryotrocha* sp. and *Capitella capitata* dominated, indicating some level of organic enrichment in these areas. Towards the mouth of the estuary, in the sandy sediments, the infauna was dominated by the polychaetes *Chaetozone christiei* and *Spio decorata*, crustaceans (e.g. *Diastylis bradyi*) and molluscs (e.g. *Abra alba*) were also present.

8.4.4 The benthic survey carried out for the NGCT ES also described the epifaunal communities in the lower Tees Estuary. Trawls showed a greater species abundance and diversity in the area between Dabholm Gut and Seaton Channel, with trawls between Tees Dock and Dabholm Gut and at the mouth of the estuary yielding very little epifauna (Royal Haskoning, 2006). The most abundant species were the shrimp *Crangon* spp. and the shore crab *Carcinus maenus*. The brittle star *Ophiura albida* was also relatively abundant in some trawls.

Summary of Environment Agency benthic survey data

8.4.5 The Environment Agency has provided benthic invertebrate data for a number of sampling stations in the Tees estuary (see **Figure 8-2**). The most recent available data for these stations is summarised below:

- Bamletts Bight (April 2011);
- Laings Basin (September 2011);
- Seal Sands (October 2011);
- Seaton Snook (September 2011);
- Tioxide Outfall (October 2011); and,
- Tees TW WFD (April 2013).

8.4.6 The following presents a summary of the most recent benthic data from each of the above stations; a full analysis will be undertaken in the ES alongside the data from the benthic survey to be undertaken as part of the EIA process.

- Bamletts Bight (April 2011)

8.4.7 This station was characterised by oligochaete and polychaete worms, with *Scalibregma inflatum*, *Streblospio shrubsolii*, *Tubificoides benedii*, *Tubificoides pseudogaster* and Sabellidae being numerically dominant. These species are typically associated with estuarine sedimentary habitats.

- Laings Basin (September 2011)

8.4.8 The polychaetes *Cossura longocirrata*, *Tharyx* and *Chaetozone vivipara* dominated this station, with the oligochaete *Tubificoides pseudogaster* also present.

- Seal Sands (October 2011)

8.4.9 A range of polychaetes and oligochaetes characterised the Seal Sands station, with the cockle *Cerastoderma* also present.

- Seaton Snook (September 2011)

8.4.10 Polychaetes and oligochaetes dominated this station, with a small number of cockles *Cerastoderma* and mussels *Mytilidae* also present.

- Tioxide Outfall (October 2011)

8.4.11 Oligochaetes were numerically dominant at this station, particularly *Tubificoides benedii*, *Tubificoides pseudogaster* and *Tubificoides galiciensis*. A range of polychaetes were also present, notably the opportunistic species *Capitella capitata*.

- Tees TW WFD (April 2013)

8.4.12 This station appears to be the most species rich of the sampled stations and is dominated by polychaete and oligochaete worms. Notably high densities of the polychaetes *Ophryotrocha* and *Euchone* were recorded from this station.

Benthic invertebrates and habitat

8.4.13 The remaining intertidal areas in the Tees estuary are composed of mud and sand, with mats of *Enteromorpha* sp. on sheltered mudflats (notably at Seal Sands). The strand-line and foreshores of North and South Gare (either side of the estuary mouth) and the mudflats of Seal Sands and Bran Sands are backed by their respective dune systems and series of open wet grasslands at Seaton Common and on Cowpen Marsh. An area of intertidal is present within the footprint of the proposed port terminal; this area is only exposed on spring tides (further discussed in **Paragraph 8.4.39**).

8.4.14 As with intertidal habitats, the subtidal environment of the Tees estuary is heavily modified with extensive areas subject to regular dredging and sediment removal. Analysis of macrobenthic data from the Tees estuary suggests that between 1979 and 2001 there was a trend of increasing biological diversity of infaunal invertebrates, with less domination by opportunistic species and some sensitive species starting to become present (NMMP, 2004). This change reflects the improvements in water quality in the last 20 years. It is considered, however, that the subtidal benthic communities within the approach channel and existing berth pockets along the banks of the Tees estuary would be representative of highly disturbed conditions as a result of frequent maintenance dredging.

8.4.15 A survey of the benthic invertebrate community of the intertidal and subtidal area within the footprint of the proposed scheme will be undertaken during July 2014.

Saltmarsh

8.4.16 Greatham Creek has well developed saltmarsh and is the only extensive example of this habitat between the Humber Estuary and Lindisfarne. A managed realignment scheme is underway with the objective of creating 22ha of intertidal habitat (mudflat and saltmarsh) along Greatham Creek.

Designated sites for nature conservation

8.4.17 Although the proposed scheme footprint is not located within a designated site for nature conservation, a large proportion of the Tees estuary has been recognised for its nature conservation value through national and international designations. The designated sites for nature conservation within the study area (see **Figure 8-6**) are:

- Teesmouth and Cleveland Coast Special Protection Area (SPA) and Ramsar site;
- Tees and Hartlepool Foreshore and Wetlands (Site of Special Scientific Interest (SSSI));
- Teesmouth National Nature Reserve (NNR);
- Seal Sands SSSI;
- Cowpen Marsh SSSI;
- Redcar Rocks SSSI;

- Seaton Dunes and Common SSSI; and,
- South Gare and Coatham Sands SSSI

8.4.18 These sites are predominantly designated for their ability to support important waterbird populations. However, some of the above sites are also designated for marine mammals and marine and coastal flora, in addition to waterbird populations, as presented below. The interest features of the SPA and Ramsar site (and the waterbird interest of the other sites listed above) are presented in full within **Section 9.4.**

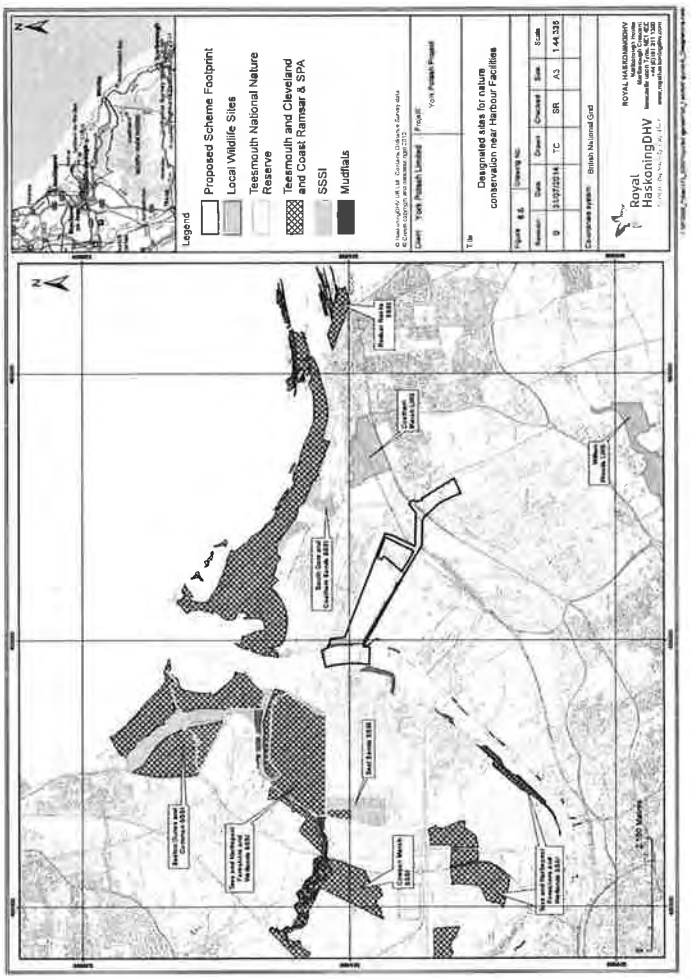
Teesmouth National Nature Reserve

8.4.19 The Teesmouth NNR is divided into two sections, namely North Gare and Seal Sands. North Gare is an area of dunes and grazing marsh, whilst Seal Sands is one of the largest areas of intertidal mudflat on England's north-east coast. North Gare is of importance given its ability to support over-wintering birds. At Seal Sands, a colony of harbour seals haul out on the sand banks at low tide. The seals also utilise the intertidal mudflat as a breeding ground for pups (further discussed within **Paragraphs 8.4.31** to **8.4.33**)

Cowpen Marsh SSSI

8.4.20 The site known as Cowpen Marsh includes the largest saltmarsh between Lindisfarne and the Humber estuary.

8.4.21 Along the southern side of Greatham Creek the saltmarsh is dominated by common saltmarsh grass *Puccinellia maritima* with sea aster *Aster tripolium*. More elevated sections of the saltmarsh support species-rich associations of red fescue *Festuca rubra*, sea plantain *Plantago maritima*, sea arrowgrass *Triglochin maritima*, greater sea-spurry *Spergularia media* and sea milkwort *Glaux maritima* and there is an unusual community of common sea-lavender *Limonium vulgare* with thrift *Armeria maritima* which occurs close to the northern limit of its range in eastern Britain. To the north of Greatham Creek, pioneer communities of glasswort *Salicornia* spp. and annual seablite on the intertidal mud are succeeded by common saltmarsh-grass and sea aster.



Seaton Dunes and Common SSSI

8.4.22 Seaton Dunes and Common is an area of considerable importance for its flora, invertebrate fauna, and bird life. The range of habitats present include sandy, muddy and rocky foreshore, dunes, dune slacks and dune grassland, as well as relict saltmarsh, grazed freshwater marsh with dykes (known locally as fleets and stells) pools and seawalls.

8.4.23 Marram grass *Ammophila arenaria* dominates the main dunes with large populations of sea lyme grass *Elymus arenarius*, sand couch *Agropyron junceiforme* and sea rocket *Cakile maritima* on their seaward side. The dune flora is particularly rich and includes the nationally rare rush-leaved fescue *Festuca juncifolia* and sea couch *Agrophyron pungens* and its northernmost locality, as well as purple milk vetch *Astragalus danicus*, blue fleabane *Erigeron acer* and yellow wort *Blackstonia perfoliata* which have a limited distribution and are associated with the lime-rich slag of the dune covered sea walls.

South Gare and Coatham Sands SSSI

8.4.24 The sand dunes at South Gare and Coatham Sands are dominated by marram grass *Ammophila arenaria* in addition to supporting one of the largest continuous stands of lyme grass *Leymus arenarius* in Britain. Sea couch-grass *Elymus pycnanthus* is present within the site at the northern limit of its range.

8.4.25 The dune slacks support large populations of northern marsh orchid *Dactylorhiza purpurella*, early marsh orchid *D. incarnata* and fragrant orchid *Gymnadenia conopsea*. Other plants of particular interest within the dune system, and associated with lime-rich areas of lipped slag, are yellow wort *Blackstonia perfoliata*, lesser centaury *Centaurium pulchellum*, knotted hedge parsley *Torilis nodosa*, carline thistle *Carlina vulgaris*, strawberry clover *Trifolium fragiferum* and the nationally rare grass, rush-leaved fescue *Festuca juncifolia*.

8.4.26 Within the developing saltmarsh notable plants include sea wormwood *Artemisia maritima*, lesser sea spurrey *Spergularia marina*, lax-flowered sea lavender *Limonium humile*, sea purslane *Halimione portulacoides* and smallest hare's ear *Bupleurum tenuissimum*. Parsley water dropwort *Oenantha lachenalii* is of particular interest amongst the fresh water marsh communities dominated by great reedmace *Typha latifolia*, rushes *Juncus* spp. and sedges *Carex* spp.

Local Wildlife Sites

8.4.27 Local Wildlife Sites (LWSs) are selected for their local nature conservation value. LWSs can contain important, distinctive and threatened habitats and species. In many parts of the UK, they are the principal wildlife resource but their designation is non-statutory and their only protection comes via the planning system.

8.4.28 Consultation with INCA during April 2014 has identified that the closest LWS to the proposed scheme footprint is the Coatham Marsh site, which has been managed by the Tees Valley Wildlife Trust since 1982. The Coatham Marsh LWS is located approximately 1.1km north east of the proposed scheme

footprint at its closest point, and is comprised of a series of pools and reed-swamp which has survived the urbanisation and industrialisation of the Tees estuary. The site is of regional importance for wintering birds and local importance for its breeding bird population.

8.4.29 The Wilton Woods LWS is the next closest locally designated wildlife site to the proposed scheme footprint. The Wilton Woods LWS is located approximately 3.7km south of the proposed scheme footprint at its closest point, and is comprised of an extensive mixed woodland complex of ancient woodland, broad leaved woodland and re-planted ancient woodland mosaic. The complex is one of the best sites in the Tees Valley for land molluscs, a primary indicator of ancient woodland. The location of LWS in relation to the proposed scheme footprint is illustrated on **Figure 8-6**.

8.4.30 LWSs have not been considered further within this section of the PER, given the interest features for which the sites have been designated and the geographic separation between the LWSs and the footprint of the proposed scheme.

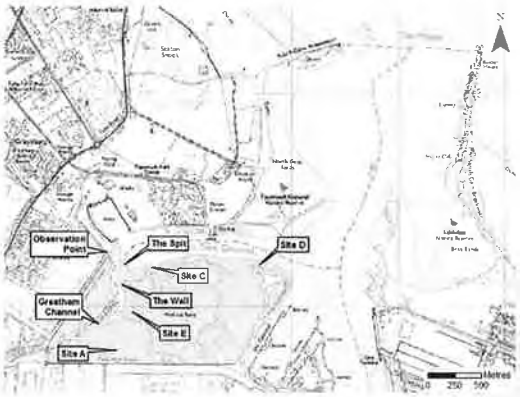
Marine mammals

8.4.31 Seal Sands is an important haul-out site for both common (harbour) seals *Phoca vitulina* and grey seals *Halichoerus grypus*, and is also the only breeding site for common seals on the east coast between the Wash and the Tay. Both the common seal and grey seal are listed as vulnerable under the EC Habitats Directive. INCA has been monitoring the seal population at Seal Sands since 1989, with the most intensive monitoring being undertaken during the common seal pupping season (between early June and late August).

8.4.32 **Figure 8-7** shows the key haul out sites used by marine mammals at Seal Sands. Site 'A', 'B', 'E' and 'The Wall' are used mainly by common seals, while Site 'D' is used by grey seals. Site 'C' and 'The Spit' are used by both species (INCA, 2012).

8.4.33 The 2013 season saw the birth of 23 harbour seal pups, which continues the upward trend in pup births which has been evident in recent years. Of the 23 harbour seal pups which were born during 2013, 22 survived with only one still born pup. The result from 2013 was also significant as INCAs dedicated seal monitors observed two seal births on the saltmarsh at Greatham Creek. These are the first two seal pup births that are known to have taken place at that location. The maximum daily number of Harbour Seal recorded within the Tees estuary peaked at 103 during early September 2013. This exceeds the previous record from 2012 by 17% (INCA, 2013).

Figure 8-7 Location of seal haul out sites on Seal Sands



Habitats and species of principal importance

8.4.34 Section 41 of the Natural Environment and Rural Communities Act 2006 requires the Secretary of State to publish a list of habitat and species which are of principal importance for the conservation of biodiversity in England. The Section 41 list is used to guide decision makers in implementing their duty under Section 40 of the Natural Environment and Rural Communities Act 2006, to have regard to the conservation of biodiversity in England when carrying out their normal functions. A total of 56 habitats of principal importance and 943 species of principal importance are included on the Section 41 list.

8.4.35 The presence of species of principal importance within and in the vicinity of the footprint of the proposed scheme (with regard to marine ecology) was largely unknown at this stage, as the results of the benthic ecological survey were not available at the time of writing. However, as discussed within **Paragraphs 8.4.31**, common seal are known to be present within the Tees estuary and this species is included on the list of species of principal importance.

8.4.36 The Tees estuary contains habitats of principal importance listed within Section 41 of the Natural Environment and Rural Communities Act 2006, including intertidal mudflats and saline lagoons.

Biodiversity Action Plan habitat

8.4.37 UK Biodiversity Action Plan (BAP) priority habitats were identified as being the most threatened and requiring conservation action under the UK BAP. The original list of UK BAP priority habitats was created between 1995 and 1999, and was revised in 2007 following the Species and Habitats Review Report.

8.4.38 As a result of devolution and new country level and international drivers and requirements, much of the work previously carried out by the UK BAP is now focussed at a country-level rather than a UK-level, and the UK BAP has recently (2012) been succeeded by the UK Post-2010 Biodiversity Framework. The UK list of priority habitats remains an important reference source and has been used to draw up statutory lists of priorities in England, Scotland, Wales and Northern Ireland.

8.4.39 The footprint of the proposed port terminal is located within an area of intertidal sediment habitat. Intertidal sediment is also located along the Dabholm Gut. This habitat is illustrated within **Plate 8-1, Plate 8-2** and **Plate 8-3** (photographs taken on 17 April 2014 by INCA during a spring tide (0.8m above LAT on the day of the site visit undertaken by INCA)) as well as **Figure 8-6**.

Plate 8-1 Intertidal habitat within the footprint of the proposed port terminal (photo courtesy of INCA)

Plate 8-2 View of intertidal sediments in the footprint of the proposed port terminal (photo courtesy of INCA)

Plate 8-3 Mudflats present within Dabholm Gut (photo courtesy of INCA)

Summary of underwater noise survey

8.4.40 The measurements recorded during the underwater noise survey have been analysed to determine the SPLs, and identify the main contributing sources of noise that make up the ambient noise environment in the vicinity of the proposed port facility.

8.4.41 The underwater noise survey identified that the level of noise was typically in the region of 115 to 120 dB re 1 µPa RMS down the centre of the river. This is considered to be a fairly high level for a wide, slow flowing river. Seaton Channel was found to be relatively quiet by comparison, with the exception of the noise generated by the water intakes for the nuclear plant.

8.4.42 The data identified that existing shipping activity was the main source of underwater noise within the Tees estuary. High frequency noise from many ships' echosounders was detected during the survey, as well as noise from generators on-board moored ships. Due to its ubiquity, the noise from shipping was by far the largest source and was detectable throughout the main channel with the estuary.

8.4.43 **Table 8-9** shows the maximum, minimum and mean SPL from each area during both days of the survey, analysed in terms of the hearing abilities of bottlenose dolphin, harbour porpoise and harbour seal (these species were specifically selected given their regional importance and also the availability of a good quality peer reviewed audiogram for such species).

Table 8-9 RMS levels for marine mammals for each measurement area

		RMS dB re 1µPa (*Species*)					
		02-04-14			03-04-14		
Area		Bottlenose Dolphin	Harbour Porpoise	Harbour Seal	Bottlenose Dolphin	Harbour Porpoise	Harbour Seal
1	Max	66.4	74.4	46.0	62.5	70.2	52.7
	Min	37.1	50.6	30.2	37.8	50.9	26.4
	Mean	51.0	60.0	38.3	47.3	56.7	42.8
2	Max	67.5	77.3	55.3	71.3	79.0	59.2
	Min	37.6	46.1	28.0	31.6	39.6	28.7
	Mean	49.5	58.7	41.3	47.5	56.9	41.4
3	Max	67.0	73.6	61.0	54.8	61.8	47.7
	Min	34.7	45.3	16.1	37.0	46.6	24.4
	Mean	43.3	53.6	33.1	43.4	53.5	31.6
4	Max	53.9	60.5	53.3	51.9	60.9	39.0
	Min	38.3	50.9	32.0	37.3	51.7	27.0

Area		RMS dB$_{ht}$ (Species)					
		02-04-14			02-04-14		
		Bottlenose Dolphin	Harbour Porpoise	Harbour Seal	Bottlenose Dolphin	Harbour Porpoise	Harbour Seal
Overall	Mean	44.9	54.3	42.1	42.8	54.3	29.8
	Max	67.5	77.3	61.0	71.3	79.0	59.2
	Min	34.7	45.3	16.1	31.6	39.8	24.4
	Mean	48.3	57.8	39.6	46.5	56.3	39.4

8.4.44 The mean dB_{ht} levels for marine mammals as presented in **Table 8-9** are in keeping with levels in coastal areas which are generally in the range of 30 to 65dB_{ht}.

8.4.45 Generally, baseline noise levels were below 50dB_{ht} for all species considered, suggesting that there is a low likelihood that the ambient noise levels in the area will cause any reaction for these species. The highest levels were noted for the harbour porpoise, where the maximum noise level as a vessel passed reached just over 75dB_{ht}. This can be considered the level at which some aversive reaction could occur, although this noise level is transient and any reaction is unlikely to be sustained. Therefore the existing ambient noise levels and their continuous (as opposed to impulsive) nature are unlikely to result in any significant reaction or aversive behaviour in native species.

Summary of underwater noise modelling results

Modelling of impact piling

8.4.46 The modelling results presented in **Table 8-10** provide a summary of the estimated ranges out to which certain unweighted levels of noise are expected to occur.

Table 8-10 Summary of modelled ranges for unweighted peak-to-peak SPLs for impact piling

Impact piling	North location			South location		
	Maximum range	Minimum range	Mean range	Maximum range	Minimum range	Mean range
220 dB re 1 µPa	6m	4m	5m	6m	4m	5m
200 dB re 1 µPa	42m	24m	37m	54m	20m	43m
190 dB re 1 µPa	160m	24m	94m	210m	20m	120m
180 dB re 1 µPa	600m	24m	280m	780m	20m	340m
170 dB re 1 µPa	1930m	24m	460m	2400m	20m	550m
160 dB re 1 µPa	2750m	24m	510m	4900m	20m	630m

8.4.47 The data presented in **Table 8-10** show that the propagation of noise from the North and South positions is similar, until the point at which the sound drops below approximately 170 dB re 1 µPa, where the bathymetry of the estuary starts to impact upon the noise propagation. It should also be noted that in the case of both modelling locations, the minimum range reaches a limit of 24m and 20m at the North and South positions respectively (this range is the shortest distance from the modelling location to the river bank). Contour plots illustrating the unweighted peak-to-peak SPLs for impact piling are presented in **Figure 8-8** and **Figure 8-9**.

Figure 8-8 Contour plot showing the predicted unweighted peak-to-peak SPLs from impact piling at the North position

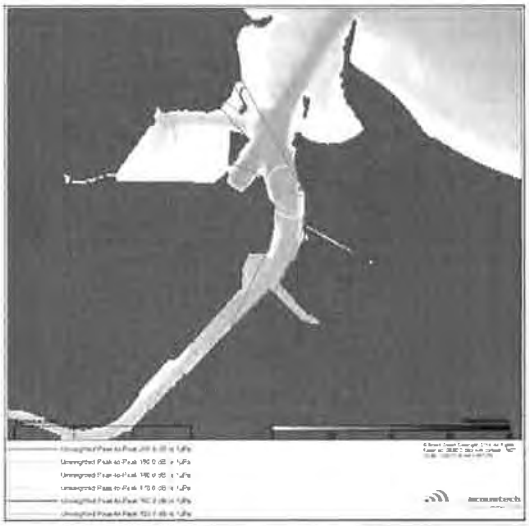
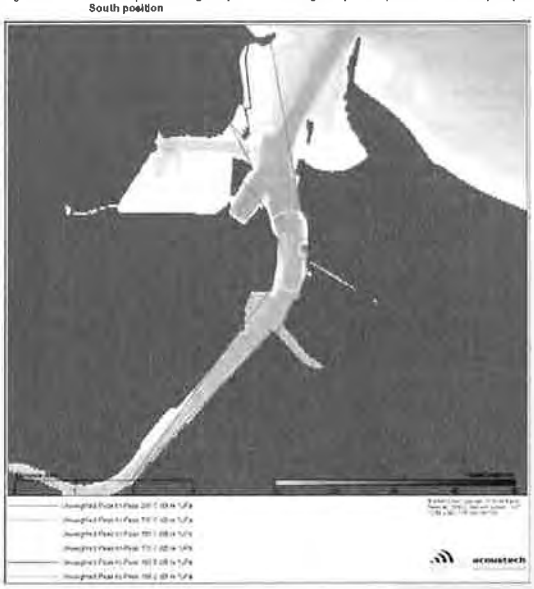


Figure 8-9 Contour plot showing the predicted unweighted peak-to-peak SPLs from impact piling at the South position



Modelling of dredging noise

8.4.48 The modelling results presented in **Table 8-11** provide a summary of the estimated ranges out to which certain unweighted RMS SPLs are expected to occur, from two different dredging operations (backhoe dredging and suction dredging). It can be seen in **Table 8-11** that the unweighted RMS levels for

suction dredging extend to a greater range compared to the predicted ranges for a backhoe dredger. As with the modelling results for impact piling, the minimum range presented in **Table 8-11** reaches a limit. However, as only three transects have been modelled for dredging noise, the minimum limit is the river bank opposite the dredge footprint (a distance of 485m).

Table 8-11 Summary of the modelled ranges for unweighted RMS SPLs in 10dB increments for dredging activities

Unweighted RMS SPLs	Backhoe dredging			Suction dredging		
	Maximum range	Minimum range	Mean range	Maximum range	Minimum range	Mean range
160 dB re 1 µPa	<5m	<5m	<5m	20m	20m	20m
150 dB re 1 µPa	10m	10m	10m	95m	75m	88m
140 dB re 1 µPa	30m	25m	28m	475m	335m	423m
130 dB re 1 µPa	105m	65m	92m	2140m	485m	1310m
120 dB re 1 µPa	480m	275m	400m	2460m	485m	1700m
110 dB re 1 µPa	1660m	485m	1090m	2920m	485m	1860m

8.5 Assessment of potential impacts during construction

Direct removal of invertebrate resource due to potential reclamation, capital dredging and piling

8.5.1 The proposed scheme would result in the direct loss of invertebrate resource due to capital dredging, piling, reclamation (for the solid quay structure only) and revetment installation (for the open quay structure only). The area of subtidal and intertidal habitat loss within the Tees estuary would differ depending on the preferred option selected with regard to the quay construction, as presented within **Table 8-12**.

Table 8-12 Area of invertebrate resource which would be directly lost under each of the quay construction options

Option	Approximate area of habitat loss within the Tees estuary due to differing scheme elements (m^2) (total of Phase 1 and Phase 2)	
	Piling	Reclamation / revetment
Open quay structure	255	See note below*
Solid quay structure	Part of the overall figure within the reclamation / revetment column	45,475

*For the open quay structure, it is considered likely that all existing intertidal habitat within the footprint of the proposed port terminal would be lost in order to install the revetment. However, this part the design was not fixed at the time of writing; therefore an area of loss has not been stated at this stage.

Impacts to subtidal habitat

8.5.2 The dredging that would be required for both forms of port terminal would result in the direct loss of benthic community within the footprint of the dredge (combined total of approximately 140,000m^2 for Phase 1 and Phase 2). The dredging within the berth pocket and approach channel does not represent a habitat loss (as the same habitat would be present at a lower level) but, in the short term, the benthic community would be removed from within the dredged areas.

8.5.3 Given the regular ongoing maintenance dredging of the approach channel, it is considered that the benthic community within the approach channel relevant to the proposed scheme itself would be similar to that recorded during the benthic ecological survey for the consented (but as yet unbuilt) QEII berth development and the NGCT (of low sensitivity).

8.5.4 As the footprint of the proposed berth pocket has not been subject to maintenance dredging, there is potential for this area to support a more diverse and varied ecological community in comparison with the approach channel (and potentially species or habitats listed within Section 41 of the Natural Environment and Rural Communities Act, 2006). The results of the site specific benthic ecological survey will be used to fully assess the significance of the habitat which would be lost as a direct result of the proposed scheme.

Impacts to intertidal habitat

8.5.5 As discussed within **Paragraph 8.4.36**, intertidal mudflat is listed as a habitat of principal importance under the Natural Environment and Rural Communities Act 2006 and is also a BAP habitat. Mudflat is, therefore, considered to represent a highly sensitive receptor (albeit, as illustrated in **Plate 8-1** to **Plate 8-3**, the mudflat habitat in question does not appear to be of pristine quality).

8.5.6 The direct loss of mudflat as a result of the proposed scheme would represent a long term change to the mudflat habitat, albeit within a relatively localised section of the estuary. The impact is considered unlikely to be reversible given the long term nature of the proposed scheme. Based on the above, the magnitude of the effect is predicted to be high, and an impact of moderate adverse significance is anticipated with regard to loss of intertidal mudflat habitat. The area of mudflat that would be directly impacted will be confirmed and is dependent on the option for the quay construction that is progressed.

8.5.7 As illustrated in **Plate 8-1** and **Plate 8-2** the sediments within the intertidal area above the level of the mudflats appear to be very shallow and accumulated over rip-rap or road planings and bricks. Adjacent to the NWL sludge pier in the south there is a covering of steel gabions on-top of the intertidal sediments. The intertidal area above the level of mudflat habitat, therefore, is not considered to represent particularly sensitive habitat given its nature. Consequently an impact of minor adverse significance is anticipated with regard to the loss of intertidal habitat above the level of mudflat.

Potential mitigation measures

8.5.8 Measures to mitigate the direct loss of benthic habitat during dredging, piling and reclamation activities are limited, as this would be an unavoidable consequence of the scheme. In order to minimise the impact on the existing habitat, the disturbance footprint would be minimised where possible, within the constraints of infrastructure engineering and operability. The results of the benthic ecological survey would inform the requirement for additional mitigation measures to prevent further significant adverse impacts to marine ecological communities.

Potential impacts to marine ecology from increased (potentially contaminated) total suspended sediment during dredging and deposition following dredging

Sediment resuspension

8.5.9 During capital dredging, a proportion of the material that is dredged would be disturbed and re-suspended into the water column, dispersed and deposited onto the seabed. Hence, the construction phase would result in increases in the TSS concentrations of the water column. The proposed dredging operations also have the potential to release contaminants bound to seabed sediments into the water column, making them potentially available for uptake by marine organisms, with consequent biological effects. For example, contaminants can cause morphological and reproductive changes in benthic invertebrates and fish.

8.5.10 An increase in the TSS concentration in the water column would increase turbidity and reduce the depth of water that light can penetrate and, therefore, the amount of light available for primary production by any phytoplankton and marine algae at depth. At high levels and/or for prolonged periods of time, an increase in TSS concentrations can inhibit or prevent benthic organisms from feeding by clogging feeding apparatus (e.g. filter feeding molluscs). In addition, high concentrations of suspended sediment may impact upon fish through clogging of gill lamellae, potentially leading to death, whilst lower concentrations can result in sub-lethal stress or avoidance reactions. Further consideration of the potential impacts of increases TSS concentrations on fish is provided in **Section 11**.

8.5.11 In general, sediment plumes induced by dredging are considered to pose only a limited risk to water quality (and subsequently marine ecological species) since the affected water usually has the capacity to accommodate an increased oxygen demand, particularly where dredging takes place in open sea or estuaries (CIRIA, 2000). The tidal exchange within the Tees estuary would remain unrestricted during the construction and operational phases, and peaks in TSS are only expected on a short term basis during Phase 1 and Phase 2. During dredging, the silts and clays disturbed would rapidly disperse away from the location of the dredge due to the relatively high current speeds in the unconfined area.

8.5.12 As discussed during **Section 3**, the proposed use of a backhoe dredger for a proportion of the dredging operation is considered likely to minimise the resuspension of sediment into the water column as far as possible (assuming best operational practice is implemented during dredging).

8.5.13 Estuarine benthic communities typically have a degree of tolerance to conditions of high and variable TSS, as concentrations can vary significantly in response to tidal conditions and other events such as storms (increased wave action) and high rainfall. The Tees estuary is regularly maintenance dredged for navigation purposes using TSHD, and therefore marine ecological receptors are likely to be adapted to temporarily increased levels of suspended sediment.

Disturbance to potentially contaminated sediment

8.5.14 As discussed within **Section 7.4**, the sediment quality within the construction and dredge footprint was unknown at the time of writing this PER as the vibrocore survey and subsequent laboratory analysis of samples has not yet been undertaken. However, given that the majority of the Phase 2 dredging and a proportion of the dredging for Phase 1 is likely to be in the marls (rock), the potential for contaminants to be present within this material (which could subsequently impact upon marine ecological receptors due to resuspension of potential contaminants) is considered to be low. There is greater potential for contamination to be present within the silts, sands and gravels which are anticipated to comprise the majority of the material to be dredged during Phase 1. However, given the unconstrained nature of the tides within the Tees estuary, it is anticipated that dilution would rapidly reduce the concentration of contaminants to acceptable levels.

8.5.15 A full assessment of the risks associated with disturbance to potentially contaminated sediment will be undertaken during the EIA once the sediment quality analysis has been undertaken.

Sediment deposition

8.5.16 As discussed above, a proportion of the sediment that is dredged would be disturbed, re-suspended into the water column, dispersed and deposited back onto the seabed. Such deposition could result in the smothering of the intertidal habitat, thereby impacting indirectly upon benthic ecology.

8.5.17 The initial results of the sediment plume modelling undertaken specifically for the proposed scheme are discussed within **Section 5.5** and **Section 5.6**. Deposition rates of 1 to 2mm per day are predicted in an area 2km either side of the proposed dredge footprint. No average increase in suspended sediment concentration is shown over the intertidal areas, leading to a prediction of negligible sediment being able to deposit on the intertidal areas.

8.5.18 Based on the initial sediment plume modelling results, the indirect impacts on intertidal habitats due to sediment deposition following dredging are not anticipated to be significant. However, this will be fully assessed within the EIA once the full set of sediment plume modelling results is available.

Potential mitigation measures

8.5.19 The miligation measures outlined within **Paragraphs 7.5.5 to 7.5.8** are also of relevance to this impact.

Noise and vibration disturbance to marine mammals

8.5.20 The generation of underwater noise during the construction works is inevitable due to piling for the construction of the port terminal (for either construction option) and capital dredging. There is little published information on the levels of underwater noise produced by piling and dredging activities and its environmental implications.

8.5.21 Seals are the marine mammal species most likely to be impacted by underwater noise in the Tees estuary. Harbour (common) seal (*Phoca vitulina*) is the most sensitive seal species to underwater sound (based on current peer reviewed audiogram data, including Mohl 1968 and Schusterman, 1998). Harbour seal was therefore considered a species of concern within regard to impacts from underwater noise.

8.5.22 Harbour seals are highly mobile and would tend to avoid such disturbance and relocate to unaffected areas close by. The ConocoPhillips Teesside LNG Plant ES (RSK, 2007) describes noise modelling undertaken to estimate the behavioural response range for seals from piling operations. Ranges of 500m for seals were reported for a response to be observed in the target species. Further discussion of the potential impacts of noise on fish and commercial fisheries resources can be found in **Section 11**.

8.5.23 The Tees estuary is an industrialised environment experiencing high levels of shipping and construction activity along its shores and is subject to the existing maintenance dredging regime. The underwater noise survey has shown that the Tees estuary has many sources of anthropogenic noise, with shipping being the main source.

8.5.24 An interpretation of the underwater noise modelling results (Subacoustech, 2014) has been undertaken to inform the impact assessment, in accordance with the assessment criteria presented in **Section 8.4.** The results of the interpretation are presented below.

Unweighted metrics

8.5.25 The source level for the noise from impact piling operations using a hammer with maximum blow energy of 125kJ has been estimated at 223.5 dB re 1 µPa at 1m (SPL_{peak}). This value exceeds the 220 dB re 1 µPa (SPL_{peak}) criteria (Parvin *et al*, 2007) for physical injury, however, does not exceed the 240 dB re 1 µPa (SPL_{peak}) criteria for lethal effect. The maximum range to which the 220 dB re 1 µPa (SPL_{peak}) criteria extends is limited, at 4m. The underwater noise source levels from dredging operations was estimated at 165 dB re 1 µPa at 1m (SPL_{RMS}) and 183 dB re 1 µPa at 1m (SPL_{RMS}) for a backhoe and suction dredger respectively. These source levels are below the levels which are anticipated to result in physical injury or behavioural response.

The dB_{ht} (species) metric – auditory injury

8.5.26 The 130 dB_{ht} (species) perceived level is used to indicate traumatic hearing damage over a very short exposure time. **Table 8-13** shows the ranges to which traumatic hearing damage may occur for harbour seals as a result of impact piling. Harbour seal are predicted to have a large range for 130 dB_{ht} (species), at 32m and 34m from the modelled North and South positions respectively.

Table 8-13 Summary of the modelled ranges for 130 dB_{ht} (species) levels for impact piling operations

Impact piling		130 dB_{ht} (species)	
		North position	South position
	Maximum	32m	34m
	Minimum	24m	20m
	Mean	29m	30m

The dB_{ht} (species) metric – behavioural response (impact piling)

8.5.27 The data in **Table 8-14** present a comparison of the estimated 90 and 75 dB_{ht} (species) impact ranges for behavioural response for harbour seals. As with the unweighted noise level data presented in **Table 8-10**, the minimum range from impact piling reaches a limit (24m at the North position and 20m at the South position). It can be seen that the estimated impact ranges from impact piling are predicted to be up to 4.89km from the South position (where 75 dB_{ht} (species) impact ranges extend to the river banks for all modelled transects).

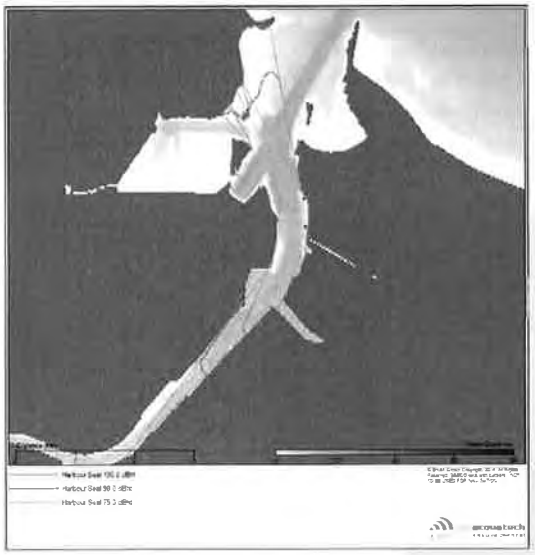
8.5.28 **Figure 8-10** presents the ranges in **Table 8-14** in the form of a contour map. It should be noted that the 130 dB_{ht} (species) contours are too small to be visible at the scale of **Table 8-13**.

Table 8-14 Summary of the modelled ranges for 90 and 75 dB_{ht} (species) levels for impact piling operations

Impact piling		North position		South position	
		90 dB_{ht} (species)	75 dB_{ht} (species)	90 dB_{ht} (species)	75 dB_{ht} (species)
	Maximum	2.50m	2.75km	3.01km	4.89k
	Minimum	24m	24m	20m	20m
	Mean	503m	511m	584m	634m

8.5.29 It is important to acknowledge in this context that piling activities would not present a constant noise source and those periods between pile driving (e.g. when repositioning the piling barge, or when boring/pre-augering of holes) would provide opportunity for unimpeded movement of seals both up and downstream within the main river channel.

Figure 8-10 Contour plot showing the predicted 90 and 75 dB_{ht} levels for harbour seal for impact piling using a 914mm diameter pile and blow energy of 125 kJ



The dB_{ht} (species) metric – behavioural response (backhoe and suction dredging)

8.5.30 The data in **Table 8-15** present a comparison of the 90 dB_{ht} and 75 dB_{ht} (species) impact ranges for behavioural response in harbour seal, predicted to arise due to backhoe and suction dredging.

Table 8-15 Summary of the modelled ranges for 90 and 75 dB_{ht} (species) levels for backhoe and suction dredging levels with regard to harbour seal

Species		Backhoe dredging		Suction dredging	
		90 dB_{ht} (species)	75 dB_{ht} (species)	90 dB_{ht} (species)	75 dB_{ht} (species)
	Maximum	<5m	<5m	<5m	10m
	Minimum	<5m	<5m	<5m	10m
	Mean	<5m	<5m	<5m	10m

8.5.31 The data show that the modelled impact ranges from dredging operations are all predicted to be 10m or less.

M-Weighted SELs

8.5.32 The accumulated exposure to sound leading to the potential onset of auditory injury for marine mammals has been assessed using the criteria proposed by Southall *et al* (2007), using M-Weighted SELs. The multiple pulse results have been created by assuming a receptor flees from the noise source at a speed of 1.5m/s. It has also been assumed that one pile would take 90 minutes to drive, with six piles being installed in a 12 hour period.

8.5.33 **Table 8-16** shows the ranges to which 186 dB re 1 μPa^2s are likely to extend, for single pulse exposure and for exposure over multiple pulses, based on the assumptions outlined above. The maximum range for single pulses is predicted to be 6m at both the North and South positions. The maximum range for an exposure to multiple pulses, assuming the animal is fleeing, is 310m at the South position and 130m at the North position.

Table 8-16 Summary of impact ranges using Southall *et al* 2007 critera SEL of 186 dB re 1 μPa^2s for pinnipeds (in water)

Pinnipeds (in water) 186 dB re 1 μPa^2s	Backhoe dredging		Suction dredging	
	90 dB_{ht} (species)	75 dB_{ht} (species)	90 dB_{ht} (species)	75 dB_{ht} (species)
Maximum	6m	130m	6m	310m
Minimum	4m	100m	4m	100m
Mean	5m	105m	5m	134m

Summary of underwater noise assessment

8.5.34 Modelling of underwater noise from piling operations shows that, using unweighted SPL_{peak} noise criteria, noise levels are not predicted to be high enough for marine mammals to suffer a lethal effect. Physical traumatic injury could occur, but only out to 4m, for all marine species. Modelling of

underwater noise from the proposed dredging operations shows that noise levels are not predicted to be sufficient to reach the unweighted criteria for lethal effect, physical injury or behavioural response.

8.5.35 The largest estimated ranges out to which traumatic hearing damage may occur from impact piling using the 130 dB_{ht} (species) criteria is predicted to be 34m for harbour seal. The modelled dB_{ht} (species) sound propagation for backhoe and suction dredging is not predicted to reach the level at which traumatic hearing damage could occur.

8.5.36 The impact range for behavioural response is indicated using the 90 and 75 dB_{ht} perceived level criteria. Modelling for behavioural response shows that the impact range from impact piling for harbour seal is 3.01km, for 90 dB_{ht}. For 75 dB_{ht}, the maximum range reached 4.89km for harbour seal (the distance to the bankside from the noise source). The 90 and 75 dB_{ht} impact ranges for backhoe and suction dredging are predicted to be 10m or less.

8.5.37 Using the M-Weighted SEL for assessing auditory injury in marine mammals from impact piling, the ranges have been calculated for the 186 dB criteria in pinnipeds. The single pulse SEL impact range was calculated to be a maximum of 6m, whereas the maximum impact range for the multiple phase SEL was calculated at 310m.

8.5.38 Harbour seals (and grey seals) are considered to be receptors with very high sensitivity, as both species are listed as vulnerable under the EC Habitats Directive.

8.5.39 However, piling activities would not present a constant noise source and there would be periods between pile driving (e.g. when repositioning the piling barge, or when boring/pre-augering of holes) which would allow for unimpeded movement of seals both up and downstream within the main river channel. The noise disturbance to seals due to piling and dredging would be reversible once such operations are completed. In addition, the modelling results have predicted that the source noise levels would not result in a lethal effect on marine mammals.

8.5.40 Based on the information presented above, the magnitude of the impact to marine mammals as a result of noise and vibration is considered to be medium. Without mitigation, an impact of moderate adverse significance is, therefore, predicted to arise with respect to marine mammals as a result of underwater noise and vibration.

Potential mitigation measures

8.5.41 It is considered likely that the following measures would be required to reduce the potential for adverse impacts to marine mammals.

8.5.42 The JNCC's guidelines 'Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise' (JNCC, 2010) should be adhered to during pile driving. This would include checking for marine mammals during a pre-piling search prior to piling operations commencing, the establishment of a mitigation zone (i.e. an area within which a marine mammal could

be exposed to sound levels which could cause damage) and the use of soft start techniques to allow any marine mammals time to leave the area of greatest disturbance.

8.5.43 With the implementation of the above mitigation measures, a residual impact of minor adverse significance is predicted.

Potential effects of accidental spillages of oils, fuels and chemicals from vessels

8.5.44 There is the potential for accidental releases of substances into the marine environment which could result in a pollution incident and consequently impact upon the health of marine species. The implications of a pollution incident on water quality and, therefore, other environmental parameters such as marine ecology are highly dependent on both the nature of the substance released and the scale of the incident.

8.5.45 As it is difficult to quantify the likely amount (and nature) of any spillages or leakages into the marine environment, it is not possible to predict the significance of the potential impact. However, the risk of a pollution incident occurring and its impact on marine ecological receptors can be controlled through the implementation of the mitigation measures outlined below.

Mitigation measures

8.5.46 A spill kit (including booms for potential leaks directly into the marine environment) should be kept on site at all times during the construction phase and any major spills or leakages controlled and reported to the Environment Agency and Harbour Master.

8.5.47 PD Teesport (the harbour authority) is a spill responder for the Tees estuary. Hence there will be plans in place to ensure spillages or leakages can be rapidly and effectively managed.

8.5.48 With the above mitigation measures in place, it is anticipated that the consequences of a pollution incident would be minimised as far as possible.

Smothering of benthic habitat due to offshore disposal of dredged material

8.5.49 Subject to consideration of alternative uses, dredged material is proposed to be disposed of within licenced offshore disposal sites. Given that the disposal sites are licenced to accept dredged material, no unacceptable ecological impacts are anticipated from the offshore disposal of dredged material.

8.5.50 An impact of negligible significance was anticipated to marine ecological receptors with regard to the disposal of material from the consented NGCT scheme at licenced offshore disposal sites (a much larger volume of material was proposed for offshore disposal for the NGCT scheme than the currently proposed scheme).

8.5.51 The ES for the NGCT scheme also concluded that capital dredging would result in far lower rates of introduction of fines to the disposal sites than occurs during maintenance dredging and, therefore, the

physical effects of the material disposed at the site during capital dredging were predicted to be lower. It was anticipated that there would be some short-term build-up of sandy sediment and this would be dispersed over time. Some longer term accumulation of coarser sediments arising from the dredging of stiff clay would occur on the seabed.

8.5.52 Based on the previous EIA studies, it is considered that offshore disposal of capital dredged material is unlikely to result in an unacceptable impact; however, this will be fully assessed within the EIA and presented within the ES once the results of the hydrodynamic and sedimentary modelling are available.

8.6 Assessment of potential impacts during operation

Noise and vibration disturbance to marine ecological receptors

8.6.1 The generation of noise from shipping movements during the operational phase is an unavoidable consequence of the proposed scheme. However, the Tees estuary is an industrialised environment with high levels of shipping and construction activity along its shores. The Tees estuary is also subject to the existing maintenance dredging regime which is likely to generate underwater noise. As discussed within **Paragraph 8.4.42**, existing shipping activity was found to be the main source of underwater noise within the Tees estuary during an underwater noise survey carried out in April 2014. Consequently, it can be concluded that there are at present a number of sources of anthropogenic noise in the Tees estuary.

8.6.2 The results of the underwater noise modelling assessment for the operational phase of the proposed scheme were not available at the time of writing this PER and, as such, it has not been possible to undertake an impact assessment for this particular impact. This will however be fully assessed within the EIA and the results presented in the ES.

Potential mitigation measures

8.6.3 The results of the noise assessment will be used to inform the requirement for mitigation measures to prevent significant adverse impacts to marine ecological communities during the operational phase.

Potential effects of accidental spillages of oils, fuels and chemicals from vessels

8.6.4 There is the potential for accidental releases of substances into the marine environment during operation which could result in a pollution incident and consequently impact upon the health of marine species. As described for the construction phase, the implications of a pollution incident on water quality and, therefore, other environmental parameters such as marine ecology are highly dependent on both the nature of the substance released and the scale of the incident.

8.6.5 As it is difficult to quantify the likely amount (and nature) of any spillages or leakages into the marine environment, it is not possible to predict the significance of the potential impact. However, the risk of a pollution incident occurring and its impact on marine ecology can be controlled through the implementation of the mitigation measures outlined below.

Mitigation measures

8.6.6 A spill kit (including booms for potential leaks directly into the marine environment) should be kept on site at all times during the construction phase and any major spills or leakages controlled and reported to the Environment Agency and Harbour Master.

8.6.7 PD Teesport (a spill responder) will have plans in place to ensure spillages or leakages can be rapidly and effectively managed. With the above mitigation measures in place, it is anticipated that the consequences of a pollution incident would be minimised as far as possible.

Recovery of the benthic community following completion of capital dredging

8.6.8 It is considered likely that there would be a requirement for regular maintenance dredging of the approaches to the proposed port terminal and the berthing pocket. During the operational phase, there would be a requirement to maintain an area that is not currently routinely maintained (i.e. the proposed berthing pocket), in addition to areas which are currently maintained, albeit at a greater depth (i.e. the approach channel during Phase 1 and Phase 2).

8.6.9 Maintenance dredging represents a repeated disturbance to the benthic community within the dredged area and limits recovery of the benthic community following the impact that would occur as a result of capital dredging. Although there would be recovery following capital dredging, the community would be likely to be characterised by a low species diversity and richness, similar to that occurring throughout the remainder of the maintained area (which is evident within the results of previous benthic ecological surveys undertaken within the maintained areas of the Tees estuary).

8.6.10 Any re-colonisation of the seabed following the capital dredging would be beneficial, but given that maintenance dredging would restrict recovery, the benthic community that colonises the seabed following capital dredging would be expected to be of low species richness and diversity. It is considered that this impact would be of greater significance in the areas which are not currently maintained, given the potential for a greater species diversity and richness to be present in these areas. However, as the results of the site specific benthic ecological survey were not available at the time of writing this PER, it has not been possible to assign a significance rating to this impact.

Potential mitigation measures

8.6.11 Maintenance dredging of the approach channel and berth pocket (and the associated regulator disturbance to the benthic community) is an unavoidable consequence of the proposed scheme.

8.7 Summary

8.7.1 The Tees estuary comprises intertidal sand and mudflats, rocky shore, saltmarsh and sand dunes. Activities such as land claim, construction of breakwaters and training walls have all significantly modified the estuary over the last 150 years.

8.7.2 The study area contains a number of sites which have been designated for their nature conservation value. Seal Sands is an important haul-out site for both common (harbour) seals and grey seals. Monitoring undertaken by INCA identified that the 2012 season saw the birth of 18 seal pups, which continues the upwards trend in pup births evident in recent years.

8.7.3 The benthic ecological community within the footprint of the proposed scheme was unknown at the time of writing this PER, as the results of the site specific benthic ecological survey were not available. Given that the proposed berth pocket has not been subject to maintenance dredging, it is considered that this area has potential to contain a diverse benthic community.

8.7.4 A number of potential impacts have been identified which could arise during the construction and operational phases of the proposed scheme, including direct removal of the invertebrate resource due to piling and reclamation, indirect impacts on marine ecology due to potential reductions in water quality, noise disturbance to marine ecological receptors and smothering of benthic habitat due to the offshore disposal of dredged material. An unmitigated impact of moderate adverse significance is anticipated with regard to underwater noise and vibration disturbance to marine mammals during the construction phase. However, it is considered that the implementation of mitigation measures (i.e. adhering to JNCC guidelines) would result in a residual impact of minor adverse significance.

8.7.5 At the time of writing this PER, it was not possible to assign significance ratings to the other potential impacts as the results of the site specific studies (including the benthic ecological survey, sediment quality survey and completed noise modelling report) were not available. These impacts will be fully assessed within the EIA and presented within the ES.

9 MARINE AND COASTAL ORNITHOLOGY

9.1 Introduction

9.1.1 This section of the PER describes the existing environment in relation to marine and coastal ornithology, prior to describing the potential impacts of the construction and operational phases of the proposed scheme. Mitigation measures are detailed where it has been possible to undertake a full impact assessment, and a discussion of the residual impacts presented where significant impacts have been identified.

9.2 Guidance and consultation

Policy and guidance

National Policy Statement for Ports

9.2.1 The assessment of potential impacts to marine and coastal ornithology has been made with reference to the NPS for Ports. The particular assessment requirements relevant to marine and coastal ornithology, as presented within the NPS for Ports, are summarised in **Table 9-1**.

Table 9-1 Summary of NPS for Ports requirements with regard to marine and coastal ornithology

NPS requirements	NPS reference
Where the development is subject to EIA, the application should ensure that the ES clearly sets out any effects on internationally-, nationally and locally designated sites of ecological or geological interests.	Section 5.1.4
The applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests.	Section 5.1.5
The ES should include an assessment of the effects on the coast. In particular, the applicant should assess the effects of the proposed project on marine ecology, biodiversity and protected sites.	Section 5.3.5
The applicant should be particularly careful to identify any effects on the integrity and special features of Marine Conservation Zones, Special Areas of Conservation (SAC) and candidate SACs, Special Protection Areas (SPA) and potential SPAs, Ramsar sites, actual and potential Sites of Community Importance and Sites of Special Scientific Interest (SSSI).	Section 5.3.7

Marine Policy Statement

9.2.2 The UK MPS (HM Government, 2011) (adopted in March 2011) provides the framework for marine planning and decisions affecting the UK marine area. The MPS will facilitate and support the formulation of marine plans, ensuring that marine resources are used in a sustainable way in high level marine objectives, thereby:

- promoting sustainable economic development;
- enabling the UK to move towards a low carbon economy, in order to mitigate the causes of climate change and ocean acidification and adapting to their lives;
- ensuring a sustainable marine environment which promotes healthy, functioning marine habitats, species and our assets; and,
- contributing to the societal benefits of the marine area, including the sustainable use of marine resources to address local and social economic issues.

9.2.3 The MPS requires that all public authorities taking authorisation or enforcement decisions that affect, or might affect, the UK marine area do so in accordance with the MPS, unless relevant considerations indicate otherwise.

Redcar and Cleveland Borough Council Local Plan

9.2.4 RCBC adopted its Core Strategy in July 2007 and this provides the development framework for the Borough over the plan period to 2021. At the same time, the Council adopted its Development Policies Document which provides detailed development control policies that are intended to deliver the overarching policy objective of the Core Strategy.

9.2.5 Development Plan Document policies of relevance when considering the proposed scheme in relation to marine and coastal ornithology include:

- Policy CS24 (Biodiversity and geological conservation): the Borough's biodiversity and geological resource will be protected and enhanced. Priority will be given to:
  - protection of the integrity of the European sites in and near the Borough, and,
  - conserving and enhancing biodiversity and geodiversity sites and features in line with PPS9.

Consultation

Statutory consultation

9.2.6 A summary of the comments received from PINS though the Scoping Opinion is presented in **Table 9-2**.

9.2.7 Consultation with the Industry and Nature Conservation Association (INCA) has been carried out throughout production of this PER.

Table 9-2 Summary of comments received from PINS within the Environmental Scoping Opinion with regard to ornithology

Comment	Section of the PER in which comment is addressed
The applicant should ensure the data used to inform the assessment is up to date and specific to the proposed development. Where data is not recent, justification should be provided in the ES to demonstrate it remains valid.	Section 9.3. (Paragraph 9.3.2 to 9.3.5)
The Secretary of State agrees with the intention to use hydrodynamic and sedimentary assessment data that is due to be gathered by the applicant to inform the assessment of impacts upon waders and wildfowl and the potential effects on feeding resources of birds.	Section 9.5 and 9.6.
It is important that the assessment includes the effects of noise and vibration on water bird populations. The assessment should also consider whether there would be any potential disturbance and displacement of bird species for example, due to increased sea traffic and dredging works during construction and operation.	Section 9.5 (Paragraph 9.5.15 to 9.5.22) and 9.6 (Paragraph 9.6.1 to 9.6.4).
Bran Sands lagoon is used by many birds for feeding, not just roosting as stated in the scoping report.	Section 9.4.
Natural England noted that waterbird interest will be evaluated by desk based assessment. However, the terrestrial ecology section of the Environmental Scoping Report refers to fortnightly bird counts at various states of the tide for Bran Sands lagoon and Dabholm Gut. More information on the survey and survey effort is required to determine whether this is sufficient. This data should include recent information (preferably within the last 3 years – the breeding bird survey for NGCT was undertaken in 2005).	Section 9.3 (Paragraph 9.3.2 to 9.3.5)
Section 5.5.1 of the scoping report refers to breeding sandwich tern. This should read common tern as these breed extensively in the Tees estuary whereas sandwich tern is only an occasional breeder.	Section 9.4.

9.3 Methodology

Study area

9.3.1 The study area for this section of the PER comprises the area which has the potential to be both directly and indirectly impacted by the proposed scheme. In this case, the maximum extent of the potential impact has been determined to be the area over which the potential effects of the proposed scheme on tidal currents and sediment transport may occur.

Existing environment

9.3.2 Baseline data to inform this PER with regard to the assessment of potential impact to waterbirds comprises Wetlands Bird Survey (WeBS) counts for the most recent five years available from the BTO (i.e. 2007/08 to 2011/12) and monthly bird counts undertaken by INCA from 2009 to 2013 at Bran Sands lagoon and Dabholm Gut. The monthly bird surveys undertaken by INCA were carried out during various states of the tide.

9.3.3 Bird distribution plots produced by INCA showing bird usage at Bran Sands lagoon, Dabholm Gut and the intertidal area immediately adjacent to the footprint of the proposed port terminal (from January 2012 to March 2014) have also been used to inform this section of the PER (see **Appendix 9.1**).

9.3.4 The bird data collected by INCA from Bran Sands lagoon and Dabholm Gut during 2013 has been used to determine the significance of these areas as supporting habitat for waterbirds, by comparing the data with that of the corresponding monthly WeBS count data for the Teesmouth WeBS sector.

9.3.5 The bird use of the foreshore along the Vopak land (approximately 650m from the footprint of the proposed port terminal, on the opposite bank of the estuary) was monitored from June 2013 to March 2014 inclusive. The location, species, behaviour and number of birds was recorded onto maps approximately every two weeks throughout that period.

Methodology for assessment of potential impacts

9.3.6 Impacts to bird species have been assessed using both the Guidelines for Ecological Impact Assessment (EcIA) (IEEM, 2006) and the Guidelines for Ecological Impact Assessment – Marine and Coastal (IEEM, 2010), with emphasis being placed upon species of particular conservation importance. Furthermore, the importance of habitats which have the potential to be impacted by the proposed scheme have also been addressed.

9.3.7 In the context of EIA, the significance of an effect is determined by the interaction of two factors; firstly, the value, importance or sensitivity of the receptor being affected; and secondly, the magnitude, scale or severity of the effect or change. The criteria for determining the importance/value of the receptors with regard to waterbirds are described in **Table 9-3** below.

Table 9-3 Description of receptor importance / value

Importance / value	Description
International / National	Internationally designated or proposed sites (e.g. Ramsar, SPA, SAC) or nationally designated sites (e.g. SSSI, NNR). Species of habitats protected or otherwise deemed to be significant at the international or national level.
Regional / County	Sites containing viable areas of threatened habitats that are significant at a regional scale or areas that comfortably exceed the Local Wildlife Site (LWS) criteria, but not meeting SSSI selection criteria. Species or habitats protected or otherwise deemed to be significant at the regional or county level.
District / Local	Designated LWS, local plan designations or undesignated sites of varied quality containing habitat types of local interest. Species or habitats protected or otherwise deemed significant at the local level.
Unspecified	Low grade and widespread habitats.

9.3.8 Once the impact has been characterised, its magnitude can be assessed. Impact magnitude is the degree of change that the impact causes or is considered to cause compared to the baseline. In order to determine this, an indication of the existing baseline level and its variations (temporal and spatial) are required.

9.3.9 The sensitivity of a feature relates to the level of intolerance of the receptor to the effect being considered, or the degree to which the specific aspects that give the feature its value are altered. **Table 9-4** provides a description of the three levels of quantification of magnitude with a general description of the meaning of each 'level' of magnitude as well as a description of its definition in terms of feature sensitivity.

Table 9-4 Description of magnitude of effect

Magnitude of effect	Description	
High	A large change	The species/population is likely to be killed/ destroyed by the effect under consideration
Medium	A noticeable change	Some individuals of a species/population may be killed/destroyed by the effect under consideration and the viability of a species/population may be affected
Low	A change which may only just be noticeable	Some individuals of a species/population may be killed/destroyed/displaced by the effect under consideration but the viability of a species/ population will not be affected

9.3.10 The determined level of magnitude (**Table 9-4**) combined with the value / importance of receptor (**Table 9-3**) enables the significance of the impact to be determined in this context (**Table 9-5**).

Table 9-5 Significance of impact for qualitative receptors

Magnitude of effect	Receptor importance / value of feature				
	International / National	Regional / County	District	Local	Unspecified
High	Major	Major	Major	Moderate	Minor
Medium	Major	Moderate	Moderate	Minor	Minor
Low	Moderate	Minor	Minor	Negligible	Negligible

Cross references to other technical areas to assist with the identification of impacts

9.3.11 To inform the assessment of potential impacts to marine and coastal ornithology, reference has been made to the results of the sedimentary and hydrodynamic regime assessment as well as the noise and vibration assessment.

9.4 Existing environment

9.4.1 Although heavily developed for industry, the Tees estuary retains large areas of important habitats (intertidal mud and sand flats, saltmarsh, sand dunes, rocky shore and freshwater marsh) that support a diverse range of bird species. The main features of interest are the large numbers of waders and wildfowl that use the estuary outside of the breeding season, either for wintering or on passage, and the use of certain areas by breeding little and common terns and shelduck, the latter of which can be found nesting in Bran Sands lagoon (Geoff Barber, INCA, *pers. comm.* June 2013).

Designated conservation sites

9.4.2 There are a number of sites within the Tees estuary that are designated (either in whole or in part) for marine and coastal waterbird interests under national and international legislation. Those considered relevant to the proposed scheme are presented in **Table 9-6** and illustrated in **Figure 8-6**.

Table 9-6 Designated sites of ornithological interest relative to the proposed port options

Designated site	Distance from proposed port terminal
South Gare and Coatham Sands SSSI	0.7km
Teesmouth and Cleveland Coast SAC and Ramsar site	1km
Seal Sands SSSI	1.2km
Teesmouth NNR	1.3km
Seaton Dunes and Common SSSI	1.3km
Tees and Hartlepool Foreshore and Wetlands SSSI	3km
Cowpen Marsh SSSI	4km
Redcar Rocks SSSI	5.5km

9.4.3 Details of the waterbird interest features of these designated sites are described in the following sections.

South Gare and Coatham Sands SSSI

9.4.4 Natural England's citation report for the South Gare and Coatham Sands SSSI states that the site is of considerable environmental interest for its flora, invertebrate fauna and bird life. The range of habitats present includes extensive tracts of intertidal sand and mud, sand dunes, saltmarsh and freshwater marsh which have all developed since the construction of South Gare breakwater during the 1860s.

9.4.5 Areas of mud and sand-flat on Bran Sands provide important winter feeding grounds for bar-tailed godwit, curlew, redshank, dunlin and grey plover. The intertidal areas at Coatham Sands support an internationally important population of sanderling (1,200 birds equating to approximately 8% of the

West European population). The Coatham Sands intertidal areas also support turnstone, purple sandpiper and oystercatcher.

Teesmouth and Cleveland Coast SPA

9.4.6 Teesmouth and Cleveland Coast SPA includes a range of coastal habitats, including sand-and mud-flats, rocky shore, saltmarsh, freshwater marsh and sand dunes. Together these habitats provide feeding and roosting opportunities for important numbers of waterbirds in winter and during passage periods. In summer little tern *Sterna albifrons* breed on beaches within the site, while sandwich tern *Sterna sandvicensis* are abundant on passage.

9.4.7 The Teesmouth and Cleveland Coast SPA is of European importance because it is used regularly by at least 1% of the Great Britain population of the following species listed on Annex I of the Birds Directive (79/409/EC), as illustrated in **Table 9-7**.

Table 9-7 Annex I species of the Teesmouth and Cleveland Coast SPA

Annex I species	5 year peak mean	% of GB population
Little tern *Sterna albifrons*	40 pairs (1995-1998)	1.7
Sandwich tern *Sterna sandvicensis*	1900 birds (1988-1992)	6.8

9.4.8 In addition, the SPA is used regularly by 1% or more of the biogeographical population of the migratory species (other than those listed in Annex I) in any season, as presented in **Table 9-8**.

Table 9-8 Non-Annex I migratory species

Non-Annex I migratory species	5 year peak mean	% East Atlantic Flyway
Knot *Calidris canutus*	5509 (1991/92-1995/96)	1.6
Redshank *Tringa totanus*	1648 (1987-1991)	1.1
Ringed plover *Charadrius hiaticula*	634 (1991-1995)	1.3 (Europe/North Africa population)

9.4.9 The SPA further qualifies as it is used regularly by over 20,000 waterbirds or 20,000 seabirds in any season, the SPA supported a peak mean of 21,312 individuals over the period 1991/92 to 1995/96.

9.4.10 In addition to the above, the SPA also supports nationally important populations of cormorant *Phalacrocorax carbo*, shelduck *Tadorna tadorna*, teal *Anas crecca*, shoveler *Anas clypeata*, ringed plover *Charadrus hiaticula* and sanderling *Calidris alba*.

Teesmouth and Cleveland Coast Ramsar

9.4.11 The Teesmouth and Cleveland Coast Ramsar site is of international importance due to ability to support a bird assemblage of international importance with peak counts in winter (Ramsar criterion 5), as well as its ability to support species / populations occurring at levels of international importance (Ramsar criterion 6). The qualifying species under Ramsar criterion 6 comprise:

- Common redshank *Tringa totanus totanus* (species peak counts in spring/autumn): 833 individuals representing an average of 0.7% of the GB population (5 year peak mean 1998/9 to 2002/3)
- Red knot *Calidris canutus islandica* (species with peak counts in winter): 2,579 individuals, representing an average of 0.9% of the GB population

Seal Sands SSSI

9.4.12 The extensive mudflats within the Seal Sands SSSI are of great ornithological importance, attracting large numbers of migratory wildfowl (approximately 4,000) and wading birds (approximately 24,000) especially during the winter months. Of particular note are the internationally important concentrations of shelduck (approximately 3,200 during peak counts) which feed on Seal Sands. The shelduck population which uses the Seal Sands SSSI represents approximately 2% of the total Western European population.

9.4.13 In addition, sizeable flocks of mallard, teal and wigeon, as well as diving duck such as pochard, goldeneye and tufted duck congregate on Seal Sands to roost and feed, particularly during periods of cold weather.

9.4.14 The most important species of wading birds using Seal Sands as their main feeding ground during the winter months of the year are knot (approximately 10,000 birds at peak counts) and redshank (approximately 1,050 birds at peak counts), which both occur in internationally significant numbers at Teesmouth.

9.4.15 The mudflats are also used as feeding grounds by other species of wading birds including dunlin, oystercatcher, ringed plover, curlew, bar-tailed godwit, lapwing, grey plover and turnstone. When the mudflats are inundated at high tide their use as a feeding ground is complemented by adjacent areas of reclaimed land which also serves as roosting sites. The reclaimed enclosures with shallow lagoons in the southern sector of the site and the developing sand-dunes on the Seal Sands Peninsula are particularly important in this respect.

Teesmouth NNR

9.4.16 The Teesmouth NNR covers two main areas, namely Seal Sands and North Gare. Seal Sands is a large area of intertidal mud and sand-flats with populations of common and grey seals as well as nationally and internationally important bird populations. North Gare comprises sand dune and saltmarsh habitat supporting a wide variety of plants and birds, including large populations of knot and birds of prey, such as merlin, which hunt over the dunes.

Seaton Dunes and Common SSSI

9 4 17 Seaton Dunes and Common is an area of importance for its flora, invertebrate fauna, and bird life The range of habitats present include sandy, muddy and rocky foreshore, dunes, dune slacks and dune grassland, as well as relict saltmarsh, grazed freshwater marsh with dykes, pools and seawalls

9 4 18 Seaton Sands, North Gare Sands and Seaton Snook dunes provide important winter feeding grounds and roost sites for various species of wading birds including sanderling, knot, ringed plover, turnstone, oystercatcher, dunlin and grey plover The Teesmouth population of sanderling exceeds internationally important levels and up to half of the 1,200 birds (5 7% of the W European population) feed and roost within the SSSI

9 4 19 Similarly, the site support large populations of knot during winter, when up to 10,000 birds (3% of the W European population) may roost on Seaton Snook Dunes during high tide The populations of other species of wading birds reach nationally significant levels, with up to 200 ringed plover (about 1% of the W European population) and approximately 250 turnstone (2 4% of the UK wintering population) present within the site prior to migration Large numbers of common, arctic and sandwich terns (3,500 at peak counts) also frequent the Seaton Snook area on migration

Tees and Hartlepool Foreshore and Wetlands SSSI

9 4 20 The site comprises several coastal areas which are an integral part of the complex of wetlands, estuarine and maritime sites supporting the internationally important populations of wildfowl and waders on the Tees estuary In winter the site supports nationally important numbers of purple sandpiper, sanderling and shoveler Parts of the site also support a nationally important assemblage of breeding birds, including shoveler, pochard, little ringed plover, great crested grebe and little grebe

Cowpen Marsh SSSI

9 4 21 Cowpen Marsh includes the largest saltmarsh between Lindisfarne and the Humber Estuary and together with adjacent coastal grazing marshes and mudflats it provides an important wintering site for migratory wildfowl and wading birds

9 4 22 Greatham Creek and Cowpen Marsh together provide important roosting and feeding grounds for large numbers of migratory wildfowl and wading birds which also feed on intertidal mudflats around the Tees estuary Species feeding and roosting at this site include wigeon, teal, curlew, redshank, bar-tailed godwit, lapwing, golden plover, dunlin, mallard, moorhen, coot, snipe, reed bunting and yellow wagtail

Redcar Rocks SSSI

9 4 23 Redcar Rocks represent the finest exposures of rock in the Lower Lias north of the Market Weighton Swell (i e in the Yorkshire Basin) When exposed at low tide, the rocks and sands provide an important feeding ground for several species of wading birds (e g knot, turnstone, sanderling and

purple sandpiper), especially during the winter months These compliment other areas of rocky foreshore within South Gare and Coatham Sands SSSI

Waterbird populations at high water

9 4 24 WeBS is a partnership between the BTO, the Royal Society for the Protection of Birds (RSPB) and the JNCC in association with the Wildfowl and Wetlands Trust (WWT) Data from WeBS are routinely used when assessing the ornithological interest of estuarine areas potentially affected by development

9 4 25 WeBS Core Count data concentrates primarily on the winter period but, at selected sites (including the Tees estuary), counts are made once per month throughout the year Counts are usually made at high tide when birds are most easily counted at roosts (BTO, 2010) Core Count data was obtained for the most recent five available years (i e 2007/08 to 2011/12) for the following sites (illustrated on **Figure 9-1**)

- Tees estuary (sector 52901), and,
- Bran Sands South (sector 52427, in which the proposed scheme is located)

9 4 26 Five year peak means for waterbird species within the Tees estuary and the Bran Sands South sector are presented in **Table 9-9** and **Table 9-10** respectively

9 4 27 The data shows that the highest usage of waterbirds within both count sectors is during the winter periods In the Tees estuary sector, the area is used by a wide range of birds, however, the predominant species include mute swan, greylag goose, Canada goose, shelduck, wigeon, gadwall, teal, mallard, shoveler, tufted duck, golden eye, cormorant, coot, oystercatcher, ringed plover, golden plover, grey plover, lapwing, knot, sanderling, dunlin, curlew, redshank, turnstone, herring gull, great black-backed gull, sandwich tern and common tern The predominant species using the Bran Sands South count sector include shelduck, teal, mallard, goldeneye, red-breasted merganser, cormorant and lapwing

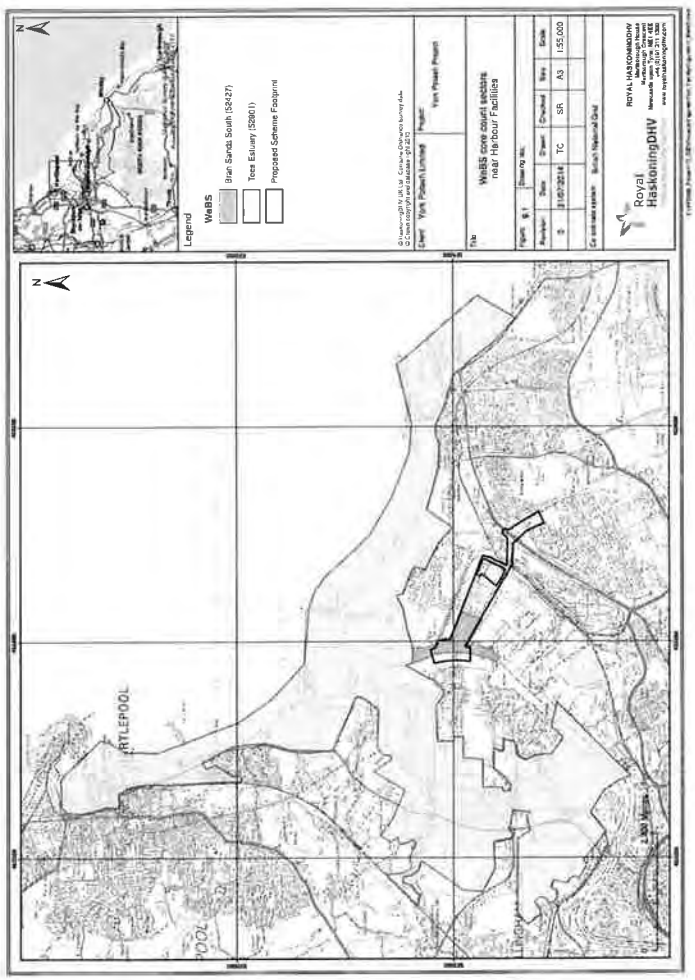


Table 9-9 **Summary of peak monthly totals and seasonal peaks in waterbird populations in the Tees estuary (sector 52901) over the period 2007/08 to 2011/12**

Year	Month	Tees estuary (sector 52901)			
		Peak monthly total[1]	Seasonal peak[2]		
			Autumn	Winter	Spring
2007/08	January	23,089	15,605	30,402	7,257
2008/09	December	17,396	16,237	22,218	6,820
2009/10	December	20,802	19,873	28,157	7,403
2010/11	December	18,033	18,422	25,969	6,283
2011/12	January	16,669	15,216	23,905	6,659
MEAN		19,194	17,071	26,130	7,284

1 Peak monthly total = maximum of the sum of the counts of all species within each month
2 Seasonal peak = sum of the maximum counts of all species within each season

Table 9-10 **Summary of peak monthly totals and seasonal peaks in waterbird populations in the Bran Sands South sector (sector 52427) over the period 2007/08 to 2011/12**

Year	Month	Bran Sands South (sector 52427)			
		Peak monthly total[1]	Seasonal peak[2]		
			Autumn	Winter	Spring
2007/08	November	2,318	894	3,085	374
2008/09	January	832	794	1,256	330
2009/10	February	725	560	944	496
2010/11	February	906	752	1,352	429
2011/12	March	583	480	941	232
MEAN		1,073	696	1,516	372

1 Peak monthly total = maximum of the sum of the counts of all species within each month
2 Seasonal peak = sum of the maximum counts of all species within each season

Waterbird populations at low water

9 4 29 Consultation with the British Trust for Ornithology (BTO) during April 2014 identified that the most recent WeBS low water count data for the count sector in which the proposed scheme is located (section DT021) was recovered during 1996/97 It was, therefore, considered that this data is unlikely to be representative of the present day usage of the area given its age, and was not used to inform this section of the PER In the absence of WeBS low water count data, the results of INCA's bird surveys and distribution plots have been used to describe low water usage of the area

9 4 30 As illustrated on the bird distribution plots presented in **Appendix 9.1**, the intertidal area at the footprint of the proposed scheme is used by a range of waterbirds, including shelduck, teal, lapwing, redshank, turnstone, curlew and common tern

9 4 31 However, the distribution plots presented within **Appendix 9.1** (which illustrate usage between January 2012 and March 2014) show that the number of birds using the intertidal area within the footprint of the proposed scheme is very low Consultation with INCA during April 2014 identified that the low bird numbers in the intertidal area is a likely result of the nature of the sediments in this area, discussed further within the following sub-section (**Paragraph 9.4.32 to 9.4.34**)

Summary of visual inspection of intertidal habitat

9 4 32 INCA carried out a site visit on 17 April 2014 to qualitatively assess the nature of the intertidal habitat within the footprint of the proposed scheme This site visit was timed to coincide with a spring tide (recorded at 0 8m above LAT), as the intertidal mudflat within the footprint of the proposed scheme is only exposed on spring tides (INCA, 2014, *pers comms*)

9 4 33 The site visit identified that the sediments exposed within the intertidal area appeared to be very shallow, with sediments accumulating over rip-rap of road planings (similar in nature to crushed tarmac) and bricks (**Plate 8-1**) The intertidal area adjacent to the NWL sludge jetty at the southern end of the proposed port terminal is covered by steel gabions (**Plate 8-2**)

9 4 34 Consultation with INCA during April 2014 identified that the nature of the intertidal habitat within the footprint of the proposed scheme is likely to explain the low bird counts identified in this area (illustrated in **Appendix 9.1**) INCA has stated that the intertidal habitat within the footprint of the proposed scheme does not represent important feeding habitat for birds (INCA 2014, *pers comms*)

Bird survey data from Dabholm Gut, Bran Sands lagoon and the river frontage area

9 4 35 **Table 9-11** presents the results of data collected by INCA during 2013 from Bran Sands lagoon **Table 9-11** specifically illustrates the maximum monthly counts of species, the corresponding WeBS count for the Teesmouth sector and the maximum count expressed as a percentage of the Teesmouth WeBS count (for key bird species only)

9 4 36 Key bird species are defined as species where the maximum monthly count was equal to or greater than 1% of the Teesmouth WeBS count for that particular month. The same approach has been undertaken for the data collected from Dabholm Gut, with this data presented in **Table 9-12**.

9 4 37 **Table 9-13** presents the annual peak counts for key bird species within Bran Sands lagoon from 2009 to 2013. This data has been used to calculate a five year average of usage within Bran Sands lagoon, which has been compared to the WeBS five year average data for the Teesmouth WeBS sector. This data is also presented within **Table 9-13**. This approach has also been used for the data recovered from Dabholm Gut and the river frontage area, which are presented in **Table 9-14** and **Table 9-15**

respectively The species highlighted in bold in **Table 9-11** to **9-15** are listed as interest features of the Teesmouth and Cleveland Coast SPA and Ramsar

Table 9-11 **Peak count waterbird survey results from Bran Sands lagoon during 2013 compared with corresponding monthly Teesmouth WeBS counts for key species (source: INCA, 2014)**

Species	Month of maximum count	Maximum count	Corresponding monthly WeBS count	Maximum count as % of WeBS count
Little grebe	November	15	24	63
Shelduck	March	73	298	24
Mallard	December	16	232	7
Gadwall	December	3	137	2
Teal	December	125	1287	10
Goldeneye	February	24	41	58
Red breasted merganser	November	43	46	93
Lapwing	January	30	2381	1
Turnstone	December	14	51	27
Redshank	**December**	**99**	**893**	**11**
Common tern	June	19	445	4
Sandwich tern	**July**	**18**	**105**	**17**

Table 9-12 **Peak count waterbird survey results from Dabholm Gut during 2013 compared with corresponding monthly Teesmouth WeBS counts for key species (source: INCA, 2014)**

Species	Month of maximum count	Maximum count	Corresponding monthly WeBS count	Maximum count as % of WeBS count
Shelduck	December	74	306	24
Mallard	January	38	324	12
Gadwall	February	15	82	18
Teal	March	134	355	38
Lapwing	October	68	2195	3
Turnstone	February	20	45	44
Redshank	**January**	**96**	**795**	**12**

Table 9-13 **Peak counts and five year averages for key bird species from 2009 to 2013 within Bran Sands lagoon, compared against five year average data for the Teesmouth WeBS count sector (source: INCA, 2014)**

Species	Peak counts per year					5 year average	WeBS 5 year average	% of WeBS 5 year average
	2009	2010	2011	2012	2013	2009 – 2013	2009 - 2013	
Little grebe	3	6	19	14	12	11	65	17
Shelduck	189	104	106	68	73	108	451	24
Mallard	28	37	72	13	16	33	304	11
Gadwall	9	21	2	13	3	10	407	3
Teal	97	176	185	32	125	123	1661	7
Goldeneye	22	31	80	63	24	44	85	52
Red breasted merganser	9	16	70	25	43	33	74	45
Turnstone	13	0	7	1	7	6	233	3
Redshank	62	86	30	3	99	60	1235	5
Common tern	0	34	0	0	19	11	570	2
Sandwich tern	0	0	0	0	18	4	221	2

Table 9-14 **Peak counts and five year averages for key bird species from 2009 to 2013 within Dabholm Gut, compared against five year average data for the Teesmouth WeBS count sector (source: INCA, 2014)**

Species	Peak counts per year					5 year average	WeBS 5 year average	% of WeBS 5 year average
	2009	2010	2011	2012	2013	2009 – 2013	2009 - 2013	
Shelduck	18	67	63	74	74	63	451	14
Mallard	18	90	64	30	38	48	304	16
Gadwall	8	37	45	48	26	33	407	8
Teal	120	314	275	422	241	274	1661	17
Turnstone	11	56	9	17	20	23	233	10
Redshank	79	132	111	89	156	113	1235	9

Table 9-15 **Peak counts and five year averages for key bird species from 2009 to 2013 along the river frontage (including intertidal area), compared against five year average data for the Teesmouth WeBS count sector (source: INCA)**

Species	Peak counts per year					5 year average	WeBS 5 year average	% of WeBS 5 year average
	2009	2010	2011	2012	2013	2009 – 2013	2009 - 2013	
Shelduck	5	6	6	2	6	5	451	1.1
Gadwall	9	-	1	-	1	2	407	0.5
Teal	13	4	5	-	-	4	1661	0.2
Mallard	2	2	-	-	-	<1	304	<0.3
Lapwing	-	-	4	-	90	19	4218	0.5
Curlew	3	2	10	3	6	5	1195	0.4
Turnstone	3	2	2	1	10	4	233	1.7
Redshank	59	10	5	8	3	17	1235	1.4

9 4 38 The data in **Table 9-11** to **Table 9-14** shows that there is significant waterbird use of both Bran Sands lagoon and Dabholm Gut by a variety of bird species, with a variety of species found at numbers exceeding 1% of the corresponding Teesmouth WeBS monthly count for at least one month. **Table 9-15** shows that the number of waterbirds present is low on the river frontage, but exceeds 1% of the Teesmouth WeBS counts for shelduck, turnstone and redshank

Bird survey data from the Vopak foreshore

9 4 39 **Table 9-16** presents the data from the waterbird surveys of the Vopak foreshore. The survey report (INCA, 2014; **Appendix 9.1**) states that the use of the foreshore by birds at low tide is relatively low when compared with similar locations such as North Tees Mudflats

9 4 40 The only species using the site in any significant numbers is lapwing The majority of these birds are roosting, recorded as loafing, with only a small number appearing to be feeding. In observations recorded on the adjacent terrestrial area at Vopak over recent years, the number of lapwing was also quite high with flocks of over 200 birds using the site for roosting. It is likely that the preferred roosting area is the Vopak landholding, but the birds move down onto the intertidal area when disturbed by activity on the adjacent site

9 4 41 INCA (2014) (**Appendix 9.1**) proposes that the intertidal sediment at this location is of a coarse nature, which does not support significant invertebrate populations that represent the food source for birds

Table 9-16 Results of the waterbird surveys of the Vopak foreshore (f = feeding; l = loafing)

Date	Bar-tailed Godwit	Common tern	Cormorant	Curlew	Dunlin	Heron	Lapwing	Oyster-catcher	Redshank	Shelduck
24/06/13			1 l							1 l
27/06/13			2 l	1 f				1 f		
10/07/13				1 f			3 l	3 f		
23/07/13				4 f		7 l	1 l 2 f	6 f		
01/08/13		2 l		1 f			3 f 5 l	8 f		
21/08/13			5 l	3 f			25 l	4 f		
04/09/13			5 l	2 f	4 f		21 l	6 f	2 f	
20/09/13			2 l	3 f			130 l	2 f		
02/10//13	1 f		6 l	1 f			10 l	7 f		
17/10/13	5 f		2 l	5 f			22 l	4 f		
04/11/13	1 f			4 f			6 f 40 l	3 f	2 f	1 f
15/11/13			4 l	3 f			43 l	2 f		
04/12/13			2 l	5 f			140 l	5 f		
09/12/13			24 l	1 f			30 l	3 f		
18/12/13							165 l	2 f		
06/01/14			73 l				77 l	4 f		
17/01/14	1 f						14 l	5f		
17/02/14								3 f		1 f
25/02/14								2 f		2 l
03/03/14			1 l	4 f				1 f	1 f	2 l
19/03/14				1 f				2 f		

Summary of bird surveys undertaken by INCA within the wider Tees estuary during previous years

Teesport Estate

9.4.42 Bird surveys were undertaken by INCA in 2010 for intertidal and river banks to the immediate north and south of Tees Dock entrance. No birds, including those notified for designated areas, were observed within the area being surveyed. However, notified birds were observed at other locations within the estuary at the same time the surveys were undertaken (Royal Haskoning, 2012).

Vopak foreshore

9.4.43 Counts of waterbirds using the Vopak foreshore were undertaken for the NGCT studies (Royal Haskoning, 2006, 2007). The surveys concluded that the Vopak foreshore was not considered to be of major importance as a feeding area for birds on the estuary; however, the area was considered to be of local ecological significance for wintering/passage wildfowl and waders.

9.4.44 Results of the waterbird counts undertaken between June 2013 and March 2014 are presented above.

Breeding birds

9.4.45 As part of the NGCT EIA, a breeding bird survey was conducted on the Teesport Estate by ESL (ESL, 2005). It was concluded that the site had limited interest for breeding birds. The potential interest identified as part of the studies for the NGCT ES relates to the wider Teesport estate, away from the hardstanding areas of Tees Dock. Overall, it was concluded that the breeding bird community at the site was of low significance.

9.4.46 Consultation with INCA during April 2014 identified that shelduck breed along the northern shore of Bran Sands lagoon, despite the proximity of this area to the neighbouring steel works.

9.5 Assessment of potential impacts during construction

Impacts to bird feeding resource due to reductions in water quality

9.5.1 As discussed in **Section 5.5**, the proposed dredging and piling works are likely to cause suspension of potentially contaminated fine sediment into the water column, causing a sediment plume which could adversely impact upon ornithological receptors. Adverse impacts could arise in the form of reduced feeding resource for birds as well as reduced ability of birds to identify prey species through the water column.

9.5.2 The impacts identified above are considered likely to result in short term, localised adverse impacts to marine ornithological receptors, on the basis of the localised area predicted to be affected by increased TSS concentrations in relation to the area available for feeding and the results of the sedimentary modelling undertaken for the consented NGCT.

9.5.3 As discussed in **Section 3**, Phase 1 dredging works are to be carried out by a TSHD for the softer materials and by backhoe for the marl. Dredging for Phase 2 would be likely to be carried out by a CSD. Backhoe dredging is considered likely to minimise the resuspension of sediment into the water column (assuming best operational practice is implemented during dredging).

9.5.4 Birds would be able to continue to feed at the estuary mouth and in the near shore waters of Tees Bay during the construction phase for the proposed scheme. Hence, overall, it is anticipated that this would not represent a significant impact on marine and coastal waterbirds. However, this impact will be fully assessed once the scheme-specific sediment dispersion modelling has been completed.

Potential mitigation measures

9.5.5 The mitigation measures outlined within **Paragraphs 7.5.5** to **7.5.8** are also of relevance to this impact.

Smothering of intertidal food resource through deposition of fine sediment following dredging

9.5.6 The deposition of fine sediment that is disturbed by dredging across intertidal areas has the potential to affect benthic communities that represent a feeding resource for waders and wildfowl. For example, high levels of overall deposition or a high rate of deposition could adversely affect components of the benthic community to the detriment of feeding waterfowl.

9.5.7 Previous sediment dispersion modelling undertaken for the consented NGCT and QEII schemes has demonstrated that the dredging operations required for those schemes do not have the potential to result in the deposition of fine material over intertidal areas (including North Tees Mudflats). The initial results of the sediment plume modelling undertaken specifically for the proposed scheme has predicted a deposition rate of 1 to 2mm per day for a distance of 2km either side of the dredge footprint. The results also predict no average increase in suspended sediment concentration over the intertidal areas, leading to a prediction of negligible sediment deposiiton over intertidal areas. Based on the results of the initial sediment plume modelling undertaken for the proposed scheme, as well as the results of the historic sediment modelling undertaken for the NGCT and QEII schemes, sediment deposition within intertidal areas is not anticipated to result in a significant effect on the bird feeding resource.

Reduced feeding habitat from reductions in intertidal and subtidal habitat

9.5.8 As discussed within **Section 8**, both forms of quay construction would result in the direct loss of intertidal habitat due to reclamation (solid quay structure) and the installation of a revetment over the re-graded intertidal habitat (open quay structure). Subtidal habitat would also be lost as a direct result of pile installation and reclamation (solid quay structure only).

9.5.9 The design, including alignment, of the conveyor corridor(s) and temporary construction access is currently ongoing. The intention is that the conveyor corridor(s) and construction access will be accommodated on existing land areas, without any works required within Bran Sands lagoon. However, some localised works within the lagoon may be unavoidable if there is insufficient land area within which to accommodate the conveyor(s) and access route. There is a requirement for the

installation of conveyor bridge supports within the upstream section of Dabholm Gut, however, as illustrated in the bird distribution plots within **Appendix 9.1**, the proposed footprint of the bridge supports is not utilised by key bird species.

9.5.10 The bird distribution figures (**Appendix 9.1**) show that the area of intertidal habitat that would be directly impacted by the proposed port terminal is used by a range of species (albeit in very low numbers), namely shelduck, teal, lapwing, redshank, turnstone, curlew and common tern. The loss of this habitat as a result of revetment installation or reclamation (for the open and solid quay structure respectively) would, therefore, represent a reduction in feeding availability for the species which are known to utilise the area.

9.5.11 Consultation with INCA has identified that the area of intertidal mudflat present at the proposed location of the port terminal is only available for feeding on spring tides. As such, the intertidal habitat is not considered to be imperative feeding habitat to support these species, however, it is recognised that the area it utilised by a small number of birds for feeding when the intertidal area is exposed.

9.5.12 The results of the benthic ecological survey were not available at the time of writing this PER and, as such, the potential for the intertidal and subtidal zone to represent an important feeding resource for bird species has not been confirmed. However, consultation with INCA during April 2014 identified that the area of intertidal habitat to be lost as a result of the scheme is of poor quality due to the nature of the sediments that are exposed on spring tides (see **Plate 8-1** and **Plate 8-2**); this poor quality habitat is likely to explain the low numbers of birds identified by INCA as using the sites during low water (INCA, *pers. comm.* 2014) (illustrated in **Appendix 9.1**). INCA also stated that the intertidal area does not represent an important feeding resource for birds, based on knowledge gained regarding the use of area from undertaking waterbird counts. Based on the above, it is considered unlikely that the proposed scheme would result in a significant impact on waterbirds due to a reduction in intertidal or subtidal habitat. However, this impact will be fully assessed within the EIA once the results of the benthic ecological survey are available.

Potential mitigation measures

9.5.13 Measures to mitigate the direct loss of intertidal and subtidal habitat during dredging, piling and reclamation activities are limited, as this would be an unavoidable consequence of the scheme.

9.5.14 However, in order to minimise the impact on the existing habitat, the disturbance footprint will be minimised where possible as part of the design process, within the constraints of infrastructure engineering and operability. The results of the benthic ecological survey will inform the requirement for additional mitigation to prevent significant adverse impacts to ornithological receptors.

Disturbance to feeding, roosting and breeding birds during construction

9.5.15 Birds potentially can be disturbed during the construction works due to noise and the movement of plant and personnel. The noisiest aspect of the construction work would be the piling for the port

terminal and conveyor system and, to a much lesser extent, dredging of the berth area and approaches. The proposed installation of an access road over Dabholm Gut would also result in noise and presence disturbance to birds.

9.5.16 When assessing the influence of disturbance on birds it is important to consider the level of disturbance under the existing situation (and, therefore, the extent to which birds may be accustomed to disturbance) and the proximity of areas used by birds to the source of the disturbance. The Tees estuary is heavily industrialised and, as such, it is likely that bird species within the estuary would be accustomed to a certain level of noise. However, although located in an area surrounded by industrial development, Bran Sands lagoon and Dabholm Gut are relatively isolated from significant, continuous noise.

9.5.17 The ornithological surveys which have been undertaken to date by INCA indicate that the water bodies within the immediate vicinity of the proposed scheme (i.e. Dabholm Gut and Bran Sands lagoon) provide important supporting habitat for roosting, feeding and breeding birds (see **Table 9-11** to **Table 9-14**).

9.5.18 The startle reaction caused by piling is likely to be sufficient to temporarily disrupt feeding, breeding and/or roosting birds, but they are likely to resettle if the area they are using is distant from the construction works. For locations close to construction operations (i.e. Bran Sands lagoon and Dabholm Gut), birds may be temporarily displaced to other areas of the Tees where ambient noise levels remain similar to existing levels. Therefore, there may be a localised redistribution of birds to other areas during the piling and dredging elements of the proposed construction phase.

9.5.19 Evidence suggests that, in general, wildlife, including birds, adjust to background noise levels. Habituation of birds to noise, light and traffic disturbance is reported to be considerable (Hockin *et al.*, 1992), as birds are adaptable and can accommodate regular disturbance events, becoming tolerant to the disturbance over a relatively short period.

9.5.20 Evidence relating to the potential impact of construction noise and activity on birds is also available from the monitoring of emergency flood defence works carried out adjacent to the Humber Estuary SPA. This revealed that wintering waterfowl numbers were slightly depressed during the initial period of works, when the majority of the piling works for the defences were undertaken. The main effect was the partial displacement of birds from roosting and feeding areas within an area confined to 250m of the works. The overall conclusion of the study, however, was that the impacts due to disturbance on the SPA designated populations were minimal (Halcrow 1996; *pers. comm.*).

9.5.21 Additionally, during a period of piling at Conoco-Phillips in 2004 in the Tees estuary, INCA undertook monitoring of the birds located approximately 270m away (on Seal Sands) from where percussive piling was taking place. On all four visits to the site (at the start and during piling) there was no evident disturbance to the birds, which continued to feed (INCA 2014, *pers. comm.*).

9.5.22 As the noise assessment has not been completed, it has not been possible to fully assess this impact within the PER. However, this impact will be fully assessed once this data is available, with the results of the impact assessment to be presented within the ES.

Potential mitigation measures

9.5.23 In order to reduce the impact of noise disturbance to roosting, feeding and breeding birds, the following best practice measures could be implemented during the construction phase:

- Machines should only be switched on when necessary, and shut down when not in use to avoid unnecessary disturbance.
- Plant and machinery should be chosen to be as quiet as possible, where appropriate. This could include choosing sound reduced compressors, lined with acoustic covers or silencers. Machinery should be well maintained to ensure that noise levels are kept to a minimum.
- Machinery should be sensitively sited and, where possible, use of machinery close to the channel should be minimised, to avoid disturbance to birds in the channel.

9.6 Assessment of potential impacts during operation

Noise disturbance to birds from operational activities at the port facility

9.6.1 Disturbance to feeding and roosting waterbirds potentially could occur due to increased shipping activity during the operational phase. Disturbance to birds could also arise in the form of noise disturbance from the operation of the conveyor system drives at the port end. Shipping activity can disturb waterbirds in two ways, namely noise generated by vessels and shipwash generated from vessels (see **Paragraph 9.6.4** for assessment of this latter activity).

9.6.2 Birds are already exposed to a significant number of ship movements within the Tees estuary, and it is probable that they will have become habituated to the low energy, gradual increases in airborne noise associated with the passage of relatively slow-moving ships. Increased noise levels are only likely to impact upon the area immediately adjacent to the proposed quay due to vessel movements and vessels on the berth. However, given the waterbird interest in this area and the adjacent area (i.e. Bran Sands lagoon), noise from the operation of the proposed scheme has the potential to impact upon bird species.

9.6.3 The significance of this potential impact can only be fully assessed on completion of the noise impact assessment which will predict the effect on noise generated by vessels on the existing background noise levels.

Shipwash disturbance to birds from operational activities

9.6.4 Shipwash can be a source of disturbance to feeding waterbirds in that it propagates across intertidal areas and causes birds to take flight. This disturbance, especially if it is repeated, minimises the time that birds can feed within the tidal cycle and can reduce the overall feeding efficiency. This can be

critical during the winter months and during periods of particularly severe weather when maximising available feeding time is of paramount importance. Given that the proposed scheme is unlikely to result in the introduction of significantly larger vessels into the Tees estuary, and the increase in vessel numbers is not considered significant in the context of overall vessel numbers in the estuary (see **Section 16.6**), shipwash is not predicted to be an issue with respect to the proposed scheme. Hence an impact of negligible significance with regard to bird disturbance from shipwash is predicted.

Mitigation measures and residual impact

9.6.5 Maximum permitted vessel speed in the Tees is controlled and managed by PD Teesport and no mitigation measures are required. The residual impact would be of negligible significance.

Impact on intertidal areas used by waterbirds due to effects on morphology

9.6.6 The preliminary predicted effects of the proposed scheme on the morphology of intertidal areas throughout the estuary are presented in **Section 5**.

9.6.7 As discussed within **Section 5**, the preliminary results from the wave propagation modelling indicate a relatively localised effect of the port terminal options with regard to its effect on significant wave heights. No increases in wave energy over the intertidal areas at Teesmouth are predicted by the modelling, although there is potential for some increase in wave energy on the narrow spits located either side of the Seaton Channel.

9.6.8 Based on the modelling work undertaken for the proposed scheme at the time of writing, no changes to sediment transport in the predominantly sandy areas around Teesmouth are anticipated, so no net effect on sand transport is anticipated. The predicted effects of the proposed scheme on tidal currents are relatively small and localised, without any obvious implications for the overall morphological regime of the Tees estuary.

9.6.9 The cohesive sediment transport modelling has shown that the proposed scheme would result in a negligible effect on the overall import of fine sediment into the estuary (less than 0.5%).

9.6.10 Based on the above, it is considered that the proposed scheme is unlikely to have a significant impact on intertidal habitats used by waterbirds due to impacts on morphology. However, this will be fully assessed within the EIA once the modelling has been completed and the results presented in the ES.

Potential mitigation measures

9.6.11 Based on the preliminary results of the modelling work undertaken for the proposed scheme and the results of modelling work undertaken for similar schemes within the Tees estuary, it is considered unlikely that mitigation would be necessary for this effect. However, this will be fully assessed within the EIA.

Impacts to birds using Bran Sands lagoon due to fluctuations in water levels within Bran Sands lagoon

9.6.12 As discussed within **Section 3**, it is proposed that the hydraulic connectivity between Bran Sands lagoon and the Tees estuary would be maintained during the operational phase of the proposed scheme. Therefore, there would be no significant variation in water levels within Bran Sands lagoon during the operational phase. On this basis, impacts on birds using the lagoon as a result of changes in water levels within the lagoon would not be anticipated as a result of the proposed scheme.

9.7 Summary

9.7.1 There are a number of sites within the Tees estuary that are designated (either in whole or in part) for marine and coastal waterbird interests under national and international legislation.

9.7.2 The bird count data collected by INCA shows that there is significant waterbird use of both Bran Sands lagoon and Dabholm Gut by a variety of bird species, with various species found at numbers exceeding 1% of the corresponding Teesmouth WeBS monthly count for at least one month. Bird surveys undertaken by INCA at low water indicate that use of the intertidal mudflats within the footprint of the proposed scheme is limited, most likely due to the nature of the sediments within the area and, therefore, the benthic community supported in this area.

9.7.3 The preliminary assessment carried out within this PER has identified that the proposed scheme has the potential to result in a number of impacts to marine and coastal ornithology. Potential construction phase impacts include:

- impacts to the feeding resource due to reduced water quality (associated with dredging and piling activities);
- smothering of the intertidal food resource due to deposition of fine sediment following dredging;
- reduced feeding habitat due to loss of intertidal and subtidal habitat; and,
- disturbance to feeding, roosting and breeding.

9.7.4 Based on the information that was available at the time of writing this PER, it was not possible to assign significance ratings to these potential impacts. They will be fully assessed within the EIA and the results presented in the ES.

9.7.5 Potential operational phase impacts include disturbance to birds due to noise (and shipwash). However it is anticipated that the effect of shipwash would be of negligible significance given the existing levels of shipping activity within the Tees estuary. The effect of operational noise at the port facility will be assessed based on the predictions of changes in operational noise compared with existing background levels.

Based on the preliminary hydrodynamic modelling results available at the time of writing this PER, it is considered that the proposed scheme is unlikely to result in an unacceptable risk to ornithological receptors due to impacts on morphology in the operational phase.

10 TERRESTRIAL ECOLOGY

10.1 Introduction

10.1.1 This section of the PER presents ecological information obtained during a desk study, ecological walkover surveys, otter survey, water vole survey, reptile survey, bat survey and breeding bird surveys. All of these studies and surveys were undertaken between 2011 and 2014. The usage of the area by feeding and roosting waterbirds (including the overwintering period) is described in **Section 9**.

10.1.2 This Ecological Impact Assessment (EcIA) evaluates the nature conservation value of ecological features present within the study area, assesses the significance of the effects of the proposed scheme on these features, and sets out proposed mitigation and enhancement measures. Legislation relevant to the ecological features associated with the scheme footprint is covered in **Appendix 10.1**.

10.1.3 The Habitats Directive and Birds Directive, as implemented in the UK through The Conservation of Habitats and Species Regulations 2010, are particularly relevant to this project. The proposed scheme has been assessed with reference to these Regulations (see **Section 2**).

10.1.4 The scope of this EcIA has included:

- data gathering of existing ecological information within the vicinity of the site from appropriate sources;
- ecological walkover survey of land within and adjacent to the site;
- evaluation of the area of land within and adjacent to the site with regard to its nature conservation value;
- identification of potential impacts on ecological features;
- consideration of mitigation measures to minimise negative impacts and enhancement measures to increase the biodiversity value of the land within the site; and,
- assessment of the significance of potential ecological impacts from the proposals, taking mitigation into account, including habitat loss, disturbance of animals and off-site impacts from the proposed scheme.

10.2 Guidance and consultation

Policy and guidance

10.2.1 The EcIA has been undertaken with reference to current best practice and, in particular, the Guidelines for Ecological Impact Assessment in the United Kingdom (Institute of Ecology and Environmental Management (IEEM), 2006).

10.2.2 The proposed scheme footprint is in close proximity to designated sites for nature conservation, including the Teesmouth and Cleveland Coast SPA and Ramsar site (see **Section 9**) and, therefore, a HRA screening exercise has carried out under Regulation 61 of the *Conservation of Habitats and Species Regulations 2010*. The HRA screening of potential impacts on the adjacent designated sites

for nature conservation considered both the construction and operational effects of the proposed scheme. **Section 25** provides further details in respect of the YPL HRA.

10.2.3 RCBC's Local Plan contains policies that are relevant to ecology and biodiversity. In particular, Policy CS24 refers to the requirement to protect and enhance the Borough's biodiversity and geological resource, including protecting the integrity of European sites. Policy DP3 (an adopted Development Plan Document Policy) requires all development to be designed to a high standard that respects or enhances the character and surroundings of the site, including biodiversity designations.

Consultation

10.2.4 Beyond the provision of the Environmental Scoping Report (Royal HaskoningDHV, 2013) to PINS, the scope of the terrestrial ecology surveys that have been undertaken to inform the EIA process was presented and discussed at the stakeholder workshop held on 10 April 2014 attended by Natural England, Environment Agency, the MMO and the RSPB.

10.2.5 **Table 10-1** provides a summary of the comments received from PINS within the Environmental Scoping Opinion (**Appendix 4.1**) with specific regard to terrestrial ecology.

Table 10-1 Summary of comments within the scoping opinion received from PINS during January 2014 with specific regard to terrestrial ecology

Comment	Section of PER in which comment has been addressed
The proposals should fully address the needs of protecting and enhancing biodiversity. The assessment should cover habitats, species and processes with the sites and surroundings.	Sections 10.5 and 10.6.
The study area assessed by habitat survey should be sufficient to consider temporary and permanent land take and receptors within the vicinity of the site where impact pathways may be present.	Section 10.3 (Paragraphs 10.3.1 to 10.3.14)
It is noted that Phase 2 survey is not intended to be carried out. This should be agreed with Natural England.	Discussions with Natural England are ongoing.
A number of species surveys are proposed. The ES should clearly state the methodologies used within the assessments and the applicant is advised to agree these with Natural England.	Section 10.3 (Paragraphs 10.3.12 to 10.3.28)
Where existing data is to be used, this needs to be relevant and representative of the baseline. The suitability of such data should be explained within the ES.	Site specific ecological surveys have been undertaken specifically for the proposed scheme.
The assessment should take account of impacts on noise, vibration and air quality (including dust) and cross reference to these reports.	To be undertaken during the subsequent stage of the EIA process.

Comment	Section of PER in which comment has been addressed
Potential impacts on internationally and nationally designated habitats should be assessed as well as county level habitats.	Section 10.5 (Paragraphs 10.5.1 to 10.5.4). Section 10.6 (Paragraphs 10.6.1 to 10.6.3)
The applicant is encouraged to engage with PINS in the preparation of their HRA report.	Appendix 2.1.
The England Biodiversity Strategy establishes principles for consideration of biodiversity and the effects of climate change. The ES should reflect these principles and identify how the developments effects on the natural environment will be influenced by climate change and how ecological networks will be maintained.	To be undertaken during the subsequent stage of the EIA process.

10.3 Methodology

10.3.1 To define the total extent of the study area for the ecological assessment, the proposed activities to be undertaken during the construction and operational phase of the proposed scheme were reviewed in order to identify the spatial scale at which ecological features could be affected.

10.3.2 The zone of influence (ZOI) is the area encompassing all potential negative ecological effects from the proposed scheme, both those which would occur as a result of land-take and habitat loss and those which may occur indirectly through disturbance such as noise or lighting. It was considered that the potential impacts of the proposed scheme would not extend beyond the footprint of the development and its immediate surroundings. A zone of 2km around the proposed scheme footprint was, therefore, considered appropriate for the desk study data gathering exercise.

10.3.3 For the field surveys, the proposed scheme footprint (illustrated on **Figure 1-2**) plus a 50m zone was considered an appropriate area to survey (with a 500m zone for the purposes of the great crested newt survey). Further details on the desk study and field survey methodologies are provided in the subsequent sections.

10.3.4 Potential ecological impacts have been assessed in the context of how the existing environment within the ZOI would change during the lifetime of the proposed scheme.

10.3.5 The main construction works for Phase 1 of both forms of quay structure is expected to start in February 2017 and continue for a period of 17 months. Phase 2 construction works are anticipated to start within 6 years of the completion of Phase 1.

Existing environment

Desk top study

10.3.6 An initial ecological desk study was undertaken in 2011 by INCA, this was updated by INCA and Royal HaskoningDHV in 2013. The Multi-Agency Geographic Information for the Countryside (MAGIC)

website was used to identify all statutory designated nature conservation sites and notable habitats (i.e. Ancient Woodlands) within, and up to 2km from, the proposed scheme footprint.

10.3.7 Information on locally designated non-statutory sites of importance for nature conservation, in particular County Wildlife Sites (CWS), and sites which are protected by planning policies at a local authority level, was requested from Environmental Records Information Centre North East (ERIC). The search area for this data request extended 2km from the proposed scheme footprint boundary.

10.3.8 Great crested newts (a species which is afforded protection by both British and European law) use water bodies as breeding habitat and can use terrestrial habitat up to 500m from their breeding habitat as a foraging area (English Nature, 2001). Ordnance Survey (OS) maps were used to identify the presence of water bodies within, and up to 500m zone from, the scheme footprint boundary in order to establish whether the footprint and surrounding area contains any potential breeding habitat for great crested newts.

10.3.9 OS maps were also used to identify any water bodies within or adjacent to the proposed scheme footprint to identify the potential for presence of other protected species including otter, water vole and white clawed crayfish, which might use such water bodies. Google Earth photography was reviewed to assist in identifying any other notable habitats.

10.3.10 Information was obtained from ERIC on all records of legally protected BAP and locally notable or rare species within, and up to 2km from, the boundary of the proposed scheme footprint. Additional data was collated from the records INCA hold for the area to supplement this information.

10.3.11 Both the UK BAP and Tees Valley BAP (Local BAP) were reviewed to identify habitats and species of conservation concern that may be present within the zone of influence.

Field surveys

10.3.12 An extended Phase 1 habitat survey of areas within and adjacent to the proposed scheme footprint (including land up to 50m from the scheme boundary (illustrated on **Figure 1-2**)) was undertaken in 2011. This was subsequently updated in 2013 (INCA, 2014). These surveys followed JNCC guidance and were extended to include a search for evidence of the presence of notable and protected species (and for the potential for habitats to support such species) as recommended by IEEM.

10.3.13 During the 2011 and 2013 extended Phase 1 habitat surveys, the following activities were undertaken:

- a visual inspection from the ground of all trees and structures within the scheme footprint to assess their suitability for roosting bats;
- assessment of potential for habitats to support nesting birds (including Schedule 1 species which are afforded special protection, such as barn owls and kingfishers) within the scheme footprint;
- assessment of habitat potential for amphibians, in particular great crested newts, and assessment of potential aquatic and terrestrial habitats;
- assessment of potential of habitat to support reptiles within the scheme footprint;

- searching for evidence of water vole activity, such as the presence of burrows, feeding stations, faeces and latrines along the water bodies within the scheme footprint;
- searching for evidence of otter activity, such as the presence of sprainls, lying up places and holts within the water bodies within and adjacent to the scheme footprint;
- assessment of potential habitat to support white clawed crayfish within the water bodies within and adjacent to the scheme footprint,
- a search for signs of badger activity including setts, tracks, snuffle holes and latrines within the scheme footprint and up to 50m outside the scheme footprint,
- assessment of potential of habitat to support dormice within the scheme footprint; and,
- a search for evidence of presence of invasive plants listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) and which are subject to strict legal control The list of invasive species included on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) is extensive and these plants are found in a range of different habitats, including aquatic habitats The extended Phase 1 surveys checked, in particular, for the presence of Japanese knotweed, giant knotweed, hybrid knotweed, giant hogweed, rhododendron and Himalyan balsam Other invasive species, in particular those associated with aquatic habitats, may not have been recorded, but it is considered that the walkover surveys are sufficient to identify any significant constraints posed by invasive species

10 3 14 Reports produced by INCA following surveys undertaken in 2014 are presented in **Appendix 10.2**, and these should be referred to for further details.

Bat survey

10 3 15 All surveys of buildings and the habitat assessment were undertaken in accordance with the 'Bat Workers' Manual (3rd Edition)' (Mitchell-Jones & McLeish, 2004) and 'Bat Survey Good Practice Guidelines' (Hundt, 2012), and by an independent ecologist who is a licenced bat surveyor. The initial bat surveys undertaken in February 2014 were carried out outside of the main period of activity for bats, therefore these survey results provided a preliminary appraisal involving investigation of the degree of risk relating to structures and their suitability for roosting bats The 2013 extended Phase 1 habitat survey also identified habitat suitable within the proposed scheme footprint for foraging and commuting bats

10 3 16 Five bridges and the industrial plant at Bran Sands lagoon were identified as potential bat roosting habitat (**Figure 10-1**) A daytime inspection was carried out to search for bats or signs of bats (e.g. droppings, feeding remains, staining) between September 2013 and December 2013 All surveys were conducted in good light, using close-focusing binoculars and a powerful (million candlepower) Clulite torch where appropriate These surveys identified the potential of each structure to support roosting bats and identify if further detailed surveys would be required

10 3 17 Criteria which increased the possibility of roosting bats being present in buildings included:

- building disused or undisturbed;
- roof spaces present;
- wall cavities present;
- uneven roof with spaces;
- other spaces for bats to enter (via cladding, holes fascia, tiles); and,
- proximity to potential feeding area

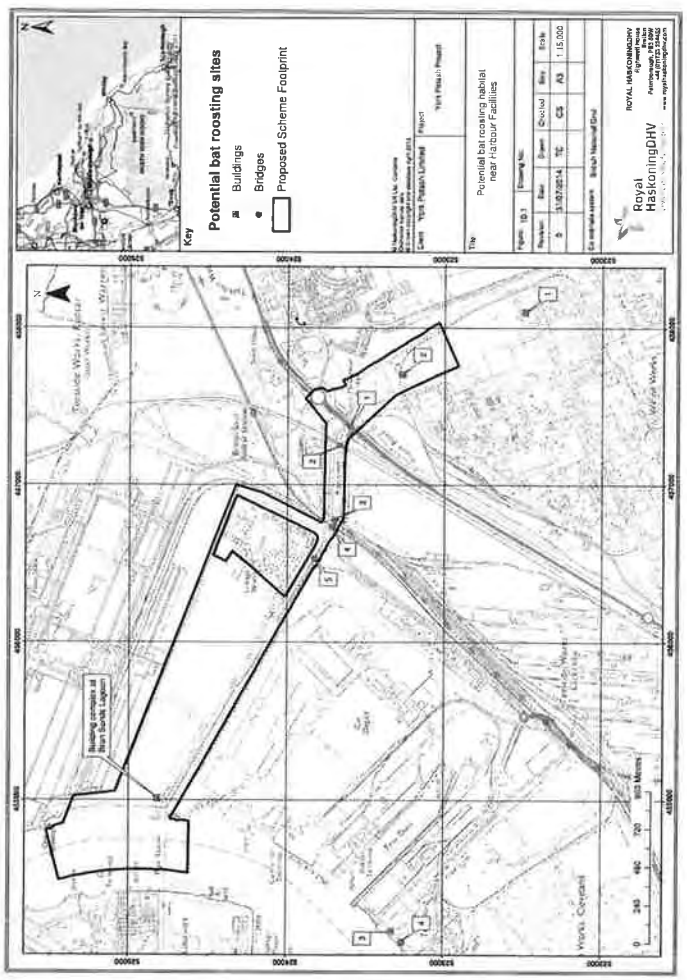
10 3 18 For the bridges, the criteria used included:

- widening joints and expansion joints,
- gaps at buttress corners,
- widening gaps where the bridge width has been increased;
- cracks and crevices between stonework and brickwork (over 100mm deep);
- drainage pipes and ducts,
- internal voids in box girder bridges;
- proximity to potential feeding areas, and,
- purpose of bridge and assumed level of activity

10 3 19 The trees and buildings were categorised based on a four point scale for their potential to support roosting bats

- Negligible potential – no features present which could offer bats the opportunity to roost
- Low potential – only minor crevices or cracks present; considered to offer poor roosting spaces for bats
- Medium potential – features present such as small cavities and gaps leading to small enclosed spaces, which offer some form of protection for either individual bats or small numbers of bats
- High potential – significant holes, cracks or crevices in roof or building structures, which are considered very suitable to be used by bats for roosting and could support large or important roosts such as maternity roosts

10 3 20 In addition to the daytime inspection surveys, two dusk surveys were subsequently undertaken (one on 24 September 2013 at Bridges 2 and 3 and another on 8 October 2013 at Teesport Buildings 7 and 8) While it was recognised that the timing of the survey work fell outside of the normally accepted survey period, it was considered that the warm frost-free weather throughout September 20130 and early October 2013 was conducive to observing any late season bat activity



10 3 21 For each survey, an ecologist was stationed close to the feature being surveyed Handheld bat detectors (Bat Box Duet) were used to allow surveyors to hear and identify bats Dusk emergence surveys were carried out from 30 minutes before sunset until one hour and 30 minutes after sunset, or until it was no longer light enough to see whether bats were emerging from the structure Any bat activity was recorded manually

10 3 22 The results of these dusk surveys have been used to inform the risk assessment rather than form any definitive conclusions about bat use of a particular part of the study area This is especially important to bear in mind as bat activity in the late season may not reflect bat activity in the study area and within the main season of activity, due to changing use of areas which bats show in different seasons

10 3 23 Additional bat survey was undertaken by Ecosurv Ltd during the bat breeding season (May and June 2014) to identify if bats utilise the bridges illustrated in **Figure 10-1** Evening emergence surveys together with dawn return surveys were conducted at each bridge location, with a single dawn and dusk survey being conducted at each point In order to provide further information as to the potential presence of bats to the wider surrounds, a static bat detector was also used during the survey Equipment used consisted of a AnaBat SD2 and Songmeter SM2 detector

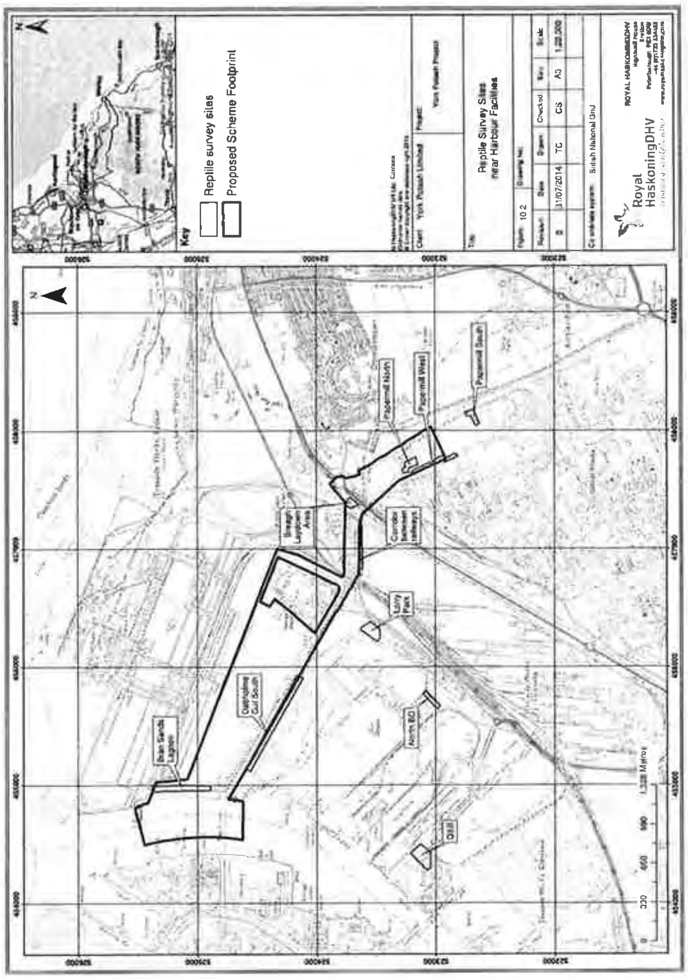
10 3 24 The weather during the May and June 2014 surveys was good, with high evening and overnight temperatures, maintaining a high level of insect prey species for bats

Reptile survey

10 3 25 The 2013 extended Phase 1 habitat survey identified ten areas that have optimal habitat to support common reptile species (**Figure 10-2**) These areas were mostly open mosaic habitats of grass tussocks and zones of sparse vegetation with industrial debris such as metal sheeting and wooden planks that could serve as reptile refuges There were also paved and concrete sections that reptiles could use as basking sites

10 3 26 Reptile surveys were undertaken at these ten survey plots (**Figure 10-2**) in accordance with the recommendations in *Reptile Survey An Introduction to Planning, Conducting and Interpreting Surveys for Snake and Lizard Conservation* (Froglife, 1999) between May 2013 and October 2013

10 3 27 Ninety six reptile 'refuges' were placed in a grid pattern across the ten survey plots and were numbered from 1 to 96 The reptile refuges consisted of 0 5m^2 squares of roofing felt Each refuge was examined on ten separate occasions between 26 September 2013 and 24 October 2013 On each visit the surface of the mats were examined and the mat was raised to check for the presence of reptiles Other potential basking areas such as rock piles, bare patches within open mosaic grassland and the edges of tarred roads were also checked for reptiles All surveys were carried out in fine weather with sunshine and temperatures between 13 and 21°C Any amphibians found were also recorded



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Otter and water vole survey

10 3 28 The desk top study identified two water bodies within and immediately adjacent to the proposed scheme footprint, namely Bran Sands lagoon and Dabholm Beck (which runs into Dabholm Gut) (**Figure 6-2**) Both of these water bodies were assessed as having optimal habitat for otter and water vole Each water body was assessed (from within the channel for Dabholm Beck and the perimeter of Bran Sands lagoon) for signs of otter and water vole Water vole surveys were undertaken in accordance with the Water Vole Conservation Handbook (Strachan and Moorhouse, 2006)

10 3 29 Both the otter and water vole surveys were undertaken on 24 October 2013 (for Dabholm Beck) and 29 October 2013 (for Bran Sands lagoon) While this was outside the optimum survey period for water vole (which is typically between March–September) it was considered that the unseasonably mild and frost-free weather experienced until at least the end of October 2013 would allow surveys for these species to be undertaken slightly outside of the usual period However, a repeat survey for water vole was undertaken in June 2014 by INCA There is no seasonal constraint for otter survey

10 3 30 For otter, key field signs which were the focus of the survey included holts, spraints and footprints in mud, with spraints typically being located on prominent rocks within water courses or bodies For water voles, key signs searched for included burrows, latrines, grazed feeding stations and footprints All signs or sightings were recorded with their geographical location

Methodology for the assessment of potential impacts

10 3 31 The nature conservation value, or sensitivity, of an ecological feature has been determined within a defined geographic context

- Very high: of international importance (e g SAC, SPA, Ramsar sites, or species directly linked to the designation of these sites)
- High of national importance (e g NNR, SSSI protected species)
- Medium of regional importance (e g Environment Agency regional biodiversity indicators, important features in Natural England Natural Areas) or of county importance (e g Local Nature Reserve (LNR), CWS)
- Low: habitats and species important within the district
- Negligible: features of local (parish) importance or importance within the site and immediate environs only (e g ditches, hedgerows, ponds)

10 3 32 The assessment of the potential impacts of the proposed scheme has taken into account both on-site impacts and those that may occur to adjacent and more distant ecological features Impacts can be positive or negative Potential impacts could include

- direct loss or gain of wildlife habitats,
- fragmentation and isolation or consolidation of habitats,
- disturbance to species from noise, light of other visual stimuli;

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- changes to key habitat features, and,
- changes to water quality and/or air quality

10 3 33 Negative and positive impacts on nature conservation features have been characterised based on predicted changes as a result of the proposed scheme (**Table 10-2**) In order to characterise the impacts on each feature, the following parameters were taken into account

- the magnitude of the impact (e g high, medium, low, negligible),
- the spatial extent over which the impact would occur
- the temporal duration of the impact;
- whether the impact is reversible and over what timeframe, and,
- the timing and frequency of the impact

Table 10-2 Categorisation of Impacts

Significance of impact	Sensitivity of receptor and magnitude of impact
High adverse	Permanent or long-term adverse and / or large scale / high magnitude adverse impact on integrity and / or conservation status of a feature of county or greater value (e g receptors of medium, high or very high sensitivity)
Moderate adverse	Temporary and / or small scale / low magnitude adverse impact on integrity and / or conservation status of a feature of national or greater value (e g receptors of high or very high sensitivity) Short or medium term and / or moderate scale / medium magnitude adverse impact on integrity and / or conservation status of a feature of county or greater value (e g receptors of medium, high or very high sensitivity) Permanent or long-term and/or large scale / high magnitude adverse impact on integrity and / or conservation status of a feature of district value (e g receptors of low sensitivity)
Low adverse	Temporary and / or small scale / low magnitude adverse impact on integrity and / or conservation status of a feature of district or county value (e g receptors of low sensitivity) Adverse impacts on integrity and / or conservation status of a feature of local / Site value (e g receptors of low sensitivity)
Negligible	Negligible impact on integrity and / or conservation status
Low beneficial	Temporary and / or small scale / low magnitude beneficial impact on integrity and/or conservation status of a feature of district or county value (e g receptors of low sensitivity) Beneficial impacts on integrity and / or conservation status of a feature of local / Site value (e g receptors of low sensitivity)

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Significance of impact	Sensitivity of receptor and magnitude of impact
Moderate beneficial	Temporary and / or small scale / low magnitude beneficial impact on integrity and / or conservation status of a feature of national or greater value (e g receptors of high or very high sensitivity) Short or medium term and / or moderate scale / medium magnitude beneficial impact on integrity and / or conservation status of a feature of county or greater value (e g receptors of medium, high or very high sensitivity) Permanent or long-term and / or large scale / high magnitude beneficial impact on integrity and / or conservation status of a feature of district value (e g receptors of low sensitivity)
High beneficial	Permanent or long-term and / or large scale / high magnitude beneficial impact on integrity and / or conservation status of a feature of County or greater value (e g receptors of medium, high or very high sensitivity)

10 3 34 The assessment identified those positive and negative impacts which would be 'significant', based on the value or sensitivity of the ecological feature and the magnitude of the impact Impacts were considered unlikely to be significant where features of local value or sensitivity would be subject to low magnitude or short-term impacts However, where there were a number of low magnitude impacts that were not considered to be significant alone, cumulatively, these may result in an overall significant impact

10 3 35 IEEM (2006) provides definitions of site integrity, conservation status for habitats and conservation status for species which have been applied to this EcIA and included below

"The integrity of a site is the coherence of the ecological structure and function across its whole area that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which is was classified" (IEEM, 2006)

10 3 36 The mitigation measures described in this section would be agreed, incorporated into the scheme design and construction programme, and taken into account in the assessment of impacts In addition, the assessment takes into account the likely success of the mitigation Monitoring requirements and the criteria for measuring the success of mitigation are identified Enhancement measures (i e measures that are in addition to mitigation requirements) are also identified The residual impact assessment (i e following mitigation) reflects the predicted impact of the completed scheme; the residual impact assessment does not take account of enhancement measures that may be proposed

10.4 **Existing environment**

Designated sites

10.4.1 The proposed scheme footprint is not located within the boundary of a statutory or non-statutory designated nature conservation site. However, there are a number of environmentally designated sites for nature conservation within 5km of the proposed scheme footprint (see **Figure 8-6**), namely

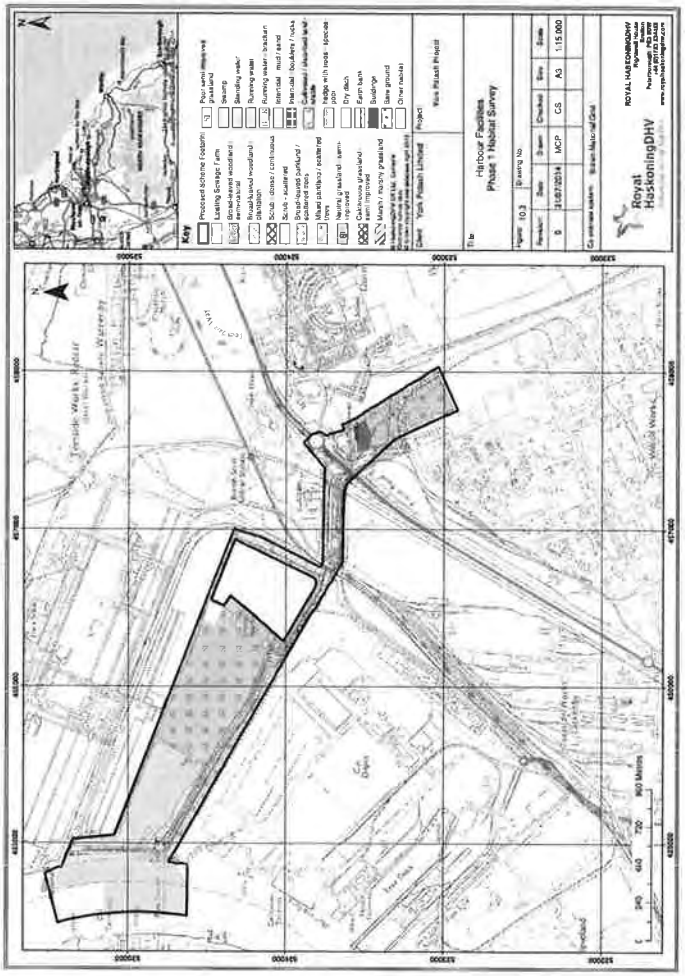
- Teesmouth and Cleveland Coast SPA;
- Teesmouth and Cleveland Coast Ramsar site;
- Seal Sands SSSI;
- Seaton Dunes and Common SSSI;
- South Gare and Coatham Sands SSSI;
- Redcar Rocks SSSI;
- Tees and Hartlepool Foreshore and Wellands SSSI;
- Cowpen Marsh SSSI, and,
- Teesmouth NNR

10.4.2 The closest statutory designated nature conservation site to the proposed scheme footprint is the Teesmouth and Cleveland Coast SPA and Ramsar site. The Teesmouth and Cleveland Coast SPA and Ramsar site is located approximately 1km from the proposed scheme footprint at its closest point. It includes a range of coastal habitats, including sand and mud-flats, areas of rocky shore, saltmarsh, freshwater marsh and sand dunes, all of which are located within or around an estuary which has been subject to extensive modification by human activities. Together these habitats provide feeding and roosting opportunities for important numbers of waterbirds in winter and during passage periods. In summer, little tern *Sterna albifrons* breed on beaches within the designated site, while sandwich tern *Sterna sandvicensis* are abundant on passage.

Habitats

10.4.3 The main habitats within the proposed scheme footprint are shown on **Figure 10-3**. Target Notes (TN) were used to describe habitat and species composition and highlight features of ecological interest (see **Appendix 10.2**). The key habitats noted during the 2013 survey include:

- semi-improved neutral grassland;
- ditches;
- scattered trees (young and semi-mature);
- standing water (i.e. ponds),
- scattered areas of scrub;
- tall ruderals; and,
- areas of hard standing and buildings



10.4.4 Adjacent to the Breagh Laydown area (**Appendix 10.2**) is an extensive stand of Japanese knotweed *Fallopia japonica*. No species of local, regional or national significance were recorded within the survey area

Semi-improved grassland

10.4.5 The majority of the study area is semi-improved calcareous or mesotrophic grasslands which have lost most of their interest due to becoming overgrown and rank

Ditches

10.4.6 A ditch runs the length of the paper mill site, with the majority of the ditch bound by rank grassland, with sections engulfed by scrub

Scattered trees

10.4.7 Within the study area there are a number of scattered young and semi-mature trees. Many of these have been planted as screens. Tree species include willow, elder, birch, hawthorn and apple

Ponds

10.4.8 There are several waterbodies in the study area, with the ICI Ecology Pond being the largest. The margins are dense with common reed *Phragmites australis* and common reedmace *Typha latifolia*. The pond itself has dense *Potamageton* weed, especially in the western end, and supports very high numbers of stickleback *Gasterosteus aculeatus*. Other waterbodies are present within the study area which are dense with common reedmace and common reed. Most hold water throughout the year and support amphibian populations of common toad, common frog and smooth newt

Scattered areas of scrub

10.4.9 Within the site there are several areas of scrub which include bramble, blackthorn and hawthorn. All of these areas have the potential to support nesting birds.

Species within and in the vicinity of the proposed scheme footprint

Bats

10.4.10 The desk top study identified observations of foraging common pipistrelle *Pipistrellus pipistrellus* in a number of locations within the study area and a single location near Teesport. No evidence of roosting bats within the Wilton or Teesport industrial complexes has been recorded

10.4.11 The nearest records of bat roosts are of a common pipistrelle roost at Wilton Village (NZ584198) in July 2011, which is 4km south-east of the proposed scheme footprint. A roost of soprano pipistrelle

Pipistrellus pygmaeus of undisclosed size was recorded in the Kirkleatham area of Redcar (NZ595218) in July 2010, which is 3km south-east of the proposed scheme footprint

10.4.12 The daytime bat roost assessment undertaken as part of the 2013 extended Phase 1 habitat survey identified five bridges and 11 buildings which represented potential roosting sites for bats. The five bridges were inspected and no sign of bat activity was noted. The daytime inspections identified potential roosting opportunities (i.e. gaps and crevices within the bridge structure). However, each bridge currently experiences regular traffic use and, therefore, in combination with associated vibrational disturbance, it is considered that these bridges have low to medium potential to support roosting bats. Furthermore, all of the bridges are in close proximity to good foraging habitat, with bats observed in the wider area of the bridges. On this basis, it is considered that each of the bridges has a low to medium risk of roosting bats being present

10.4.13 Dusk emergence surveys were carried out at Bridges 2 and 3 on 24 September 2013. Activity was observed from a single common pipistrelle around the north-eastern abutment of bridge 3. This activity, detected at 45kHz, started at 19:00 (sunset) and continued with regular feeding buzzes noted until 20:00. Activity at Bridge 2 was a little later, when a single common pipistrelle pass was noted at 19:15. A further ten passes were noted up until the survey finished at 20:30

10.4.14 Dusk emergence surveys took place on 8 October 2013 to assess any activity by bats using the complex of buildings in the Teesport area. There was no activity observed around the Teesport buildings

10.4.15 The industrial plant at Bran Sands lagoon was also inspected. The majority of these buildings are of steel construction which does not constitute desirable roosting locations for bats. Only one building is of brick construction, which is tightly constructed giving limited possible entry points for bats. Large fans are located within this building which runs continuously, making the building less attractive to bats. These buildings were, therefore, assessed as having a low bat potential

10.4.16 During the evening emergence and dawn return surveys undertaken by Ecosurv Ltd in May and June 2014, a single common pipistrelle bat was found to be flying below Bridge 1 on 29 May 2014. Records from the SM2 and AnaBat recorders identified the activity at 21:06 and 21:09, some 26 minutes before sunset.

10.4.17 Bats in low numbers, predominantly common pipistrelle with the occasional soprano pipistrelle were observed to utilise the land adjacent to the bridges. The maximum number of bats observed utilising land surrounding the bridges at any one time was three

10.4.18 Bat feeding within the Wilton Ecology Pond was almost continuous during the May and June 2014 surveys (between the hours of sunset and sunrise). A noctule bat Nyctalus noctula was also noted on a single occasion during the survey

10.4.19 It was concluded that Bridges 1 to 5 may provide occasional daytime roosting sites for single bats that may be prevented from returning to their usual day roosts by inclement weather. The bridges are considered unsuitable as a maternity roost or hibernation site.

Reptiles

10.4.20 The desk top study identified two records of slow-worm within 10km of the proposed scheme footprint and a single record of adder and common lizard. All records of grass snake were at distances greater than 10km from the proposed scheme footprint. No records of reptiles for the proposed scheme footprint or for areas adjoining these sites were found in either INCA's Ecological Database or in the published literature. The nearest sites to the survey areas for which there are confirmed records of common lizard are Eston Moor and South Gare, which at its closest point is 2km north-east of the proposed scheme footprint.

10.4.21 The detailed reptile surveys undertaken in 2013 and over a ten day period recorded no reptile species either on or under the mats or in other areas of the survey sites. The only amphibian species recorded during the surveys was the common toad *Bufo bufo* at the Breagh Laydown and Papermill West locations, which are the only two survey sites immediately adjacent to permanent ponds. This species was recorded in low numbers.

Great crested newts

10.4.22 There are no records of the great crested newt *Triturus cristatus* within or adjacent to the proposed scheme footprint. No newt species was recorded during the 2013 surveys, although smooth newt *Lissotriton vulgaris* is present within the water body adjacent to the Bran Sands lagoon on the Wilton International site. Due to the absence of great crested newt in the surveyed water bodies, it is considered that the proposed scheme would not have any impact on this species and, therefore, is has not been considered further in this assessment.

Otter

10.4.23 Otter *Lutra lutra*, and their holts are fully protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). The species is also protected under Schedule 2 of the Conservation of Habitats and Species Regulations 2010. The desk top study identified no records of otter within a 6km radius of the proposed scheme footprint.

10.4.24 The 2011 walkover survey identified two locations with potential otter habitat; Dabholm Beck and Bran Sands lagoon. The south-eastern end of Dabholm Beck has been surveyed on previous occasions and no signs of otter activity were noted. Two signs of otter were recorded within Dabholm Beck in 2013; firstly of a spraint situated on a rock within the beck channel and secondly of footprints in mud adjacent to the channel.

10.4.25 The waterside habitat around the whole perimeter of Bran Sands lagoon is lined with rip-rap and the lagoon itself is saline. Two locations along the northern edge of Bran Sands lagoon showed signs of

otter with a single otter spraint seen at each location. These were situated on prominent rocks in the shallows at the edge of the lagoon. There was no evidence of an otter holt along the entire shoreline of Bran Sands lagoon or at the Dabholm Beck site.

10.4.26 The low frequency of otter signs observed during this detailed survey suggests occasional use of the area by a single otter or by a small number of commuting otters as part of a foraging range.

Water vole

10.4.27 The water vole *Arvicola amphibious* is fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). The ERIC North East database provided one record of water vole within a 6km radius of the proposed scheme footprint. This was recorded in April 2010 at the western boundary of the Wilton site. No other records were provided within 6km of the proposed scheme footprint.

10.4.28 At the south-eastern end of Dabholm Beck there is a small area of *Phragmites* reedbed. This was checked for signs of water vole in August, September, October 2013 and June 2014. No sign of water vole activity was noted during this survey, indicating that this species is not present. The exposed banksides along Dabholm Beck and the whole perimeter of Bran Sands lagoon were found to be sub-optimal for water vole as they are lined with rip-rap. In addition, Bran Sands lagoon is saline and, therefore, provides sub-optimal habitat for water vole. No signs of this species were found at either of these locations and, therefore, it is considered that the proposed works would not have any impact on this species and water vole has not been considered further in this assessment.

White clawed crayfish, badger and dormice

10.4.29 The desk study did not return any records for white clawed crayfish, badger or dormice. Furthermore, the 2013 extended Phase 1 habitat survey did not identify any suitable habitat within the proposed scheme footprint for these species. It is, therefore, considered unlikely that these species are present within the proposed scheme footprint or adjacent area. As such, these species have not been considered further in this assessment.

10.5 Assessment of potential impacts during construction

Potential impacts to designated sites

10.5.1 The proximity of the proposed scheme footprint to the Teesmouth and Cleveland Coast SPA and Ramsar site results in the potential for disturbance to the interest features of these sites. The proposed works would be undertaken over a long period of time, which could affect both breeding and overwintering bird species for which the site is designated as an SPA and Ramsar. Given this, a HRA screening assessment has been undertaken for the proposed scheme **(see Appendix 2.1)**. The usage of the area by waterbirds that form part of the populations of the SPA and Ramsar site is described in **Section 9**.

10.5.2 It is considered that there would be no impact on non-statutory designated conservation sites during the construction phase due to the geographic separation between such sites and the proposed scheme footprint.

Potential impacts to habitats

10.5.3 The habitat types present within the proposed scheme footprint are considered to be common in this area. There is no terrestrial or freshwater BAP habitat located within the proposed scheme footprint. However, the construction works associated with the proposed scheme would directly and indirectly affect a number of different habitats, including those of nature conservation value, such as semi-improved neutral grassland, areas of dense scrub and areas of open water (both standing and brackish waters).

10.5.4 The habitats within the proposed scheme footprint are considered to be of low ecological value, with an effect of negligible magnitude being predicted during construction given the anticipated loss of habitat in relation to the existing habitat present. Given this, an impact of negligible significance is predicted.

Potential impacts to terrestrial birds

10.5.5 All breeding wild birds, their occupied nests and eggs are protected by the Wildlife and Countryside Act 1981 (as amended) (see **Appendix 10.1**).

10.5.6 The areas of open semi-improved neutral grassland and scrub within the proposed scheme footprint currently provide food and nesting opportunities for birds. Some removal of this habitat would be required to deliver the proposed scheme. However, the surrounding landscape provides very similar habitat and the terrestrial (land) area of the proposed scheme is considered to have limited suitability for nesting birds, given the lack of suitable ground conditions and limited vegetation that could support breeding birds. It is concluded that the works in this area are unlikely to have a significant impact on breeding birds (if the removal of habitat occurs at an appropriate time).

10.5.7 Given this, despite the high sensitivity of nesting birds, the magnitude of the loss of part of these areas of potential nesting habitat is predicted to be negligible, resulting in an impact of negligible significance during construction.

Potential mitigation measures

10.5.8 Mitigation (vegetation clearance) would be required in advance to minimise the risk of any harm to nesting birds (should they be present) during the works. Any vegetation clearance that is required would be undertaken outside of the breeding bird season (i.e. between September and February, as the breeding bird season is typically between March to August, but is weather dependent).

10.5.9 Should further vegetation clearance be required within the nesting season, surveys for occupied nests (or nests being built) would be carried out prior to any works being undertaken. A survey would be undertaken a maximum of 48 hours prior to the commencement of works, to check for occupied nests

or those being built, in order to minimise the chance of nest building being undertaken between the survey and the start of the works. Any nest in use or being built during this survey would need to be left undamaged until the chicks have fledged and an alternative approach to the works proposed.

Potential impacts to bats

10.5.10 None of the bridges or buildings assessed as having bat potential would be lost as a result of the proposed scheme and, therefore, potential impacts on bats as a result of the works are likely to be restricted to disturbance / displacement of commuting and foraging bats as a result of general site presence, noise, and lighting.

10.5.11 From the surveys that have been undertaken, it can be concludedthat all five bridges provide foraging habitat for low numbers of bats. It is also concluded that the bridges may provide occasional daytime roosting sites for single bats (maximum of three seen at any one time).

10.5.12 It is understood that all of these bridges are already subject to noise disturbance throughout the entire day from on-going activities. These bridges are not currently illuminated and, therefore, any installation of lighting potentially would cause disturbance to feeding and any roosting bats. Given this, despite the high sensitivity of bats, the magnitude of the disturbance impact is predicted to be negligible, resulting in an impact of negligible significance during construction.

Potential mitigation measures

10.5.13 Given that it is likely that there would be some night working, it is proposed that any construction lighting would be located away from the bridges to avoid disturbance to any potential bat roost. The lighting requirements for the proposed works would be designed in accordance with guidance from the Bat Conservation Trust.

10.5.14 With the proposed mitigation in place, it is predicted that despite the high sensitivity of bats, the magnitude of the potential construction effect would be negligible. Consequently, an impact of negligible significance on bat species is predicted during the construction phase.

Potential impacts to reptiles

10.5.15 While no reptile species were recorded within the proposed scheme footprint, the presence of suitable habitat (i.e. areas of scattered scrub and hard standing areas) means that there is the potential for these species to use the area if they are present in the wider area. The areas of semi-improved neutral grassland were considered to provide suitable shelter, forage and basking habitat for common reptile species.

10.5.16 There is the potential for construction activities to temporarily disturb and possibly injure or kill common reptile species, such as grass snakes, adders, slow-worms or common lizards.

Potential mitigation measures

10.5.17 It is proposed that a Precautionary Method of Working document would be prepared by an ecologist and would cover the site works associated with the proposed scheme in order to minimise the risk of harm to reptiles. Habitat manipulation would be undertaken which would comprise vegetation cutting and the removal of debris which could provide shelter. This would encourage any reptiles present on site to move onto adjacent areas; much of the land surrounding the proposed scheme footprint also provides similar habitats which could be utilised by reptiles.

10.5.18 All advance habitat manipulation works would be supervised by an ecologist. Clearance of potential reptile refuges and vegetation cutting would be undertaken outside of reptile hibernation season (which is generally between October and February) when daytime maximum temperatures are below 10°C. Based on this, despite the high sensitivity of reptiles, an effect of negligible magnitude and a potential impact of negligible significance is predicted.

Potential impacts to otter

10.5.19 Dabholm Beck and Bran Sands lagoon are the two water bodies within and immediately adjacent to the proposed scheme footprint where evidence of otter activity has been recorded. These water bodies would not be lost as a result of the proposed scheme, and no holts are present. Consequently, the proposed scheme would not have a direct impact on holts. However, due to the proximity of the works, there may be some indirect disturbance to otters during the construction phase, although movement along the water bodies would not be restricted and it is unlikely that any animals would venture into the proposed scheme footprint due to the high levels of activity.

Potential mitigation measures

10.5.20 As a precaution, it is proposed that any trenches and excavations would be closed overnight and escape routes provided should an animal become trapped. An effect of negligible magnitude and an impact of negligible significance is predicted.

10.6 Assessment of potential impacts during operation

Potential impacts to designated sites

10.6.1 The HRA screening assessment undertaken with respect to potential effects on designated sites for nature conservation has considered both construction and operational effects **(see Appendix 2.1)**.

10.6.2 There would be no impacts on non-statutory designated nature conservation sites during the operational phase due to the distance of these sites from the proposed scheme footprint.

Potential impacts to habitats

10.6.3 On completion of the proposed scheme, the existing habitats would largely remain. Given this, a residual impact of negligible significance on habitats is predicted in the operational phase.

Potential impacts to terrestrial birds

10.6.4 The trees and areas of scrub within the proposed scheme footprint provide food and nesting opportunities for birds. The removal of some of this habitat would be required as part of the proposed works. However, given the presence of similar habitat in adjacent areas, the loss of some potential nesting habitat would have a negligible impact on the conservation status of the local bird populations during operation and result in an impact of negligible significance.

Potential impacts to bats

10.6.5 Based on the surveys undertaken to date, no bat maternity roosts or hibernation sites have been recorded within the proposed scheme footprint and no structures which have been assessed as having potential to support roosting bats would be lost as a result of the proposed scheme. However, the area within the scheme's footprint has been noted to provide feeding, foraging and commuting habitat for bats.

Potential enhancement measures

10.6.6 It is proposed that the installation of habitat enhancement measures as part of the proposed scheme is investigated during the subsequent stage of the EIA process. Such habitat enhancement measures could include installation of bat boxes, along with the planting of species, which in turn would provide good quality foraging habitat for bats. It is considered that such measures would off-set any indirect impacts to bats. It is, therefore, concluded that a low magnitude beneficial effect could arise on a receptor of high sensitivity.

Potential impacts to reptiles

10.6.7 The proposed scheme would look to provide additional habitats and opportunities for basking reptiles, including small areas of planted scrub on completion of the proposed scheme. Hence the proposed design, site management and implementation of a precautionary method of working would have a low magnitude, but benefical effect on reptiles (a receptor of high sensitivity). It is, therefore, predicted that there would be a long-term impact of low beneficial significance.

10.7 Summary

10.7.1 An extensive suite of desk and field studies has been undertaken between 2011 and 2014 to inform the EcIA. Based on the findings of the terrestrial ecology surveys undertaken to date, it is concluded that Phase 2 ecology surveys are not required.

10.7.2 The proposed scheme would give rise to a number of adverse impacts with respect to terrestrial ecology that would require mitigation. These include:

- Impacts on bats and terrestrial birds due to vegetation removal.
- Direct impacts on common reptile species (if present) due to vegetation removal.
- Indirect impacts on otters using the Dabholm Beck and Bran Sands lagoon.

10.7.3 Provided that the mitigation measures described in this EcIA are successfully implemented, it is anticipated that significant adverse impacts to terrestrial ecology would be avoided and some minor beneficial impacts achieved.

11 FISHERIES AND FISHING ACTIVITY

11.1 Introduction

11.1.1 This section of the PER describes the existing environment in relation to fisheries and fishing activity and identifies the potential impacts of the construction and operational phases of the proposed scheme. Mitigation measures are detailed where it has been possible to undertake a full impact assessment, and a discussion of the residual impacts presented where significant impacts have been identified. Potential mitigation measures (which may need to be implemented during the construction and operational phase) have been identified where it has not been possible to undertake a full impact assessment, based on the existing environmental information available at the time of writing.

11.1.2 The requirement for the implementation of the potential mitigation measures identified within this PER will be determined once all baseline information is available and the significance of potential impacts has been determined.

11.2 Guidance and consultation

Policy and guidance

Marine Policy Statement

11.2.1 The MPS states that fishing activity is sensitive to changes in other sea uses, with marine developments having the potential to prevent, displace or encourage fishing activities. There are potential social, economic and environmental implications of displacement of fishing activity caused by other sea uses, particularly if from well-established fishing grounds.

11.2.2 The MPS states that the coastal environment is important as a corridor for migrating Atlantic salmon and European eel, as well as providing the marine feeding ground for sea trout. These important species that support coastal and inland commercial fishing and recreational angling could be vulnerable to a wide range of coastal activities. Marine plan authorities should consider the potential social and economic impacts of other developments on fishing activity, as well as potential environmental impacts.

Redcar and Cleveland Borough Council Local Plan

11.2.3 RCBC adopted its Core Strategy in July 2007 and this provides the development framework for the Borough over the plan period to 2021. At the same time, the Council adopted its Development Policies Document which provides detailed development control policies that are intended to deliver the overarching policy objective of the Core Strategy. Development Plan Document policies of relevance when considering the proposed scheme in relation to the natural fisheries resource include:

- CS24: Biodiversity and geological conservation: the Borough's biodiversity and geological resource will be protected and enhanced. Priority will be given to:
  - Conserving and enhancing biodiversity and geodiversity sites and features in line with PPS9;
  - Improving the integrity and biodiversity value of wildlife corridors particularly along the coast, around the Teesmouth estuary and linking with the North York Moors;
  - Meeting the objectives and targets in the UK and Tees Valley Biodiversity Action Plan (recently disbanded and replaced by the Tees Valley Nature Partnership); and,
  - Strengthening populations of protected species.

Guidance

11.2.4 The principal guidance documents used to inform the assessment of potential impacts to the natural fisheries resource and fishing activity are as follows:

- Guidance note for Environmental Impact Assessment in respect of Food and Environmental Protection Act (FEPA) and Coast Protection Act (CPA) requirements (Cefas, 2004).
- OSPAR List of Threatened and/or Declining Species and Habitats (OSPAR Commission, 2008).

Consultation

11.2.5 A summary of the comments received from PINS with regard to natural fisheries resource and fishing activity during January 2014 is presented in **Table 11-1**.

Table 11-1 Summary of scoping comments received from PINS of relevance to fisheries and fishing activity

Comment	Section of PER in which comment is addressed
The applicant should ensure that any existing data to be used in the assessment is relevant and up to date. Primary data collected in relation to other topics e.g. hydrodynamic and sedimentary regime and marine and coastal ornithology should be fed into the assessment.	Section 11.3 (Paragraphs 11.3.2 to 11.3.7)
The applicant is advised to consult with fishing organisations within the local area to determine the origin of any fishing vessels and how and where they operate, in order to inform the assessment. *Additional consultation is to be undertaken with fishing organisations during the subsequent stage of the EIA process.*	Section 11.2 (Paragraphs 11.2.6 to 11.2.8).
The EA stated that NEIFCA should be contacted to provide advice on sea fisheries interests, as should the National Federation of Fishermen's Associations. The most recent rod catch data should be used.	Section 11.2 (Paragraphs 11.2.6 to 11.2.8).
Cod, spurdog, anglerfish, whiting, sprat, lemon sole and nephrops use this general area and should be assessed alongside currently identified species.	Noted.

Comment	Section of PER in which comment is addressed
The ES must also include an assessment of the effects, if any, on those species and habitats on the OSPAR list of threatened and declining species and habitats.	Section 11.4 (Paragraph 11.4.11). Section 11.5 and 11.6
The effects on natural fisheries resource from changes to marine sediment and water quality must also be assessed.	Section 11.5 (Paragraphs 11.5.1 to 11.5.12).

11.2.6 A separate consultation exercise was undertaken with the Environment Agency during December 2013 in order to identify and source baseline information with regard to fish migrations along the Tees estuary. This approach was in accordance with that proposed within the Environmental Scoping Report (Royal HaskoningDHV, 2013) (i.e. desk based assessment).

11.2.7 During this consultation, the Environment Agency recommended that the EIA for the proposed scheme should be informed by fish count data recovered from the Tees Barrage. This data was subsequently provided to Royal HaskoningDHV during December 2013 by the Environment Agency, and has been used to inform this section of the PER.

11.2.8 Consultation with the North Eastern Inshore Fisheries and Conservation Authority (NEIFCA) was also undertaken during March 2013 to discuss the sea fisheries interests within the area (as recommended within the Environmental Scoping Opinion (PINS, 2013)). The results of the discussion have been used to inform this section of the PER.

11.3 Methodology

Study area

11.3.1 The study area for this section of the PER comprises the Tees estuary, extending from the mouth of the estuary at the North and South Gare breakwaters, upstream to the Transporter Bridge.

Existing environment

11.3.2 The fisheries resource of the Tees estuary is well understood from several years of data gathered by the Environment Agency. In addition to the existing data, additional site-specific data regarding fish usage in the area is to be gathered as part of the benthic ecological survey, as discussed below.

Site specific data

11.3.3 A site-specific benthic survey was undertaken in July 2014 which involved a total of 10 benthic trawls within the study area to sample epifauna. The trawls were evenly distributed across the sampling area and a five minute trawl (20mm mesh with a 5mm cod end) was undertaken at each of the 10 locations.

11.3.4 The results of the benthic trawls were not available at the time of writing this PER, however, the data will be included within the ES.

Underwater noise modelling

11.3.5 Within the Environmental Scoping Opinion (PINS, 2014), Natural England recommended subsea acoustic modelling was undertaken to assist with the prediction of impacts to marine ecology due to piling. An underwater noise survey has therefore been completed, and a modelling exercise was commissioned for the proposed scheme. This was undertaken by Subacoustech. The results of the model have been used to assist with the prediction of potential impacts of the proposed scheme on resident and migratory fish species.

11.3.6 The methodology used for the underwater noise survey and modelling is presented in **Section 8.3**. The criteria used to assess the environmental effects of underwater noise from piling and dredging are also provided within **Section 8.3**. With regard to the Unweighted Metrics assessment criteria (discussed in **Section 8.3**), additional criteria have been considered for assessing the impact of noise on fish (based on work of the Fisheries Hydroacoustic Working Group (FHWG) in the USA). FHWS assigns criteria based on unweighted noise levels. This includes a peak SPL of 206 dB re 1 µPa (SPL_{peak}) and accumulated SEL over a period of time of 187 dB re 1 μPa^2s. These generic criteria make no distinction between individual species.

OSPAR list of Threatened and/or Declining Species and Habitats

11.3.7 A review of the fish species and habitats present on the OSPAR list of Threatened and/or Declining Species and Habitats, and any adverse impacts upon species/habitats which could arise as a result of the proposed scheme, has been undertaken (see **Section 11.4**).

Methodology for assessment of potential impacts

11.3.8 The assessment methodology used to determine the potential environmental impacts associated with the proposed scheme on the fishery and fishing activity is as set out within **Section 3**. For the purposes of the PER, this methodology has been used where sufficient site-specific and relevant information was available to allow an impact assessment to be undertaken.

11.3.9 The results of the site-specific benthic ecological survey were not available at the time of writing. As such, it has not yet been possible to determine the potential for the proposed dredge area and pile footprints to support a benthic invertebrate resource which could provide a suitable feeding ground for fish.

11.3.10 Reference has been made to the hydrodynamic and sedimentary regime, marine sediment quality, water quality and marine and coastal ecology sections in the rest of this document.

11.4 Existing environment

Literature review of existing information on resident and migratory species

11.4.1 Tees Bay and the Tees estuary provide important habitats for a number of fish species which feed on benthic invertebrates found in subtidal and intertidal sediments. The lower Tees estuary supports many fish, some of which are estuary dependant (e.g. flounder *Platichthys flesus*) and some temporary residents (e.g. plaice *Pleuronectes platessa*), which use the estuary as a nursery ground (Tansley 2003), with herring (*Clupea harengus*), sprat (*Sprattus sprattus*), cod (*Gadus morhua*), spurdog (*Squalus acanthias*), anglerfish (*Lophius piscatorius*), whiting (*Merlangius merlangus*), lemon sole (*Microstomus kitt*) and nephrops (*Nephrops norvegicus*) also recorded in the general area.

11.4.2 Herring and plaice are identified as BAP species and priority species by the grouped plan for commercial marine fish (UK BAP, 2009). Sandeels are also abundant in the local area and although there is no commercial fishery, they are an important food source for bird populations.

11.4.3 Migratory fish species are also present within the Tees estuary, including salmon (*Salmo salar*), sea trout (*S. trutta*), and European eel (*Anguilla anguilla*). Improvements in water quality in recent years have enabled the numbers of salmonids to steadily increase, and the Tees is now recognised as a main salmon river in England and Wales, for which the Tees Salmon Action Plan (SAP) is enforced by the Environment Agency. There are upstream movements of salmon from May onwards through summer to peak movement in September/October, with the downstream smolt run peaking in May.

11.4.4 The river lamprey (*Lampetra fluviatilis*) is found only in Western Europe and is widespread in the UK. Whilst not a true 'fish' (as it is jawless), lamprey are a migratory species which grow to maturity in estuaries and then move into fresh water to spawn in clean rivers and streams. River lampreys enter the Tees estuary to spawn and have been observed at the Tees Barrage at Stockton. Sea lampreys have also been recorded within the Tees estuary.

Environment Agency monitoring

11.4.5 Since 2011, the Environment Agency has been monitoring migratory fish numbers within the Tees estuary through the use of an electronic fish counter. The electronic fish counter replaced a fish trap which was previously located at the Tees Barrage, and is a non-invasive method of monitoring fish passage at the Tees Barrage. The results of the fish counter have been validated by the Environment Agency using underwater video footage and infra-red lighting. The counter is a resistivity type counter, which relies on small changes in electrical resistance being detected when a fish passes over a set of electrodes positioned in the water channel. The counter is able to differentiate between fish moving upstream and downstream, as well as rejecting false signals caused by waves or debris.

11.4.6 It should be noted that the existing fish pass only represents one potential route for fish passage at the barrage, and the Environment Agency is aware that fish would pass across the barrage gates at certain

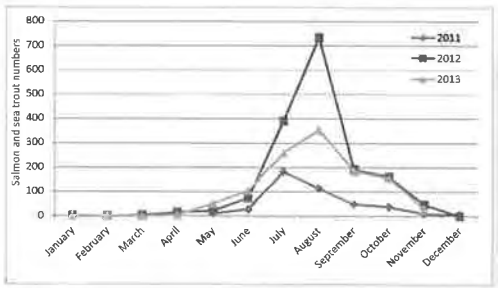
states of the tide. Therefore, the data from the electronic fish counter provides an index of the run rather than a total count of migratory fish within the Tees estuary.

Peak salmon and sea trout migrations

11.4.7 Environment Agency data from the electronic fish counter at the Tees Barrage shows that the salmon and sea trout migration period generally commences in May, with migrations peaking during July or August. Salmon and sea trout migrations continue through to October and November, however the numbers of fish migrating during these months are significantly lower than the peak months. This relationship is shown in **Figure 11-1**.

11.4.8 **Figure 11-1** shows that the peak salmon and sea trout run was during July in 2011 (183 salmon and sea trout recorded), August in 2012 (735 salmon and sea trout recorded) and August in 2013 (355 salmon and sea trout recorded). The data shows that there was a significantly greater number of salmon and sea trout migrating and recorded within the fish counter during 2012, in comparison with the data recovered during 2011 and 2013. The reason for this increase during 2012 is currently unknown.

Figure 11-1 **Salmon and sea trout catch data from the Tees Barrage electronic fish counter**



Sea fisheries

11.4.9 Sea fisheries out to 6nm from the UK territorial baseline between the River Tyne and approximately the eastern bank of the Humber estuary fall under the jurisdiction of the NEIFCA. The Environment Agency has responsibility for the management of migratory fisheries for salmon, trout and eels within this area.

11.4.10 Consultation with NEIFCA has confirmed that most commercial fishing activity takes place outside of the estuary, although there is a small amount of fishing targeted at lobster (*Homarus gammarus*) and velvet swimming crab (*Necora puber*) in the lower estuary during summer. The digging of lugworms, ragworms and peeler crabs takes place in the intertidal mud and sandflats of the outer estuary and adjacent coast. Ragworm digging takes place throughout the year but peaks in May and September.

Fish species listed on the OSPAR List of Threatened and Declining Species and Habitats

11.4.11 **Table 11-2** identifies the fish species present on the OSPAR list.

Table 11-2 **Summary of fish species present on OSPAR List of Threatened and/or Declining Species**

Scientific name	Common name	OSPAR Regions where the species occurs	OSPAR Regions where species is under threat and/or decline
*Acipenser sturio**	Sturgeon	II, IV	All where it occurs
*Alosa alosa**	Allis shad	II, III, IV	All where it occurs
Anguilla anguilla	European eel	I, II, III, IV	All where it occurs
Centroscymnus coelolepis	Portuguese dogfish	All	All where it occurs
Centrophorus granulosus	Gulper shark	IV, V	All where it occurs
Centrophorus squamosus	Leafscale gulper shark	All	All where it occurs
Cetorhinus maximus	Basking shark	All	All where it occurs
Coregonus lavaretus oxyrinchus (Linnaeus, 1758)	Houting	II	All where it occurs
Dipturus batis (synonym: *Raja batis*)	Common Skate	All	All where it occurs
Raja montagui (synonym: Dipturus montagui)	Spotted Ray	II, III, IV, V	All where it occurs
Gadus morhua– populations in the OSPAR regions II and III	Cod	All	II, III
Hippocampus guttulatus (synonym: *Hippocampus ramulosus*)	Long-snouted seahorse	II, III, IV, V	All where it occurs
Hippocampus hippocampus	Short-snouted seahorse	II, III, IV, V	All where it occurs
Hoplostethus atlanticus	Orange roughy	I, V	All where it occurs
Lamna nasus	Porbeagle	All	All where it occurs
Petromyzon mannus	Sea lamprey	I, II, III, IV	All where it occurs
Raja clavata	Thornback skate / ray	I, II, III, IV, V	II

Scientific name	Common name	OSPAR Regions where the species occurs	OSPAR Regions where species is under threat and/or decline
Rostroraja alba	White skate	II, III, IV	All where it occurs
Salmo salar	Salmon	I, II, III, IV	All where it occurs
Squalus acanthias	[Northeast Atlantic] spurdog	All	All where it occurs
Squatina squatina	Angel shark	II, III, IV	All where it occurs
Thunnus thynnus	Bluefin tuna	V	All where it occurs

11.4.12 Of the species listed in **Table 11-2**, eel, cod, salmon and spurdog are known to be present within the Tees estuary.

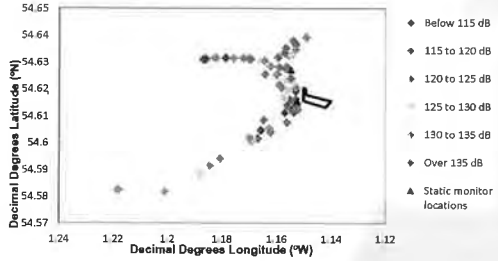
Results of the underwater noise survey

Measurement results

11.4.13 Measurements undertaken during the underwater noise survey have been analysed to determine the sound pressure levels and to identify the main contributing sources of noise that make up the ambient underwater noise environment in the vicinity of the proposed scheme footprint.

11.4.14 **Figure 11-2** presents the mean RMS sound level for all measurements taken throughout both days of the underwater noise survey at various points within the Tees estuary.

Figure 11-2 **Location of average RMS sound levels for all measurements recorded during both days of the underwater noise survey**



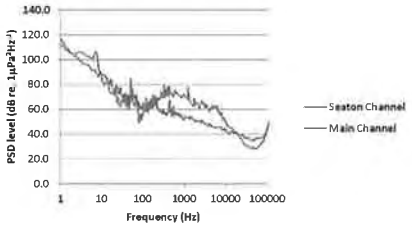
11.4.15 As shown in **Figure 11-2**, the level of underwater noise during the survey was typically in the region of 115 to 120 dB re 1 µPa RMS along the centre of the river. This is considered to be relatively high noise levels for a wide, slow flowing river and is due to the high level of shipping, engines and generators which are audible along the entire length of the main channel. The Seaton Channel was found to be fairly quiet by comparison, with the exception of noise associated with the water intakes for the nuclear power plant.

11.4.16 The soundscape of the river is constantly changing due to ships travelling up and down the river, so the average RMS sound levels illustrated in **Figure 11-2** are a 'snapshot' of the noise levels encountered.

Baseline noise levels

11.4.17 **Figure 11-3** shows the frequency spectra of two recordings which were both recorded with no visible vessel traffic or any other significant noise source in the area. Both frequency spectra can therefore be considered as representative of the background noise level at the location where they were recorded.

Figure 11-3 Frequency spectra of background noise in the main channel of the River Tees and the Seaton Channel

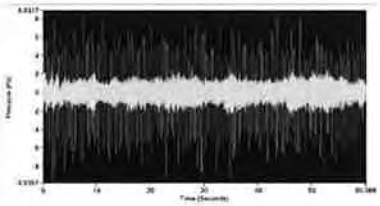


11.4.18 The Seaton Channel recording presented in **Figure 11-3** shows a typical frequency spectrum for a quiet river with minimal influence of anthropogenic noise. The average sound level for this recording was 101.5 dB re 1 µPa RMS. In contrast, the main channel of the Tees estuary shows increased underwater noise levels from 100 to 20,000 Hz of around 15 dB, with an overall average sound level of 110.6 dB re 1 µPa RMS. The increase is due to the almost contact shipping activity at various points of the river (although no vessels were visible nearby at the time of monitoring). Noise from stationary ships with their generators running also contributes to background noise levels within the main channel.

Dredging noise

11.4.19 **Figure 11-4** presents a 60 second time history of a recording of a dredger operating approximately 1km from the noise survey vessel. A distance of 1km between the survey vessel and the dredger was maintained to prevent disturbance to dredging operations.

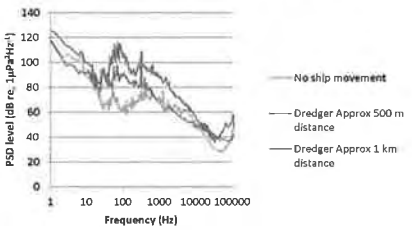
Figure 11-4 Time history of a dredger operating approximately 1km from the noise survey boat



11.4.20 The most obvious sound source in **Figure 11-4** is the dredger's echosounder which pulses around three times a second reaching sound pressures from approximately -9 to +8 Pa. The sound produced by the dredger machinery is of a fairly constant level, and at this distance fluctuated between -2 and +2Pa. These combined sources produced a sound level of 114.6 dB re 1 µPa at 1km.

11.4.21 **Figure 11-5** presents the frequency spectrum of the time history shown in **Figure 11-4**, as well as one of the measurements taken closer (approximately 500m) to the dredger but with no audible echosounder, and the background noise level from the main channel shown in **Figure 11-3**. The average sound level of the second dredger sample was 129.8 dB re 1 µPa RMS. This measurement can be considered a background noise level of the river. Although it reaches a high instantaneous sound pressure, the echosounder does not make up a large component of the overall sound level as the pulses are so short and high frequency. Most of the noise can be seen to be made up of the lower frequencies, in the region of 50 to 1000 Hz with many tonal components, typical of most ship and engine noise underwater. The small increase at higher frequencies can be seen toward the upper end of the hydrophone's range.

Figure 11-5 Frequency spectra of two recordings of dredging compared to a recording on the main channel with no visible moving vessels

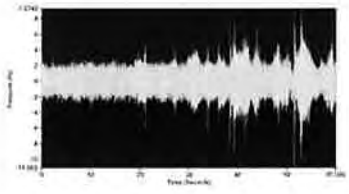


Shipping noise

11.4.22 Shipping noise was present in all measurements excluding some taken towards the end of Seaton Channel, making it the largest contributor to the overall sound level in the river. This is partly due to the many moored ships serving a large number of purposes, including gas ships or container ships.

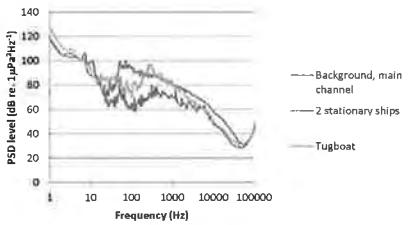
11.4.23 Even when moored, each ship produces a significant amount of noise from unloading and loading, and any generators running on board. No measurements of large vessels in transit were able to be recorded during the survey due to the risk of drifting into their path, so **Figure 11-6** shows a recording of two stationary ships, while one or both of them were being loaded.

Figure 11-6 Time history of a recording taken at a distance of around 80m from two ships, the 'Elena VE' and the 'Wilson Hull' while one or both of them were being loaded



11.4.24 **Figure 11-7** compares the frequency spectra of the two stationary ships to one of a tug that was moving at around 1km from the survey vessel and the background noise in the main channel.

Figure 11-7 Frequency specta of the recording shown in the previous figure compared to one taken of a tug underway and the background noise on the main channel

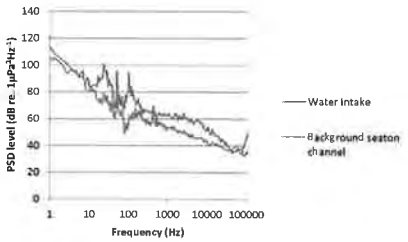


11.4.25 Shipping produces noise over a very wide frequency band from around 50 Hz to 50 kHz in some cases. This varies from ship to ship as it can be seen that the tug produces less noise below 200 Hz than the two stationary ships.

Water intakes

11.4.26 The water intake from the Hartlepool nuclear power station lies near to the entrance of Seaton Channel. It was audible from where the noise measurements were taken, approximately halfway across the river channel at a distance of approximately 100m. **Figure 11-8** shows the frequency spectra from a recording of the noise the intakes produce compared to background noise on the Seaton Channel. The intakes produce noise primarily of low frequency in the region of 10 to 200 Hz, which makes an average noise level of 111.1 dB re. 1 µPa RMS.

Figure 11-8 Frequency spectra of the noise from the water intake at Hartlepool nuclear power station compared to the background level in the Seaton Channel



Measured unweighted sound pressure levels

11.4.27 The measured maximum, minimum and mean unweighted RMS sound pressure levels, divided by area of the Tees estuary are shown in **Table 11-3**. Vessels present in the vicinity of the survey boat were noted and the approximate number and type of vessel is given below

11.4.28 All levels measured are in keeping with typical riverine ambient noise levels previously measured by Subacoustech in the UK. As might be expected due to the lower level of shipping in Seaton channel, it can be seen that, the mean sound pressure level (SPL) for Area 3 was the lowest on day 1 at 115.3 dB re 1 µPa RMS, but on Day 2, Area 4 had the lowest level at 112.9 dB re 1 µPa RMS. This was the result of no shipping activity being undertaken at the time the measurements were taken

Table 11-3 Maximum, minimum and mean RMS SPLs measured in each area of the Tees estuary during the underwater noise survey

		02-04-2014		03-04-2014	
Unweighted RMS Level		Level (dB re 1 µPa)	Comments	Level (dB re 1 µPa)	Comments
Area 1	Max	125.1	Tugboat boat 1 km away. Unidentified echosounder audible	132.7	
	Min	111.6		105.8	
	Mean	118.5		120.4	
Area 2	Max	130.5	Many moored ships, such as the *'Nordic Sola'*,	142.3	Dredger 500 m to 1 km

		02-04-2014		03-04-2014	
Unweighted RMS Level		Level (dB re 1 µPa)	Comments	Level (dB re 1 µPa)	Comments
	Min	107.3	some loading. Some construction noise. 2 tugs 1 km away.	108.4	away. Many moored ships, such as the *'Trout'*, *'Sea Sprat'*, *'SKS Sinni'*, *'Odin'* and others.
	Mean	117.5		120.1	
Area 3	Max	132.8	Maintenance work on jackup barges in progress. Noise from Water intakes.	141.1	Noise from water intakes.
	Min	96.6		105.0	
	Mean	115.3		114.4	
Area 4	Max	133.0	Dredger 500 m - 1 km away.	117.8	Pilot boat passed.
	Min	113.0		107.9	
	Mean	122.4		112.9	
Overall	Max	133.0		142.3	
	Min	96.6		105.0	
	Mean	118.0		118.9	

Fixed monitor results

11.4.29 The fixed monitor hydrophone was deployed from a large pellet buoy. The data from the fixed monitor hydrophone was filtered to remove very low frequency noise (below 100 Hz) generated as a result of hydrophone movement within the water column. This data (presented in **Figure 11-9** and **Figure 11 10**) has been included within this PER to illustrate the variability in the level of underwater sound within the Tees estuary

Figure 11-9 RMS sound level recorded by the fixed monitor hydrophone on 2 April 2014

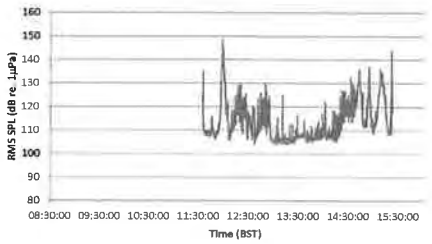
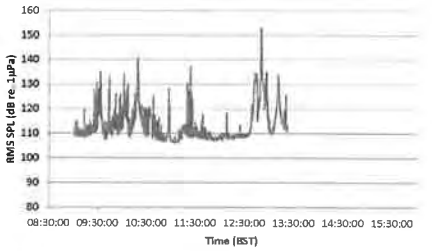


Figure 11-10 RMS sound level recorded by the fixed monitor hydrophone on 3 April 2014



11.4.30 Peaks with a long rise and fall time are caused by ships approaching and receding from the monitor, one of which caused the highest recorded sound level of 153.1 dB re 1µPa. Much shorter peaks were caused by bangs in ship loading or construction

11.4.31 The background level when there were no ships passing was slightly higher on 3 April 2014 than that recorded on 2 April 2014. This may have been due to the higher windspeed, or the fact that the

monitor was placed closer to the location of moored ships whose generator noise may have been picked up by the hydrophone

Interpretation of underwater noise survey results

11.4.32 **Table 11-4** and **Table 11-5** show the maximum, minimum and mean SPL from each area of the Tees estuary during both days of the survey, analysed in terms of the hearing abilities of bass, cod, dab, herring and salmon. The species upon which the analysis has been conducted in the underwater noise study was based upon regional significance and also upon the availability of a good quality peer reviewed audiogram.

11.4.33 For dB_{ht} levels that have been calculated to be below 0dB, this indicates the level of sound was below the target species hearing threshold and they would not be able to perceive it

Table 11-4 dB_{ht} RMS sound levels for fish for each measurement area on 2 April 2014

Day 1: 02-04-2014		RMS dB_{ht} (Species)				
Area		Bass	Cod	Dab	Herring	Salmon
1	Max	19.9	38.2	21.0	44.6	15.1
	Min	-4.2	24.2	0.7	30.4	1.3
	Mean	9.6	30.3	10.1	38.9	6.6
2	Max	30.7	52.2	38.6	54.4	31.3
	Min	1.6	20.6	-0.1	27.1	-4.5
	Mean	12.9	32.4	13.6	38.5	9.7
3	Max	9.5	35.2	24.9	41.1	13.1
	Min	-16.8	3.1	-13.4	8.2	-17.5
	Mean	1.9	26.2	14.8	31.8	4.6
4	Max	31.5	51.4	36.6	56.2	30.3
	Min	8.5	27.9	11.2	34.4	4.2
	Mean	19.0	39.3	23.2	44.6	16.9
Overall	Max	31.5	52.2	38.6	56.2	31.3
	Min	-16.8	3.1	-13.4	8.2	-17.5
	Mean	11.5	32.0	14.6	38.4	9.3

Table 11-5 dB_{ht} RMS sound levels for fish for each measurement area on 3 April 2014

Day 2:03-04-2014		RMS dB_{ht}(Species)				
Area		Bass	Cod	Dab	Herring	Salmon
1	Max	26.7	44.8	28.8	52.5	23.6
	Min	-0.4	16.5	-4.1	26.3	-5.5
	Mean	14.8	32.8	14.4	40.7	10.6
2	Max	39.0	62.4	49.6	66.1	40.5
	Min	-1.6	15.2	-4.5	25.1	-9.5
	Mean	15.0	35.4	18.8	40.7	13.3
3	Max	22.4	43.2	33.4	69.6	43.6
	Min	-8.6	11.7	-5.4	34.1	6.8
	Mean	1.3	25.8	13.2	47.8	20.2
4	Max	7.7	26.0	16.5	35.3	5.1
	Min	-1.7	17.1	6.0	27.3	-5.8
	Mean	0.5	22.1	11.6	30.3	-0.4
Overall	Max	39.0	62.4	49.6	66.1	40.5
	Min	-8.6	11.7	-5.4	16.9	-9.5
	Mean	12.1	32.7	16.8	38.7	10.5

11.4.34 It can be seen that the vast majority of dB_{ht} levels for fish (bass, cod, dab, herring and salmon) are less than 50 dB_{ht}. It should be noted that the measurements taken in close proximity to the moored ships and the water intakes rarely exceed 50 dB_{ht}. Exceedences of 50 dB_{ht} are evident within **Table 11-4** and **Table 11-5** with regard to herring and cod, as these species are considered to be hearing specialists.

Summary of underwater noise modelling results

11.4.35 The results of the underwater noise model with specific regard to noise generated as a result of impact piling, dredging and increased vessel activity are presented in **Section 8.4**.

11.5 Assessment of potential impacts during construction

Effects on the fisheries resource from changes to marine water quality

11.5.1 As discussed in **Section 5**, a proportion of the material that is dredged and disturbed during piling would be disturbed and re-suspended into the water column. Hence, the construction phase would result in temporary increases in the TSS concentrations of the water column. The proposed dredging

operations also have potential to release contaminants bound to seabed sediments into the water column, making them potentially available for uptake by marine organisms, with consequent biological effects. For example, contaminants can cause morphological and reproductive changes in shellfish, fish and benthic invertebrates.

11.5.2 An increase in the TSS concentration in the water column would increase turbidity and reduce the depth of water that light can penetrate and, therefore, the amount of light available for primary production by any phytoplankton and marine algae at depth. Such impacts on phytoplankton and marine algae can impact upon food availability for fish species. At high levels and/or for prolonged periods of time, an increase in TSS concentrations can impact upon fish through clogging of gill lamellae, potentially leading to death, whilst lower concentrations can result in sub-lethal stress or avoidance reactions. Larvae and juvenile fish may be more susceptible to adverse physiological effects than mature fish as their sensory systems are less well developed. Consequently, they are less able to detect and avoid adverse conditions.

11.5.3 The re-suspension of sediment as a consequence of the proposed dredging could also potentially affect dissolved oxygen levels in the water column, particularly during summer months.

11.5.4 The proposed dredging activities within the berth pocket for Phase 1 of both forms of quay construction are currently programmed for the summer months. Dredging of the river channel for Phase 1 and dredging for Phase 2 of both forms of quay construction are anticipated to be undertaken during the winter months. The proposed timing of the dredging operation during Phase 1 dredging of the river channel and Phase 2 for both forms of quay construction (open quay and solid quay structure) significantly reduces the potential for disturbance to migrating salmon and sea trout associated with temporary reductions in water quality, given the minimal numbers of migrating salmonids during the winter months within the Tees estuary.

11.5.5 In general, sediment plumes induced by dredging are considered to pose only a limited risk to water quality (and subsequently fish species) since the affected water usually has the capacity to accommodate an increased oxygen demand, particularly where dredging takes place in open sea or estuaries (CIRIA, 2000). The tidal exchange within the Tees estuary would remain unrestricted during the construction and operation phase, and peaks in TSS are only expected on a short term basis during Phase 1 and Phase 2. During dredging, the silts and clays disturbed would rapidly disperse away from the location of the dredge due to the relatively high current speeds in the unconfined area.

11.5.6 As discussed within **Section 3.1**, it is proposed that the Phase 1 dredging works are to be carried out by a TSHD for the softer materials and by backhoe for the marl. Dredging for Phase 2 is likely to be carried out by a CSD. Backhoe dredging is considered likely to minimise the resuspension of sediment into the water column (assuming best operational practice is implemented during dredging).

11.5.7 The tidal exchange within the Tees estuary would remain unrestricted during dredging, which is anticipated to rapidly dilute and disperse temporarily increased suspended sediment concentrations.

11.5.8 In general, estuarine fish have a degree of tolerance to conditions of high TSS, as concentrations can vary significantly in response to tidal conditions and other events such as storms (increased wave action) and high rainfall. The Tees estuary is regularly maintenance dredged for navigation purposes using TSHD, and therefore fish species present are likely to have become accustomed to temporarily increased levels of suspended sediment.

11.5.9 As discussed within **Section 7.4**, the quality of the sediment within the construction and dredge footprint was not known at the time of writing this PER, as laboratory analysis of the sediment samples had not been completed. Given that the majority of the Phase 2 dredging and a proportion of the dredging for Phase 1 is likely to be in the marls (rock), the potential for contaminants to be present within this material (which could subsequently impact upon fish due to resuspension) is considered to be low.

11.5.10 It is considered that there is greater potential for contamination to be present within the overlying sands, gravels and silts present on the sea bed. These deposits are anticipated to comprise the majority of the material to be dredged during Phase 1 of the proposed scheme. On this basis, it is considered that there is a greater risk of contaminants impacting estuarine water quality during Phase 1 of the proposed scheme in comparison with Phase 2. However, the unconstrained nature of the tides within the Tees estuary would be likely to dilute the concentration of contaminants resuspended into the water column during dredging. As the concentration of contaminants within the sediment was unknown at the time of writing, it was not possible to determine whether dilution by the tides would reduce concentrations of contaminants to acceptable levels to prevent impacts to fish. This impact will be fully assessed within the EIA however, with the results presented in the ES.

11.5.11 Based on the discussion above, it is considered that the potential for an adverse effect on the fisheries resource (a medium sensitivity receptor) as a result of reduced water quality (increased TSS concentrations) from dredging and piling is very low, and an impact of negligible significance is anticipated.

11.5.12 The impact to fish due to reductions in water quality from resuspension of contaminants is currently unknown and will be assessed once site specific sediment quality data is available.

Potential mitigation measures

11.5.13 As noted above, dredging works are to be undertaken by a combination of TSHD, CSD and backhoe. Mitigation measures associated with all three forms of dredging are presented below.

11.5.14 Limiting re-suspension of sediment during TSHD can be achieved through the following measures:

- Trailing velocity, position of the suction mouth and the discharge of the pump can be optimised with respect to each other.
- Any reduction in the intake of water by the suction head means a more dense pay load, thus reducing or avoiding the need for overflowing. This can be achieved by directing the flow lines of the

suction stream to the actual point of excavation, thus making better use of the erosive capacities of the flow of water into the suction head.

11.5.15 Backhoe dredging is the most environmentally acceptable approach as this would result in a significantly lower release rate of sediment to the water column compared with, for example, typical CSD or TSHD. The main measure that can be adopted to minimise losses of sediment to the water column during dredging activities with the backhoe dredger is to use an experienced operator, as control over the dredging equipment is one of the main factors affecting sediment disturbance during backhoe dredging. Other measures that limit plume generation comprise limiting the swing of the backhoe over water, thereby reducing the time when sediment can leak out of the bucket. In addition, the practice of smoothing the excavated area by dragging the backhoe bucket along the bottom should be avoided (CIRIA, 2000).

11.5.16 The re-suspension of sediment caused by CSD can be reduced through optimising the cutter speed, swing velocity and suction discharge, shielding the cutter head or suction head and optimising the design of the cutter head.

Direct uptake and disturbance of fish, fish eggs, shellfish and food resources during dredging

11.5.17 During the capital dredging, there is the potential for fish, fish eggs, shellfish and the food resources on which fish rely to be taken up directly by the dredger. Potential effects are injury, mortality and displacement. The potential for direct uptake is greatest for demersal species (i.e. those which live on the seabed) such as flatfish. The temporary disturbance to a localised area of seabed is likely to result in an avoidance reaction, with the presence of the dredge head likely resulting in fish moving away from the area, thereby avoiding direct uptake.

11.5.18 Based on our existing knowledge of the overall ecological condition of the subtidal habitat within the Tees estuary (gained from the studies undertaken to inform the QEII berth EIA and the NGCT EIA), it is predicted that the approach channel would contain subtidal benthic communities which are well represented in the Tees estuary, of relatively low diversity and characteristic of disturbed conditions. In addition, the approach channel (which requires local capital dredging to accommodate Phase 2 of the proposed scheme) is subject to regular maintenance dredging to maintain the advertised depths and, as such, is not expected to represent an important spawning or feeding ground for fish species. The direct disturbance to a localised area of the subtidal habitat as a result of the dredging activity is, therefore, considered unlikely to impact upon fish feeding activities within the estuary.

11.5.19 The ecological condition of the berth pocket and approach channel was unknown at the time of writing the PER as the results of the benthic ecological survey were not available. However, it is considered likely that the benthic habitats within the berth pocket would be representative of a typical estuarine benthic environment. As relevant site specific information regarding benthic ecology was not available at the time of writing, it was not possible to assign a significance rating to this impact. This impact will be assessed fully during the EIA once site specific data is available and the results presented in the ES.

Potential mitigation measures

11.5.20 The requirement for the implementation of mitigation measures will be determined during the EIA once all baseline information is available. Mitigation measures could include ensuring that the dredge footprint is minimised as far as possible within the design of the scheme, and using suitably qualified and experienced dredging plant operators.

Potential effects of construction noise and vibration on fish

11.5.21 Certain aspects of the construction phase may have the potential to impact on fish due to the generation of underwater noise and vibration. This particularly relates to piling activities, but also to noise and vibration generated during dredging. There is also the potential to affect fish migration through the estuary and effects on fish distribution.

11.5.22 When assessing the potential impact of noise on fish populations, it is important to consider the nature of the existing noise in the environment and therefore to assess the potential impacts associated with construction activities, such as piling, in this context. As discussed in **Section 11.4**, the Tees estuary has a relatively high level of underwater noise due to the high level of shipping, engines and generators positioned on vessels which are audible along the entire length of the main channel. Shipping activity was identified as the main source of anthropogenic noise in the Tees estuary. Increased shipping activity during the construction phase therefore has potential to disturb both migratory and resident fish species.

11.5.23 Also of concern is the noise and vibration generated during piling operations for the proposed port terminal. In the worst case scenario, excessive noise may lead to temporary behavioural disturbance of resident fish species and even mortality. Given that the piles are to be installed within the main channel (rather than within a dock, for example), there is potential for noise disturbance to impact upon salmonid migrations throughout the estuary in addition to causing disturbance to resident species.

11.5.24 An interpretation of the underwater noise modelling results (Subacoustech, 2014) has been undertaken in accordance with the assessment criteria presented in **Section 8.4** to inform this impact assessment. The species of fish which were considered within the underwater noise modelling assessment were dab, herring, salmon, sandeels and sea trout. The results of the interpretation are presented below.

Unweighted metrics

11.5.25 The underwater noise source level from impact piling operations, using a hammer with maximum blow energy of 125 kJ, was estimated to be 223.5 dB re 1 µPa at 1m (SPL_{peak}) (Subacoustech, 2014). This noise source level exceeds the threshold for physical injury of 220 dB re 1 µPa (SPL_{peak}) value (Parvin *et al*, 2007), however, does not exceed the threshold for a lethal effect (240 dB re 1 µPa (SPL_{peak})). The information in **Table 11-6** presents a summary of impact ranges to which the various unweighted criteria are estimated to extend with regard to fish.

Table 11-6 Summary of modelled ranges for unweighted peak SPLs for impact piling operations

Criteria and effect	Species	Maximum range	Minimum range	Mean range
206 dB re 1 µPa (physical injury)	Fish	10m	8m	9m
200 dB re 1 µPa (behavioural effect)	Fish	22m	18m	20m

11.5.26 As illustrated above, the maximum range to which 206 dB re 1 µPa (SPL_{peak}) extends, indicating physical injury to fish (FHWG, 2008), is predicted to be 10m. The maximum impact range for the 200 dB re 1 µPa (SPL_{peak}), indicating a behavioural effect, is predicted to be 22m.

11.5.27 The source levels for the noise from dredging operations (165 dB re 1 µPa and 183 dB re 1 µPa for a backhoe and suction dredger respectively) are below the criteria discussed above. As such, physical injury and behavioural effect as a result of noise generated from dredging operations are not anticipated.

The dB_{ht} (species) criteria

11.5.28 The 130 dB_{ht} (species) perceived level is used to indicate traumatic hearing damage over a very short exposure time. **Table 11-7** shows the ranges to which traumatic hearing damage may occur.

Table 11-7 Summary of modelled ranges for 130 dB_{ht} (species) levels for impact piling

Impact piling		130 dB_{ht} (species)	
		North position	South position
Dab	Maximum	<2m	<2m
	Minimum	<2m	<2m
	Mean	<2m	<2m
Herring	Maximum	16m	18m
	Minimum	14m	14m
	Mean	15m	17m
Salmon	Maximum	<2m	<2m
	Minimum	<2m	<2m
	Mean	<2m	<2m
Sand lance	Maximum	<2m	<2m
	Minimum	<2m	<2m
	Mean	<2m	<2m

Impact piling		130 dB_{ht} (species)	
		North position	South position
Sea trout	Maximum	<2m	<2m
	Minimum	<2m	<2m
	Mean	<2m	<2m

11.5.29 As illustrated in **Table 11-7**, the maximum impact range for the 130 dB_{ht} (species), indicating traumatic hearing damage to fish from impact piling, is 18m (with specific regard to herring). For all other fish species considered, the maximum impact range is predicted to be less than 2m.

11.5.30 The data in **Table 11-8** provide a comparison of the estimated 90 and 75 dB_{ht} (species) impact ranges for behavioural response for the species of interest from impact piling.

Table 11-8 Summary of modelled ranges for 90 and 75 dB_{ht} (species) levels for impact piling operations

Impact piling		North position		South position	
		90 dB_{ht} (species)	75 dB_{ht} (species)	90 dB_{ht} (species)	75 dB_{ht} (species)
Dab	Maximum	38m	222m	40m	262m
	Minimum	24m	24m	20m	20m
	Mean	32m	124m	34m	153m
Herring	Maximum	1.95km	2.75km	2.37km	4.89km
	Minimum	24m	24m	20m	20m
	Mean	482m	511m	551m	632m
Salmon	Maximum	40m	274m	54m	392m
	Minimum	24m	24m	20m	20m
	Mean	35m	140m	42m	208m
Sand lance	Maximum	12m	60m	14m	80m
	Minimum	10m	24m	10m	20m
	Mean	11m	49m	11m	58m
Sea trout	Maximum	14m	72m	16m	90m
	Minimum	12m	24m	14m	20m
	Mean	13m	55m	15m	65m

11.5.31 As shown in **Table 11-8**, the estimated impact ranges from impact piling are anticipated to be less than 400m for dab, salmon, sand lace and sea trout. The largest impact range is predicted for herring at 4.89km, where the 75 dB_{ht} (species) impact range extends to the river bank for all modelled transects. **Figure 11-11** to **Figure 11-15** show the impact ranges in the form of contour maps.

Figure 11-11 Contour plot showing the predicted 90 and 75 dB_{ht} levels for dab

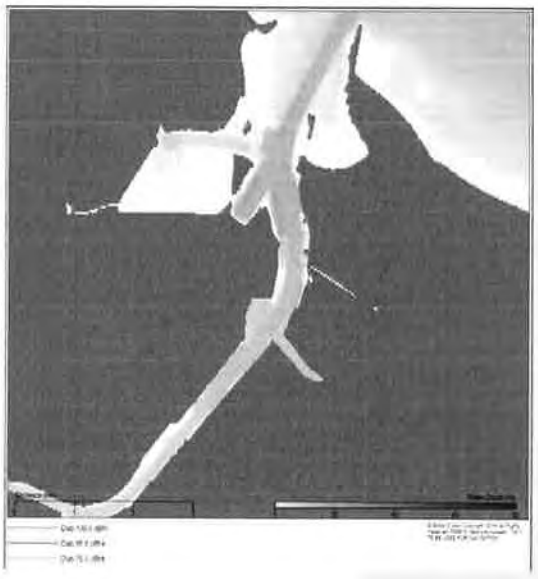


Figure 11-12 Contour plot showing the predicted 130, 90 and 75 dB_{ht} levels for herring

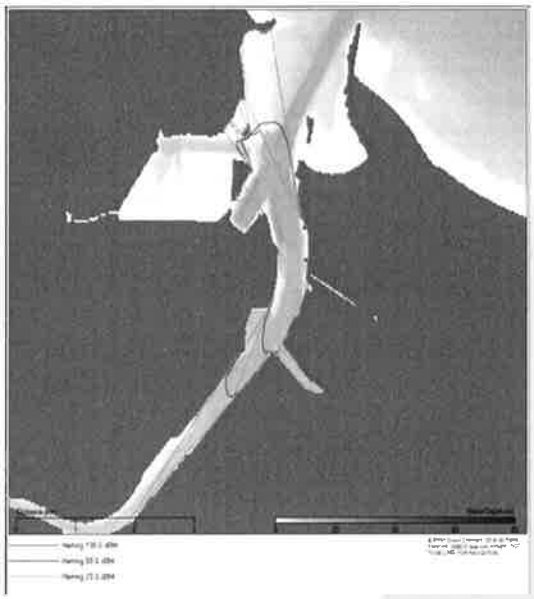


Figure 11-13 Contour plot showing the predicted 90 and 75 dB_{ht} levels for salmon

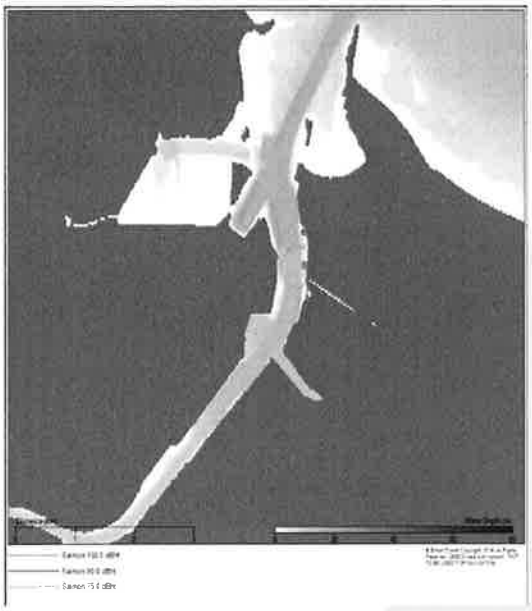


Figure 11-14 Contour plot showing the predicted 90 and 75 dB_{ht} levels for sand lace

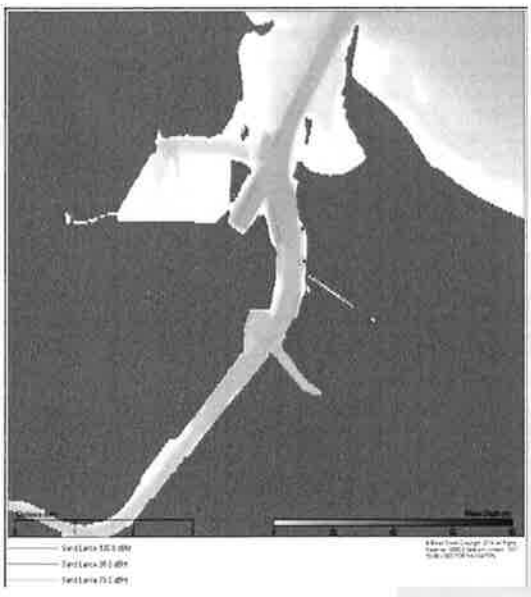
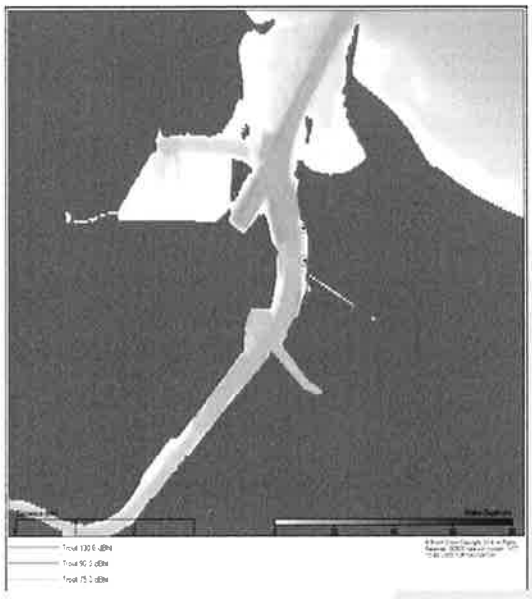


Figure 11-15 Contour plot showing the predicted 90 and 75 dB_{ht} levels for sea trout



11.5.32 The data in **Table 11-9** provides a comparison of the estimated 90 and 75 dB_{ht} (species) impact ranges for behavioural response from backhoe and suction dredging.

Table 11-9 Summary of modelled ranges for 90 and 75 dB_{ht} (species) levels for backhoe and suction dredging operations

Species		Backhoe dredging		Suction dredging	
		90 dB_{ht} (species)	75 dB_{ht} (species)	90 dB_{ht} (species)	75 dB_{ht} (species)
Dab	Maximum	<5m	<5m	<5m	15m
	Minimum	<5m	<5m	<5m	10m
	Mean	<5m	<5m	<5m	13m
Herring	Maximum	<5m	10m	30m	330m
	Minimum	<5m	10m	30m	165m
	Mean	<5m	10m	30m	250m
Salmon	Maximum	<5m	<5m	<5m	10m
	Minimum	<5m	<5m	<5m	10m
	Mean	<5m	<5m	<5m	10m
Sand lance	Maximum	<5m	<5m	<5m	10m
	Minimum	<5m	<5m	<5m	5m
	Mean	<5m	<5m	<5m	8m
Sea trout	Maximum	<5m	<5m	<5m	<5m
	Minimum	<5m	<5m	<5m	<5m
	Mean	<5m	<5m	<5m	<5m

Summary of underwater noise modelling results

11.5.33 The underwater noise modelling has predicted that physical traumatic injury to fish species could occur out to 10m from the source of the impact piling noise; a startle reaction to fish is predicted to occur out to 22m from the source of impact piling noise (using unweighted SPL_{peak} noise criteria). Modelling of underwater noise from backhoe and suction dredging operations has predicted that noise levels would not be sufficient to reach the unweighted criteria for lethal effect, physical injury or behavioural response.

11.5.34 The largest estimated range out to which traumatic hearing damage may occur from impact piling using the 130 dB_{ht} (species) criteria is predicted to be 18m for herring. The impact range for all other species is predicted to be less than 2m. The modelled dB_{ht} (species) sound propagation for backhoe and suction dredging is not predicted to reach the level at which traumatic hearing damage could occur.

11.5.35 The impact range for behavioural response is indicated using the 90 and 75 dB_{ht} perceived level criteria. Modelling for behavioural response shows that the impact range from impact piling for herring is 2.37km, for 90 dB_{ht}. For 75 dB_{ht}, the maximum range reached 4.89km for herring (the distance to the bankside from the noise source). The estimated behavioural impact ranges from impact piling operations are predicted to be significantly lower for dab, salmon, sand lance and sea trout (given their reduced hearing ability in relation to herring). The 90 and 75 dB_{ht} impact ranges for backhoe and suction dredging are predicted to be 10m or less.

Conclusion

11.5.36 The modelling results have predicted that the source noise levels would not result in a lethal effect on fish, however, traumatic injury could arise if fish are located within very close proximity to the source of the impact piling noise. The modelling work has predicted that there is greater potential for behavioural response within fish species in comparison with traumatic injury (from impact piling), due to the larger modelled impact range for a behavioural response (particularly in the case of herring).

11.5.37 However, piling activities would not present a constant noise source and those periods between pile driving (e.g. when repositioning the piling barge) would provide opportunity for unimpeded movement of fish species within the estuary. The noise disturbance to fish due to piling would be reversible once such operations are completed. It should also be noted that existing noise generated by shipping and industrial activity on the banks of the Tees estuary are already likely to influence the fish distribution within the estuary.

11.5.38 It is predicted that the overriding consequence of the generation of noise during piling operations (as well as the dredging and construction activities) would be for fish to move away from the source. Therefore, in the worst case, the construction works would be expected to result in the localised redistribution of resident fish species and disturbance to migration patterns of fish throughout the Tees estuary.

11.5.39 The sensitivity of the various fish species present within the estuary ranges, hence a conservative estimate of high sensitivity has been used in the impact assessment. Based on the information presented above, the magnitude of the impact to fish species as a result of noise and vibration is considered to be medium. An impact of moderate adverse significance is, therefore, anticipated to arise to fish as a result of underwater noise and vibration.

Potential mitigation measures

11.5.40 The mitigation measures identified within **Section 8.5 (Paragraph 8.5.41 to 8.5.43)** would also be of relevance to this impact. With the implementation of the mitigation measures outlined within **Section 8.5**, a residual impact of minor adverse significance is anticipated.

Potential effects of accidental spillages of oils, fuels and chemicals from vessels

11.5.41 There is the potential for accidental releases of substances into the marine environment which could result in a pollution incident and consequently impact upon health of marine species. The implications of a pollution incident on water quality and therefore other environmental parameters such as marine ecology and fisheries are highly dependent on both the nature of the substance released and the scale of the incident.

11.5.42 As it is difficult to quantify the likely amount (and nature) of any spillages or leakages into the marine environment, it is not possible to predict the significance of the potential impact. However, the risk of a pollution incident occurring and its impact on fish could be controlled through the implementation of mitigation measures.

Potential mitigation measures

11.5.43 The mitigation measures outlined within **Section 8.5 (Paragraph 8.5.46 to 8.5.48)** would also be of relevance to this impact.

11.5.44 With the above mitigation measures in place, it is anticipated that the consequences of a pollution incident would be minimised as far as possible.

Disturbance to fishing activity

11.5.45 Most commercial fishing activity takes place outside of the Tees estuary, although there is a small amount of fishing targeted at lobster (*Homarus gammarus*) and velvet swimming crab (*Necora puber*) in the lower estuary during summer. The digging of lugworms, ragworms and peeler crabs takes place in the intertidal mud and sandflats of the outer estuary and adjacent coast. Based on this, it is anticipated that there would be no direct impact to fishing activity as a result of the proposed scheme.

Potential mitigation measures

11.5.46 No mitigation measures are proposed. There would be no residual impact.

11.6 Assessment of potential impacts during operation

Potential impact on feeding resources for fish due to maintenance dredging

11.6.1 Estuarine fish feed from a wide range of benthic invertebrates which live within and on the surface of the seabed; as such, impacts on this invertebrate resource can lead to a reduction in the value of an area as a feeding resource.

11.6.2 It is likely that there would be a requirement for maintenance dredging of the newly deepened part of the approach channel and berth pocket during the operational phase, to maintain the required operating depth. This would be necessary for both forms of quay construction, and would be likely to be

incorporated into the existing maintenance dredging operation within the Tees estuary. Maintenance dredging would prevent the succession of the invertebrate community within the dredge footprint, which has potential to impact upon the feeding resource for estuarine fish.

11.6.3 Both forms of quay construction would result in the direct loss of benthic habitat which could represent fish feeding grounds. The suspended deck option would result in the direct loss of a smaller area of benthic habitat in comparison with the reclamation option and, therefore, the reclamation option has potential for a greater direct impact on potential fish feeding grounds.

11.6.4 The ecological condition of the subtidal habitat within the pile and dredge footprints was unknown at the time of writing, as the results of the site specific benthic ecological survey were not available. However, as discussed within **Section 8.5 (Paragraphs 8.5.2 to 8.5.4)**, it is predicted that the benthic habitat within the approach channel (part of which is proposed to be dredged during Phase 2 of the scheme) is of relatively low diversity and characteristic of disturbed conditions due to regular maintenance dredging. Given this predicted existing context, recovery of the benthic community within the approach channel following capital dredging (in the absence of maintenance dredging) would not be expected to result in a significant food resource for fish and, therefore, the effect of maintenance dredging (within the proposed dredge footprint for the proposed scheme) is not considered significant for this area.

11.6.5 As the condition of the benthic habitat within the berth pocket (to be dredged during Phase 1 and Phase 2 of the proposed scheme) is currently unknown, it has not been possible to assign a significance rating to this impact. This impact will be fully assessed within the EIA once the site specific benthic ecological data is available, with the results presented in the ES.

Potential mitigation measures

11.6.6 Measures to mitigate the impacts to benthic communities due to maintenance dredging are limited, as this would be an unavoidable consequence of the scheme. In order to minimise the impact on the existing habitat, the disturbance footprint would be minimised where possible, within the constraints of infrastructure engineering and operability.

11.7 Summary

11.7.1 Tees Bay and the Tees estuary provide important habitats for a number of fish species which feed on benthic invertebrates found in subtidal and intertidal sediments. Environment Agency data on fish migrations shows that the month of May generally represents the start of the salmon and sea trout migration period, with migrations peaking during July or August. Salmon and sea trout migrations continue through to October and November, however the numbers of fish migrating during these months are significantly lower than the peak months. There is very limited commercial fishing activity within the Tees estuary itself, with most fishing efforts being undertaken offshore.

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11.7.2 A full assessment of the impacts to fish and the fisheries resource has not been undertaken within this PER as site specific sediment quality and benthic ecological data is not yet available (although these surveys have been commissioned, the results of the surveys were not available to fully assess the impacts to fish and fisheries). The impacts to fish and fisheries as a result of the proposed scheme will be fully assessed once the results of the benthic ecological survey and sediment quality survey are available.

12 TRANSPORT

12.1 Introduction

12.1.1 This section of the PER considers the likely highway, traffic and transport impacts of the proposed scheme upon members of the public and the surrounding local highway network, as either a direct or indirect result of the proposed scheme.

12.1.2 In order to consider these impacts this section describes the methodology that will be used to conduct the assessment and the baseline conditions for the site and surrounding area.

12.1.3 This section is only concerned with the likely impact of the proposed scheme during the construction phase. During the operational phase, only six full time members of staff would be employed at the harbour facility per shift during Phase 1, whilst eight full time members of staff would be employed per shift during Phase 2. This level of operational phase employment is considered negligible in transport terms. Operational phase impacts associated with traffic, therefore, have not been considered within this PER and will not be assessed in the EIA.

12.2 Policy, guidance and consultation

National Planning Policy Framework

12.2.1 Paragraph 29 of the NPPF sets out that transport policies have an important role to play in facilitating sustainable development, but also in contributing to wider sustainability and health objectives. It further states that the transport system needs to be balanced in favour of sustainable transport modes, giving people a real choice about how they travel. The Government recognises that different policies and measures will be required in different communities and opportunities to maximise sustainable transport solutions will vary from urban to rural areas.

12.2.2 The NPPF at paragraph 32 confirms that all developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment. Plans and decisions should take account of whether:

- The opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure.
- Safe and suitable access to the site can be achieved for all people.
- Improvements can be undertaken within the transport network that cost effectively to limit the significant impacts of the development.

12.2.3 The NPPF confirms that development should only be prevented or refused on transport grounds where the residual impacts of development are severe.

12.2.4 The NPPF goes on to state, at paragraph 35, that Local Plans should protect and exploit opportunities for the use of sustainable transport modes for the movement of goods or people. Therefore developments should be located and designed where practical to:

- accommodate the efficient delivery of goods and supplies;
- give priority to pedestrian and cycle movements, and have access to high quality public transport facilities;
- create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians, avoiding street clutter and where appropriate establishing home zones; and,
- consider the needs of people with disabilities by all modes of transport.

Local Planning Policy

Local Development Framework

12.2.5 RCBC's Core Strategy includes 10 aims to provide the framework for the strategic policies in the Local Development Framework (LDF), and those relevant to the transport and accessibility are as follows:

- To ensure development in the Borough supports the principles of sustainable development and secures sustainable communities.
- To improve the means of accessibility throughout the Borough and beyond.
- To accommodate development where it will provide the opportunities for people to satisfy their day to day needs locally or in locations which minimise the need to travel.
- To ensure that all development in the Borough is designed to a high quality and takes account of the wider impact on the environment and climate change.

12.2.6 Of particular relevance to the proposed scheme with regard to the transport and accessibility are the following Core Strategy Development Plan Document policies:

- Policy CS26 (Managing Travel Demand) notes that development proposals will be supported that improve transport choice, reduce the distance people need to travel, contribute towards a demand management strategy and encourage park and ride at public transport interchanges. The policy notes that the Council will support the implementation of Travel Plans to encourage sustainable transport.
- Policy CS27 (Improving Accessibility) focusses on improving accessibility within and beyond the Borough, focussing on improving bus and rail services, integration between various modes, improvements to the A66 and A174 road links to the A19 and beyond to the A1(M), measures to reduce congestion and enhancing freight access and interchange within Teesport.
- Policy CS28 (Sustainable Transport Networks) supports the development of pedestrian, cycling and equestrian networks including routes between urban and rural areas.

12.2.7 A Local Plan scoping document was published by RCBC in November 2012 which reviewed current LDF policies and concluded that the LDF transport policies are consistent with the NPPF and, therefore, will be retained for the emerging Local Plan.

Tees Valley Unlimited, Economic and Regeneration Statement of Ambition

12.2.8 Tees Valley Unlimited is the Local Enterprise Partnerships (LEPs) with a mandate to deliver jobs and economic growth across the Tees Valley. To help achieve these aims Tees Valley Unlimited has developed a Statement of Ambition 2011 which sets out the vision for the Tees Valley for the next 15 years. This focusses on delivering the benefits of the joined up and connected polycentric city region as the drive for economic growth and prosperity, making the best use of the asset of each town and district. Leading city region stakeholders have identified the following key challenges as being the most important:

- improve the journey experience of transport users of urban, regional and local networks, including interfaces with national and international networks;
- improve the connectivity and access to labour markets of key business centres; and
- deliver quantified reductions in greenhouse gas emissions within cities and regional networks, taking account of cross-network policy measures.

Local Transport Plan 2011 to 2021

12.2.9 RCBC's third Local Transport Plan, 2011-2021 (LTP3) was adopted in March 2011 and builds upon the Core Strategy and the LEP Statement of Ambition by setting five main goals for city and regional networks, namely:

- reduce carbon emissions;
- support economic growth;
- promote quality of opportunity;
- contribute to better safety, security and health; and
- improve quality of life and a healthy natural environment.

12.2.10 The following five policies have been identified as being critical in achieving the goals of the LTP3 and are considered to be of particular relevance to the application:

- PEG2 - Manage the demand for travel, in particular during peak periods. The package of measures will include car parking restraint and enforcement; providing informed travel choices; considerate land use planning.
- PEG3 - Make best use of the existing highway network, using the powers of the Traffic Management Act, under the control of the Traffic Manager.
- PEG4 - Address localised congestion issues, in particular through the development of Workplace Travel Plans and through localised traffic management schemes.

- PEG5 - Manage freight transport in the borough to provide reliability of journey times and minimise adverse environmental impacts.
- SSH1 – Improve Road Safety in the borough through a combination of education, encouragement, engineering and enforcement initiatives.

National Policy Statement for Ports

12.2.11 As stated later in this section, only six and eight operational phase staff would be employed at the harbour facility per shift during Phase 1 and Phase 2 respectively.

12.2.12 There would be no road based traffic entering and exiting the harbour facility to board or disembark ships docked at the port terminal. The product would be transported to the harbour via a conveyor system from the MHF. Ships would arrive at the port terminal to load directly from the conveyor sytem and then leave the port.

12.2.13 At the busiest construction period, it is predicted that there would be a maximum of 27 two-way HGV movements and 105 two-way consluction staff movements per day. It is therefore anticipated that the proposed development is unlikely to have significant transport implications; however this will be assessed fully during the EIA.

12.2.14 The NPS is relevant to ports where road traffic enters the port to board a ship or when a ship docks at a port and vehicles disembark. This type of port could have a traffic impact on the surrounding highway network if vehicles are delayed entering the port, resulting in a queue on the local highway network. In addition vehicles disembarking from a ship could have a traffic impact on the surrounding highway network as all the vehicles would enter onto the surrounding highway network during a very short period. As set out above, however, the proposed development would have no road based traffic boarding or disembarking ships docked at the port.

12.2.15 For the above reasons, it is not considered (in transportation and highway terms) that the NPS for Ports is applicable to the proposed scheme.

Guidelines for the Environmental Assessment of Road Traffic (1993)

12.2.16 The 'Guidelines for the Environmental Assessment of Road Traffic' (GEART), 1993 produced by the Institute of Environmental Assessment are for the assessment of the environmental effects of road traffic associated with major new developments.

Consultation

12.2.17 A summary of the comments received from PINS with regard to traffic and transport during January 2014 is presented in **Table 12-1**.

Table 12-1 Summary of scoping comments received from PINS of relevance to traffic and transport

Comment	Comment / section of PER in which comment has been addressed
Applicant may wish to consider consulting with the Highways Authority to determine any requirement for assessment of impacts on roads under their ownership	To be undertaken during the subsequent stage of the EIA process
The TA should set out how traffic movements have been predicted and what models have been used to inform the assessment	To be undertaken during the subsequent stage of the EIA process
The applicant should consider whether an abnormal load assessment is required	The requirement for such an assessment would be confirmed during the subsequent stage of the EIA process
Information on the number and size of vessels likely to use the port should be provided The assessment should also reflect the proposed operating hours of the facility	Section 3 2 1 These points have been noted for the subsequent stage of the EIA process
The assessment should consider how waste will be removed from the site	To be undertaken during the subsequent stage of the EIA process
If materials are to be brought to the site by barge, the SoS would expect the ES to include a detailed assessment of the impacts associated with barge transport This should include increased traffic movements in the port location, methods of transporting material from the barge to land and effects arising from such transportation (e g increased dust, spillages etc)	Section 16 3 These points have been noted for the subsequent stage of the EIA process

12 2 18 RCBC was consulted on 7 March 2014 concerning the traffic surveys which were commissioned for the study area for the proposed scheme RCBC responded in an email dated 7 March 2014 that, given the ongoing road works on the A174/A1042 roundabout the survey results would give a worst case scenario for the A1085 trunk road due to the traffic diversion

12 2 19 At a meeting with RCBC on 24 April 2014 it was agreed that, due to the road works impacting on the March 2014 surveys, the traffic surveys used to inform the Transport Assessment produced by Ashley Helme Associates for a residential development at land at the Markse Estate (planning application ref: R/2013/0669/OOM) would be used for the morning and evening peak hour assessment for the proposed scheme

12 2 20 In addition, it was agreed that the A66/A1053 Tees Dock Road roundabout junction should be included in the assessment, if construction access into the site is taken from this junction Subsequent to the meeting with RCBC, it has been confirmed that no construction vehicles would access the site from the A66/A1053 Tees Dock Road roundabout and therefore this junction will not be assessed

12.2.21 In terms of committed development, it has been agreed that the assessment will take into account the proposed residential development on land in the Markse Estate although not all the development is to be taken account of as only part of the development is likely to be occupied prior to the completion of

the construction works associated with this proposed scheme It was agreed that the assessment should include 250 residential dwellings to be occupied during the construction period

12.2.22 RCBC also confirmed that both the A174 and the A66 are suitable for HGV construction vehicles, although the A174 should be used as the preferable route from the A19 As discussed in **Section 3**, it is proposed that combi-piles required for the solid quay structure would be delivered by ship to a load out facility complete with a land based crane in close proximity to the proposed scheme footprint RCBC confirmed that the A66 would be suitable for transporting such Abnormal Indivisible Loads, if required, from one of the existing docks to the west of the site

12.3 Methodology

Introduction

12.3.1 This section describes the assessment methodology, including data collation impacts and impact assessment criteria that will be used in the traffic and access assessment

12.3.2 The baseline environmental studies, surveys and the impact assessment for transport will be conducted in accordance with the relevant best practice and standard methodologies, as follows:

- Guidance on Transport Assessments – Department for Transport March 2007
- Guidelines for the Environmental Assessment of Road Traffic (published by the former Institute of Environmental Assessment), 1993 (GEART)

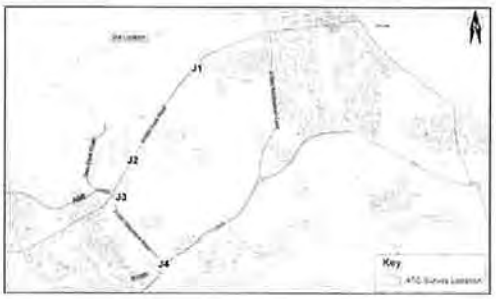
12.3.3 The study area has been informed by the location of the proposed site access and the most probable routes for traffic associated with the movement of materials, during the construction phases of the project, to access the site

12.3.4 It has been confirmed that the construction access to the site would be taken from two points at the existing A1805 Trunk Road/West Coatham Lane roundabout junction The construction route to the harbour site and part of the conveyor system route via the existing road serving the Wilton site and construction route for part of the conveyor system would be accessed from an existing approach arm located between the A1085 Trunk Road west arm and the existing access to the SSI Steel Works **Drawing PB1586-SK58** and **Drawing PB1586-SK59** shows the proposed construction access points and routes through the site

12.3.5 The proposed route taken to access the site from the A19 would be via the A174, A1053 and then onto the A185 Trunk Road

12.3.6 The study area as agreed with the Highway Authority is illustrated in **Extract 12-1 and Figure 12-1**

Extract 12-1 Study area for the traffic and access assessment

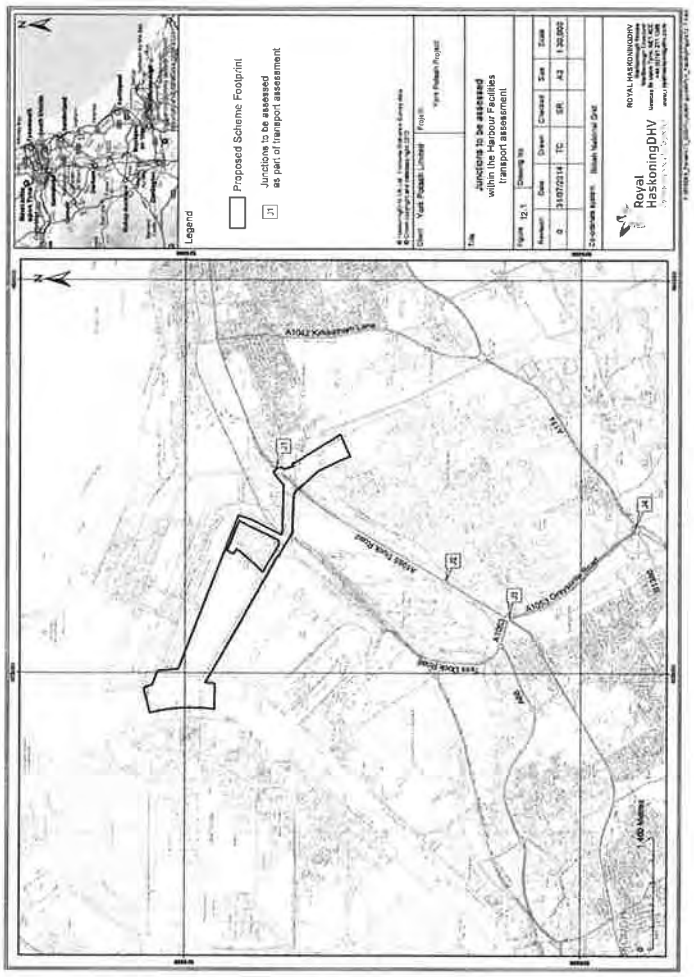


12.3.7 There are four key off-site junctions within the study area which will be assessed The key junctions to be considered are summarised in **Table 12-2**

12.3.8 In addition, as noted previously, further to consultation with RCBC the existing A66/A1053 Tees Dock Road roundabout junction will only be assessed if construction traffic is proposed to access the site from this junction

Table 12-2 Local highway network study area – key junctions

Junction Ref No	Junction Description
J1	A1085/W Coatham Lane Roundabout
J2	A1085/Industrial Access Roundabout
J3	A1085/A1053 Roundabout
J4	A1053/A174/B1380 Roundabout



Existing environment

12.3.9 Characterisation of the existing environment has been informed by a number of sources, including:

- traffic count data from the Department for Transport (DfT);
- comprehensive desktop studies and site visits;
- person injury collision data obtained from RCBC; and,
- traffic surveys commissioned by YPL, which include a classified turning traffic count survey at four key off-site junctions and automatic traffic count (ATC) surveys on the A1085, A1053, A174 and A1042. The survey locations are illustrated on **Figure 12-1**. The surveys were carried out in March 2014, as detailed in **Table 12-3**.

Table 12-3 Traffic surveys information

Junction/Link	Survey Time/Date	Data Source
Junctions J1, J2, J3 & J4 (described in Table 12.1)	07:30-09:30, 13:00-15:00, 16:30-18:30 Wednesday 12 March 2014	Traffic Survey Sub-Contractor (Classified Turning Counts)
Links including A1085, A1053, A174 and A1042	Full 7-day 12 March 2014 – 18 March 2014	Traffic Survey Sub-Contractor (7-day ATC)

Methodology for assessment of potential impacts

12.3.10 In accordance with GEART, the EIA will consider the periods when the greatest environmental impacts on sensitive receptors (as defined by affected groups) would be incurred. The greatest environmental effects typically occur when background traffic flows are low and, therefore, the proportion of development traffic is at its highest.

12.3.11 A three stage process is proposed for the assessment of the potential impacts, as outlined below.

Stage 1: Sensitivity receptors

12.3.12 GEART identifies that it is usual to identify particular groups or locations which may be sensitive to changes in traffic conditions and provides a checklist of sensitive locations and groups; however the list is not exhaustive and can be added to by the assessor. Sensitive locations include:

- hospitals;
- churches
- schools;
- tourist attractions, including historical buildings;
- open spaces and recreational sites; and,
- shopping areas

12.3.13 Sensitive groups include:

- children;
- the elderly;
- the disabled; and,
- people walking and cycling.

12.3.14 The assessment will mainly focus upon the sensitivity of roads or links which have been defined by the type of user groups who may use it (e.g. elderly people or children).

12.3.15 A sensitive area may be a village environment or where pedestrian or cyclist activity may be high, for example in the vicinity of a school.

12.3.16 A desktop exercise augmented by site visits has been undertaken to identify the sensitive receptors in the study area. The routes that are adjacent to (and therefore serving) the sensitive receptors have been assigned a sensitivity value according to the highest value receptor on the route under consideration. For example, a village road providing access to schools (high sensitivity receptors) and residential dwellings with good footways (low sensitivity receptors). Using the methodology adopted, such a road would be identified as a high sensitivity route.

12.3.17 All routes within the study area have been assessed and assigned link sensitivity. **Table 12-4** details the routes and the rationale used to determine link sensitivity.

Table 12-4 Link sensitivity

Link Description	Link Sensitivity	Rationale for link sensitivity
A1085 (Truck Road)	Low	A main (A) road designed to carry high quantities of traffic.
A1053 (Tees Dock Rd)	Low	A main (A) road designed to carry high quantities of traffic.
A1053 (Greystone Rd)	Low	A main (A) road designed to carry high quantities of traffic.
B1380 (High St)	High	The link is a main (B) road but has residential properties and a play area in close proximity to the road that could be susceptible to increases in traffic flow.
A174	Low	A main (A) road designed to carry high quantities of traffic.
A1042 (Kirkleatham Ln)	High	Although Kirkleatham Lane is a main A road, to the north the link passes close to many high sensitive receptors such as a school, and residential properties and is therefore considered to be susceptible to increase in traffic.

Stage 2: Screening process and sensitivity receptors

12.3.18 The following rules, taken from the GEART, will be used to inform the screening process and thereby define the extent and scale of assessment.

- Rule 1: Include highway links where traffic flows are predicted to increase by more than 30% (or where the number of HGVs is predicted to increase by more than 30%).
- Rule 2: Include any other specifically sensitive areas where traffic flows (or HGV component) are predicted to increase by 10% or more.

12.3.19 In justifying these rules, GEART examines the science of traffic forecasting and states:

'It is generally accepted that accuracies greater than 10% are not achievable. It should also be noted that the day to day variation of traffic on a road is frequently at least some + or -10%. At a basic level, it should therefore be assumed that projected changes in traffic of less than 10% create no discernible environmental impact.

a 30% change in traffic flow represents a reasonable threshold for including a highway link within the assessment.

12.3.20 Changes in traffic flows below these rules (thresholds) are assumed to result in no discernible or significant environmental effects and would not be assessed further as part of this study.

Stage 3: Assessments of impacts

12.3.21 The proposed impact assessment methodology has also been taken from GEART, which sets out consideration and, in some cases, thresholds in respect of changes in the volume and composition of traffic to facilitate a subjective judgement of traffic impact and significance.

12.3.22 In accordance with GEART, the environmental effects to be assessed are summarised in **Table 12-5**, along with high-level indicators of impact.

Table 12-5 Potential environmental effects

Environmental Effects	Indicators of Impact
Severance	GEART suggests that changes in total traffic flow of 30%, 60% and 90% are considered to be slight, moderate and substantial respectively.
Pedestrian Amenity (including cyclists)	GEART suggests that a threshold of a doubling of total traffic flow or the HGV component may lead to a negative impact upon pedestrian amenity.
Fear and Intimidation	GEART indicates that the change of total traffic flows of less 600vehicles/hr, or 1000 HGV/18 hour registers a moderate impact.

Environmental Effects	Indicators of Impact
Driver Delay	Driver delay caused by the construction of the proposals is considered as delay due to the additional construction traffic generated by the project, which would occur along the potential delivery routes to the application site. It is stated in GEART in Paragraph 4.35 that 'these delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system'. Key highway operational performance indicators are considered by the highway capacity assessments using the specialist software modelling packages for the various different forms of junction that are present within the Local Highway Network Study Area.
Accidents & Safety	Analysis of Personal Injury Collision Records to identify clusters (sensitivity). Volume 13 in DMRB sets out a predictive formula for estimating accidents at various types of links and junctions. The accompanying text to the predictive formula notes that it is only sensitive to changes in Annual Average Daily Traffic (AADT) flows of 1,000 vehicles. This threshold has therefore been applied in undertaking the highway safety impact assessments.
Noise & Vibration	To be considered by a separate section and to adhere to current industry guidance.
Air Quality	To be considered by a separate section and to adhere to current industry guidance.

12.3.23 **Table 12-6** details the definition of magnitude of effects adapted from GEART. These thresholds are guidance only and provide a starting point by which transport data would inform an analysis of the effects magnitude.

Table 12-6 Magnitude of effects

Effect	Magnitude of Effects			
	Very Low	Low	Medium	High
Severance	Change in total traffic flow of less than 30%	Change in total traffic flows of 30-60%	Change in total traffic flows of 60-90%	Changes in total traffic flows of over 90%
Pedestrian amenity (inc. cyclists)	Changes in traffic flow (or HGV component) less than 100%		Greater than 100% increase in traffic (or HGV component) and a review based upon the quantum of vehicles, vehicle speed and pedestrian/cycle demand	
Highway safety	Change in traffic flows less than +500 AADT	Change in traffic flows less than +1000 AADT	Change in traffic flows greater than +1000 AADT	Change in traffic flows greater than +3000 AADT

Effect	Magnitude of Effects			
	Very Low	Low	Medium	High
Driver delay (Highway Operation)	Where the With-Development traffic demand is within the practical reserve capacity of the junction and is an insignificant increase in comparison to the Planning Baseline	Where the With-Development traffic demand is within the practical reserve capacity of the junction although a significant increase in traffic flows will arise in comparison to the Planning Baseline	Where the With-Development traffic demand exceeds practical reserve capacity of the junction due to the additional development traffic (when the Planning Baseline scenario would operate in excess of practical reserve capacity in any event)	Where the With-Development traffic demand exceeds capacity of the junction due to the additional development traffic (whereas the Planning Baseline scenario would operate within practical reserve capacity)

12.3.24 **Table 12-7** sets out the assessment matrix adopted for routes that meet the screening criteria (Rules 1 and 2) and combines the initial impact assessment derived from the magnitude of effects presented in **Table 12-6** with the receptor value presented in **Table 12-4** to determine impact significance.

Table 12-7 Matrix for determining impact significance

Receptor sensitivity	Magnitude of effect			
	High	Medium	Low	Very Low
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible

12.4 Existing environment

12.4.1 This section describes the baseline conditions in relation to the local highway network, traffic flow conditions, high safety and the accessibility of the site by sustainable modes of transport.

Local highway network

12.4.2 The existing highway network that comprises the study area is identified in **Figure 12-1** and the key roads and associated junctions are described below.

12.4.3 As illustrated on **Figure 1-2** and **Figure 1-3**, the proposed scheme footprint is located adjacent to the Tees estuary and to the north west of the A1085 trunk road. The site is bounded by SSI Steel Works to

the north-east, by the NWL Sewage Treatment Plant by the south-east, by Dabholm Gut to the south-west.

12.4.4 The A1085 commences from Grangetown to the south-west of the site, via a roundabout junction with the A66 and A1053. The A1085 runs in north-east direction, continues through Redcar before heading south-east along the coast and then south through Marske-by-the-Sea. The A1085 terminates to the south of Marske-by-the-Sea at a roundabout junction with the A174.

12.4.5 On the A1085, there is an existing roundabout identified as Junction 1 (J1) on **Figure 12-1**. This is a five-arm roundabout that provides access to the SSI Steel Works to the north, the Dormanstown Industrial Estate / Dormanstown residential area to the east and the Wilton Complex to the south.

12.4.6 The A1085 at this junction is a dual carriageway road with two lanes in each direction although it does become a single carriageway with two lanes in both directions about 1km each side of the roundabout. All the other arms of the roundabout are single carriageway roads.

12.4.7 As shown on **Figure 12-1**, approximately 2.5km to the south west of J1 is another at grade roundabout on the A1085, identified as Junction 2 (J2), which provides access to the SSI Steel Works to the north and a Freightliner depot to the south. To the north of this roundabout the A1085 is a single carriageway road with two lanes in each direction whilst to the south it is a dual carriageway road with two lanes in each direction.

12.4.8 At Grangetown, the A1085 connects with the A1053 Greystone Road in the form of a four-arm signalised roundabout, which is identified as Junction 3 (J3) on **Figure 12-1**. The A1085 at this roundabout is a dual-carriageway with two lanes in each direction. The A1053 is a dual-carriageway road with two lanes in each direction, and subject to the National Speed Limit.

12.4.9 The A1053 runs southwards and links to the A174 and B1380 in the form of a four-arm signalised roundabout identified as Junction 4 (J4) on **Figure 12-1**. The B1380 is a local distributor road, which is a single carriageway with one lane in each direction. The B1380 provides access to the residential areas of Eston.

12.4.10 The A174 extends south-west from J4 and links to the A19. The A174 runs north-east from J4 and intersects with the A1042 Kirkleatham Lane in the form of a four-arm roundabout. Improvement works which commenced on this roundabout on 8 March 2014 are programmed for completion on 2 May 2014.

12.4.11 The A1042 is a single carriageway road with on-road cycle lanes in each direction. The road is street lit and subject to a 40mph speed limit with no frontage development.

12.4.12 From its junction with Stainlondale Avenue to the north, where the speed limit changes from 40mph to 30mph, the A1042 passes and provides access to sensitive receptors such as a school and residential properties.

Baseline traffic data

12.4.13 Existing traffic flow data for all the key roads and key junctions within the study area has been captured from a number of sources, namely:

- historical AADT flows from the DfT, and,
- traffic surveys (including classified turning count at the key junctions and ATC survey on key links) undertaken in March 2014.

12.4.14 Traffic turning count data has been analysed to identify the network peak hours as AM peak hour (07:45 to 08:45), inter peak hour (14:00 to15:00) and PM peak hour (16:45 to 17:45).

12.4.15 The surveyed AADT flows for the links in the study area are summarised in **Table 12-8**.

Table 12-8 2014 surveyed AADT data

Links Description	2014 Surveyed AADT		
	Vehicles	HGV	%HGV
ATC Location 1 A1042 (Kirkleatham Ln)	11,048	327	2.96%
ATC Location 2 A1085 (Trunk Road)	18,161	875	4.82%
ATC Location 3 A1053 (Greystone Road)	12,691	1,096	8.64%
ATC Location 4 A174	32,037	1,337	4.17%
DfT CP48684* A1053 (Tees Dock Road)	22,336	1,711	7.66%

*Note: AADT for DfT CP48684 was 2012 surveyed data.

Accessibility by sustainable travel modes

12.4.16 The existing accessibility of the proposed scheme footprint on foot, by cycle and by public transport has been assessed. Below is a summary of the existing accessibility of the site by sustainable modes of transport.

Accessibility on foot

12.4.17 It is widely acknowledged as good practice that walking is the most important mode of travel at the local level and offers the greatest potential to replace short car trips, particularly under 2km' (Office of the Deputy Prime Minister, 2001).

12.4.18 The eastern section of the proposed scheme footprint can currently be accessed by one Public Right of Way (ProW) that links to Tees Dock Road (**Extract 12-2**).

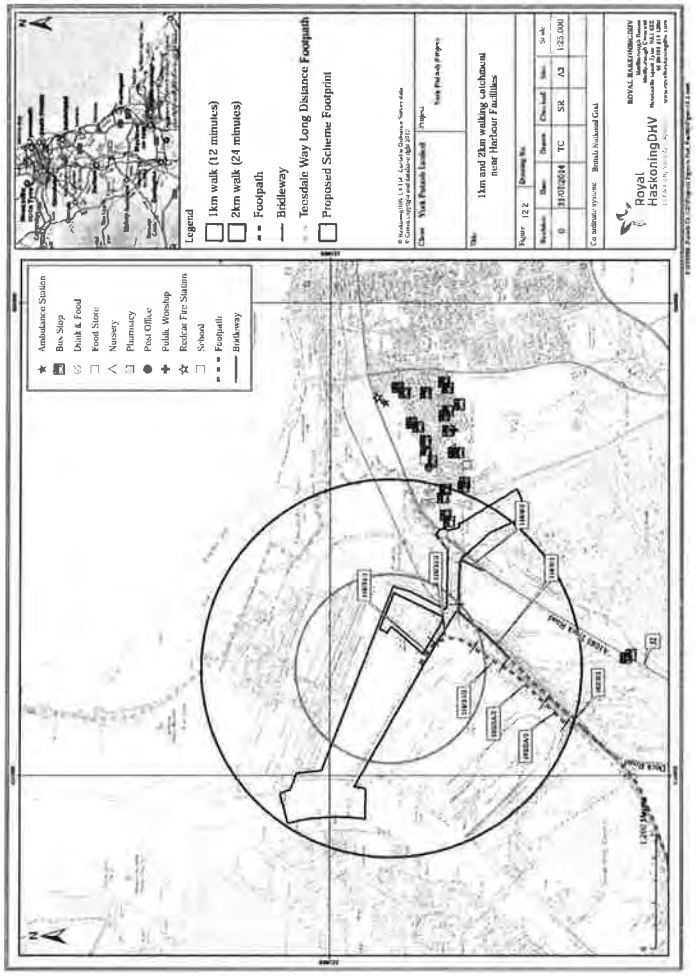
Extract 12-2 Public Rights of Way near the proposed scheme footprint

12.4.19 **Figure 12-2** has been prepared to illustrate the 1km (12 minutes) and 2km (24 minutes) walk catchments from the centre of the proposed scheme footprint. An indicative walking speed has been taken from the Chartered Institute of Highways and Transportation (CIHT) 'Guidelines for Providing for Journeys on Foot', which states that an average walking speed of approximately 1.4m/s can be assumed in most cases. This has been used to illustrate the area that is accessible on foot from the indicative centre of the site.

12.4.20 **Figure 12-2** shows that 1km walking catchment covers the whole proposed scheme footprint and part of the SSI Steel Works to the north and Teesport Estate to the south.

12.4.21 The 2km walking catchment covers the majority of the Teesport Estate site to the south and SSI Steel Works site to the north. A number of bus stops, which are located on West Coatham Lane, are also within 2km walk catchment.

12.4.22 The Cleveland Way and the Teesdale Way long distance footpaths are also located in proximity of the site. Both footpaths are safeguarded from any development which may prejudice their use (saved Local Plan Policies T05).



Royal HaskoningDHV

12.4.23 It should be noted that given the size of the proposed scheme footprint (approximately 30 hectares) and walking catchment presented in **Figure 12-2** (taken from the centre of the proposed scheme footprint), the only small established residential area located within walking distance of the site is Dormanstown.

Accessibility by cycle

12.4.24 It is widely acknowledged that cycling has the potential to replace short car journeys, particularly those under 5km. The cycle routes in the vicinity of the site are shown on **Extract 12-3**.

Extract 12-3 Cycle routes near the proposed scheme footprint

12.4.25 It can be seen that cycle routes to the site are mainly from the A1085 and A1053 Tees Dock Road. There is an existing National Cycle Route 1 running along the A174. Cyclists can also reach Middlesbrough via the A1085 trunk road.

12.4.26 Furthermore, based on saved Local Plan Policies T16, there is a proposed cycle route along the Black Path (also known at the Teesdale Way), and between Guisborough and Nunthorpe, together with associated areas to provide secure parking. However, as discussed in **Section 21**, RCBC is not actively pursuing the upgrade of the Black Path to a cycle route.

12.4.27 **Figure 12-3** has been prepared to illustrate the 3km (15 minutes) and 5km (25 minutes) cycling catchment from the centre of the site, recognised as acceptable cycling distances at a speed of 3.3m/s.

Royal HaskoningDHV

12.4.28 **Figure 12-3** shows that the 3km cycle catchment covers SSI Steel Works site, Teesport Estate site and part of Wilton Complex. The 3km cycle catchment also cover a number of established residential areas at Dormanstown.

12.4.29 The 5km cycle catchment covers the majority of Redcar including Redcar town centre and also extends towards to Eston. Two railway stations (Redcar Central and Redcar East) are also located within the 5km cycle catchment.

Accessibility by Public Transport

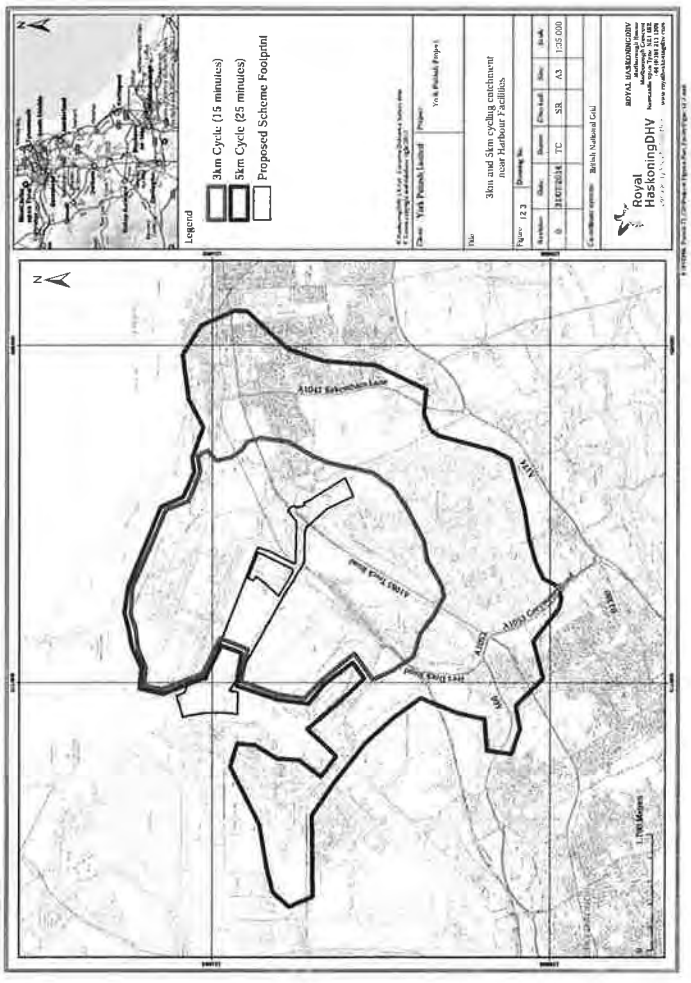
Bus

12.4.30 The IHT document *Guidelines for Planning for Public Transport in Development* (March 1999) states that new developments should be located so that public transport trips involve a walking distance of less than 400m from the nearest bus stop. However, this is only guidance to be achieved where possible by services that operate at regular frequencies. The document states that it is more important to provide services easy and attractive to passengers than to adhere to arbitrary criteria for walking distance.

12.4.31 The nearest bus stops are located on West Coatham Lane, which is more than 400m walking distance, however, still within 2km walking catchment from the centre of the scheme footprint. The frequency of bus services, which are currently accessible in the vicinity of the proposed scheme footprint, are summarised in **Table 12-9**.

Table 12-9 Summary of bus services accessible from the proposed scheme footprint

No.	Route	Frequency (minutes)					
		Monday to Friday			Saturday		Sunday
		Peak	Day	Eve	Day	Eve	
22	Middlesbrough – Redcar – Ings Farm/New Marske	30 (first service at 07:12)	30	60 (last service at 23:38)	30 (first service at 07:12)	60 (last service at 23:38)	60 (first service at 09:38 and last service at 23:38)
64/64a	New Marske – Redcar – Grangetown – Eston – Middlesbrough	30 (first service at 06:32)	30 (last service at 18:26)	-	30 (first service at 06:32 and last service at 18:17)	-	-



Rail

12.4.32 The nearest station is Redcar Central railway station which is located approximately 3.9km from the site. This station is on the Saltburn to Bishop Auckland line and is operated by Northern Rail. The station has a half hourly service on weekdays to Middlesbrough and Darlington westbound and to Saltburn eastbound. One train every hour to Darlington continues to Bishop Auckland. There is an hourly service on Sundays. From Monday to Saturday, first service starts at 06:34 and last service at 22:52. On Sunday, first service starts at 09:23 and last service at 22:22.

12.4.33 Bus service 64 directly links the site to Redcar Central railway station.

Highway safety

12.4.34 An examination of the routes within the study area was undertaken to identify any 'collision clusters'. Collision clusters have been defined as roundabouts with more collisions compared with typical values contained within the Table 2/1 in DMRB Volume 2 Section 6 TD16/07 which provides average accident frequencies at different types of roundabout.

12.4.35 Collision clusters sites are considered to be sensitive to significant changes in traffic flows and could therefore potentially be impacted by the project.

12.4.36 Where collision clusters are identified it is necessary to consider if there is a pattern of collision types which could be exacerbated by the development and if mitigation may be appropriate and effective.

12.4.37 The personal injury collision (PIC) data for the latest five year (12/2007 to 12/2012) for the following key off-site roundabouts have been obtained from RCBC.

- J1: A1085/W Coatham Lane Roundabout;
- J2: A1085/Industrial Access Roundabout;
- J3: A1085/A1053 Roundabout; and,
- J4: A1053/A174/B1380 Roundabout.

J1

12.4.38 J1 is a five-arm roundabout. During the study period there have been nine identified PICs of which two resulted in serious injury and the remaining seven resulting in slight injury. The average PIC number is 1.80 PIC/Year.

12.4.39 According to Table 2/1 in DMRB, the national average accident data on a five-arm roundabout is 3.80 PIC/Year. It is, therefore, considered that J1 is not a collision cluster and would not be sensitive to significant change in traffic flows.

J2

12.4.40 J2 is a four-arm roundabout. During the study period there have been two identified slight PICs. No serious/fatal PICs have occurred. The average PIC number is 0.40 PIC/Year.

12.4.41 According to Table 2/1 in DMRB, the national average accident data on a four-arm roundabout is 1.08 PIC/Year. It is, therefore, considered that J2 is not a collision cluster and would not be sensitive to significant change in traffic flows.

J3

12.4.42 J3 is a five-arm roundabout. During the study period there have been eight identified slight PICs. No serious/fatal PICs have occurred. The average PIC number is 1.60 PIC/Year.

12.4.43 According to Table 2/1 in DMRB, the national average accident data on a five-arm roundabout is 3.80 PIC/Year. It is, therefore, considered that J3 is not a collision cluster and would not be sensitive to significant change in traffic flows.

J4

12.4.44 J4 is a four-arm roundabout. During the study period there have been 22 identified PICs of which one resulted in a fatal injury and the remaining 21 resulted in slight injury. The average PIC number is 4.4 PIC/Year.

12.4.45 According to Table 2/1 in DMRB, the national average accident data on a four-arm roundabout is 2.65 PIC/Year. It is, therefore, considered that J4 is a collision cluster and would be sensitive to significant change in traffic flows.

12.4.46 During the EIA stage, the significance of any impact on highway safety due to the additional traffic associated with the construction of the proposed harbour facility will be assessed based on the sensitivity of each roundabout and the predicted magnitude of the effect of the additional traffic specified in **Table 12-5** and **Table 12-6**.

12.4.47 Appropriate mitigation measures will be proposed if the impact on highway safety for any roundabout was identified to be significant.

12.5 Assessment of potential impacts during construction

Site access during construction

12.5.1 Transport routes to the site for construction vehicles would make use of the major existing local strategic road network (A19, A174 and A1085 Trunk Road).

12.5.2 Additionally, sea routes present a realistic option by which to transport steel for construction equipment, steel piles as well as delivery of much of the topside equipment (conveyors, loaders, etc.).

Construction traffic generation

Heavy Goods Vehicles (HGV) trip generation

12.5.3 The construction works required for the proposed scheme are anticipated to be undertaken in two phases. At this stage, it is proposed that Phase 1 of the proposed scheme would commence in February 2017 and be completed in 17 months, although HGV movements would be spread over only 15 months. Phase 2 works are anticipated to start within 6 years of completion of Phase 1 and also last approximately 17 months, although (again) HGV movements would be spread over only 15 months.

12.5.4 **Table 12-10** summarises the predicted HGV trip generation during the construction of the proposed harbour facility.

Table 12-10 HGV trip generation during construction

	HGV trip generation (two-way)	
	Phase 1	Phase 2
Numbers of working months	15	15
Total	2,966	2,414
In the busiest month	589	601
Per day in the busiest month	29	30

12.5.5 It can be seen from **Table 12-10** that Phase 1 would generate a total of 2,966 two-way HGV movements, which would be spread over 15 months. In the busiest month, there would be 589 two-way HGV movements, which is equivalent to 29 HGVs (two-way) per day, assuming 20 working days per month.

12.5.6 Of the total 2,966 two-way HGV movements, 190 pile deliveries (380 two-way HGV movements) would be made by road. The piles would be 12m in length and each HGV would carry a maximum of 5 piles.

12.5.7 In addition, six of the total HGV two-way movements would be made by Abnormal Indivisible Loads (AIL). The AIL movements would be associated with the delivery of Surge Bins and Steelwork.

12.5.8 Phase 2 is predicted to generate a total of 2,414 two-way HGV movements, which would be spread over 15 months. In the busiest month, there would be 601 two-way HGV movements, which is equivalent to 30 HGVs (two-way) per day.

12.5.9 Of the total 2,414 two-way HGV movements, 157 pile deliveries (314 two-way HGV movements) would be made by road. The piles would be 12m in length and each HGV would carry a maximum of 5 piles.

12.5.10 As with Phase 1, six of the total HGV two-way movements would be made by AILs. The AIL movements would be associated with the delivery of Surge Bins and Steelwork.

Construction staff trip generation

12.5.11 The majority of construction staff would likely arrive to the proposed scheme footprint in cars or light vans, though opportunities would exist for travel via sustainable modes such as walking, cycling and bus.

12.5.12 It is worth noting that when calculating general vehicle movements generated by construction staff, an average car share ratio of 2.5 employees per vehicle has been assumed, which is considered reasonable given that:

- Up to four employees per vehicle would be realistically achievable for blue collar workers on the project.
- The ratio does not take into account the propensity for employees to walk, cycle or use public transport.

12.5.13 **Table 12-11** summarises the predicted general vehicle trip generation during the construction of the proposed harbour facility.

Table 12-11 General vehicle trip generation during construction

	General Vehicle Trip Generation (Two-way)	
	Phase 1	Phase 2
Numbers of working months	17	17
Total	33,120	26,720
In the busiest month	2,800	2,560
Per day in the busiest month	140	128

12.5.14 It can be seen from **Table 12-11** that Phase 1 would generate a total of 33,120 two-way general vehicle movements, which would be spread over 17 months. In the busiest month, there would be 2,800 two-way general vehicle movements, which is equivalent to 140 general vehicles (two-way) per day.

12.5.15 Phase 2 is predicted to generate a total of 26,720 two-way general vehicle movements, which would be spread over 17 months. In the busiest month, there would be 2,560 two-way general vehicle movements, which is equivalent to 128 general vehicles (two-way) per day.

12.6 Potential impacts during construction

12.6.1 It can be concluded from **Table 12-10** and **Table 12-11** that construction Phase 1 of the proposed scheme is anticipated to result in similar traffic requirements to construction Phase 2. The assessment, therefore, will be carried out for both Phase 1 and Phase 2.

12.6.2 The assessment of potential impacts will include:

- Finalising traffic distribution and assignment for HGVs and general vehicles.
- Determining the potential impact of the additional traffic associated with the key phases of construction on severance and pedestrian amenity (including cyclists).
- Determining the potential impact on highway safety and driver delay (in general traffic and public traffic).
- Appropriate mitigation measures will be proposed where necessary.

12.7 Assessment of potential impacts during operation

12.7.1 It is predicted that only six and eight operational staff would be employed at the harbour facility per shift during Phase 1 and Phase 2 of the operational phase respectively. The environmental effects of the vehicle trips associated with operational phase staffing movements would be negligible. It is, therefore, considered that assessment of potential impacts during operation is not required.

12.8 Scope of mitigation

During the construction phase

12.8.1 Appropriate mitigation measures will be considered and proposed within the ES if any environmental effects of the proposed scheme on existing traffic levels are predicted to be significant.

12.8.2 At this stage, possible mitigation measures could include:

- ensuring all vehicles are scheduled using the most efficient delivery routes to minimise the nuisance to residential areas where possible;
- all delivery vehicles associated with the movements of construction material would be filled to the practical maximum capacity to reduce the quantity of vehicles required;
- wheel washing and other environmental management measures would be put in place to reduce the potential for off-site impacts, such as mud and dust on the surrounding highways; and,
- the production of a Traffic Management Plan.

12.8.3 Residual effects will be assessed for any case where mitigation measures are proposed to reduce a significant negative impact due to the construction of the proposed harbour facility.

During the operational phase

12.8.4 Given that only six and eight operational staff would be employed at the harbour facility per shift during Phase 1 and Phase 2 of the operational phase respectively, and the environmental effects of the vehicle trips associated with six staff would be negligible, no mitigation measures are required.

12.9 Summary

12.9.1 The proposed scheme footprint is located adjacent to the Tees estuary and to the north of the A1085 trunk road. The A1085 runs in a north-east direction, continues through Redcar before heading south-east along the coast to Marske-by-the-Sea. There is a five-arm roundabout on the A1085 that provides access to the SSI Steel Works to the north, the Dormanstown Industrial Estate / Dormanstown residential area to the east and the Wilton Complex to the south.

12.9.2 Existing traffic flow data for all key roads and key junctions within the study area has been captured from a number of sources, including historical AADT flows and traffic surveys undertaken in March 2014.

12.9.3 The eastern section of the proposed scheme footprint can be access by one PRoW that links to Tees Dock Road. Cycle routes to the site are mainly from the A1085 and A1053 Tees Dock Road. The nearest bus stops to the proposed scheme footprint are located on West Coatham Lane.

12.9.4 In the busiest month, Phase 1 construction works would generate 589 two-way HGV movements, which is equivalent to 27 HGVs (two-way) per day, assuming 22 working days per month. Phase 2 construction works would generate 601 two-way HGV movements, equivalent to 27 HGVs per day. Phase 1 construction works would generate 27,324 two-way general vehicle movements, whilst Phase 2 construction works would generate 22,044 two-way general vehicle movements.

12.9.5 Construction Phase 1 of the proposed scheme is anticipated to result in similar traffic requirements to Phase 2. An assessment will therefore be carried out for both Phase 1 and Phase 2.

12.9.6 It is predicted that only six and eight operational staff would be employed at the harbour facility per shift during Phase 1 and Phase 2 of the operational facility. The environmental effects of the vehicle trips associated with operational phase staffing movements would therefore be negligible. An assessment of impacts during the operational phase is therefore not proposed.

13 AIR QUALITY

13.1 Introduction

13.1.1 This section of the PER describes the existing environment in relation to the potential impacts on air quality of the construction and operational phases of the proposed scheme.

13.1.2 Although air quality assessment has not been undertaken at the time of writing this PER, the proposed approach to the assessment has been presented in order to ensure that the methodology to be used is appropriate.

13.2 Guidance and consultation

Legislation and policy

The Air Quality Strategy

13.2.1 Air pollution can have adverse effects on the health of humans and ecosystems. EU legislation forms the basis for UK air quality policy. The EU Air Quality Framework Directive 96/62/EC on Ambient Air Quality Assessment and Management entered into force in September 1996. This was a framework for tackling air quality through setting European-wide air quality limit values in a series of daughter directives, prescribing how air quality should be assessed and managed by the Member States. Directive 96/62/EC and the first three daughter Objectives were combined to form the new EU Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe, which came into force June 2008.

13.2.2 The 1995 Environment Act required the preparation of a national Air Quality Strategy (AQS) which set air quality standards and Objectives for specified pollutants. The Act also outlined measures to be taken by local planning authorities (LPAs) in relation to meeting these standards and Objectives (the Local Air Quality Management (LAQM) system).

13.2.3 The UK AQS was originally adopted in 1997 and has been reviewed and updated in order to take account of the evolving EU Legislation, technical and policy developments and the latest information on health effects of air pollution. The strategy was revised and reissued in 2000 as the AQS for England, Scotland, Wales and Northern Ireland. This was subsequently amended in 2003 and was last updated in July 2007.

13.2.4 The standards and Objectives relevant to the LAQM framework have been prescribed through the Air Quality (England) Regulations (2000), and the Air Quality (England) (Amendment) Regulations 2002; the Air Quality Standards Regulations 2010 set out the combined Daughter Directive limit values and interim targets for Member State compliance.

13.2.5 The current air quality standards and Objectives (for the purpose of LAQM) are outlined in **Table 13-1**. Pollutant standards relate to ambient pollutant concentrations in air, set on the basis of medical and scientific evidence of how each pollutant affects human health. Pollutant Objectives however

incorporate future dates by which each standard is to be achieved, taking into account economic considerations, practicability and technical feasibility.

13.2.6 Where an air quality Objective is unlikely to be met by the relevant deadline, local authorities must designate those areas as Air Quality Management Areas (AQMAs), and develop an Air Quality Action Plan (AQAP) to work towards meeting the Objectives and improve air quality locally.

13.2.7 Possible exceedences of air quality Objectives are usually assessed in relation to those locations where members of the public are likely to be regularly present and are likely to be exposed for a period of time appropriate to the averaging period of the Objective.

Table 13-1 Air Quality Strategy Objectives (England) for the purpose of Local Air Quality Management

Pollutant	Air Quality Objective		To be achieved by
	Concentration	Measured as*	
Benzene	5µg m^{-3}	Annual mean	31/12/2010
1,3 Butadiene	2.25µg m^{-3}	Running annual mean	31/12/2003
Carbon monoxide	10mg m^{-3}	Maximum daily running 8-hour mean	31/12/2003
Lead	0.25µg m^{-3}	Annual mean	31/12/2008
Nitrogen dioxide (NO_2)	200µg m^{-3}	1 hour mean not to be exceeded more than 18 times per year	31/12/2005
	40µg m^{-3}	Annual mean	31/12/2005
Particles (PM_{10})	50µg m^{-3}	24-hour mean not to be exceeded more than 35 times per year	31/12/2004
	40µg m^{-3}	Annual mean	31/12/2004
Particles ($PM_{2.5}$)	25µg m^{-3}	Annual mean (target)	2020
	15% cut in annual mean (urban background exposure)		2010 - 2020
Sulphur Dioxide (SO_2)	350µg m^{-3}	1-hour mean not to be exceeded more than 24 times a year	31/12/2004
	125µg m^{-3}	24-hour mean not to be exceeded more than 3 times a year	31/12/2004
	266µg m^{-3}	15-minute mean not to be exceeded more than 35 times a year	31/12/2005

Note:* how the Objectives are to be measured is set out in the UK Air Quality (England) Regulations (2000).

National Planning Policy Framework

13.2.8 The NPPF was adopted in March 2012 and refers to the Local Air Quality Management process by recognising that:

> *"Planning policies should sustain compliance with and contribute towards EU limit values or national Objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas."*

13.2.9 The NPPF identifies that local planning authorities should maintain consistency within the Local Air Quality Management process and states that:

> *"Planning decisions should ensure that any new development within Air Quality Management Areas is consistent with the local Air Quality Action Plan."*

Local Planning Policy

13.2.10 A review of the 'Development Policies DPD Adoption' document (RCBC, 2007) has highlighted the following policy relevant to air quality:

> *Policy DP6 Pollution Control:*
>
> *"Development that would give rise to increased levels of noise or vibration or which would add to air, land or water pollution, by itself or in accumulation with existing or other proposed uses, will only be permitted if it is acceptable in terms of:*
>
> - *human health and safety;*
> - environment; and
> - general amenity.
>
> *Where pollution is unavoidable, mitigation measures to reduce pollution levels will be required in order to meet acceptable limits."*

Consultation

13.2.11 A summary of the comments received from PINS with regard to air quality during January 2014 is presented in **Table 13-2**.

Table 13-2 Summary of scoping comments received from PINS of relevance to air quality

Comment	Section of PER in which comment has been addressed
SoS does not agree to scope out construction air quality impacts for Option 1 and 2 for ecological receptors as the presence of ecological receptors on the site has yet to be determined by Phase 1 habitat survey.	Not applicable (Options 1 and 2 are no longer proposed; see Section 3.1).
The SoS agrees that air quality impacts on occupants of residential properties can be scoped out for Option 1 and 2 given the distance to the nearest receptor. However, air quality impacts associated with construction on other human receptors including workers on the site and the surrounding area and users of the public rights of way cannot be scoped out.	Section 13.5
Potential air quality impacts from marine vessels on ecological receptors cannot be scoped out of the EIA.	Section 13.3 (Paragraph 13.3.19)
Air quality assessments should take account of anticipated traffic movements set out in the TA.	Section 13.3 (Paragraph 13.3.6 to 13.3.10)
The SoS advises that the approach (i.e. no primary data collection and utilisation of existing data) is agreed with the EA and the EHO.	Section 13.2 (Paragraph 13.2.12)
Emissions from construction and operational plant and machinery associated with the development should be included in the assessment.	Section 13.5 and Section 13.6
A fugitive dust assessment should be carried out for all proposed options as ship loading and storage is likely to include dust generating activities, aside to those produced at the MHF.	To be addressed during the subsequent stage of the EIA process
The assessment should consider effects on national and European designated sites due to an increase in airborne pollution including fugitive dust.	Section 13.3 (Paragraph 13.3.19)
Air quality and dust levels should be considered not only on site but also off site, including along access roads, footpaths and other public rights of way.	Section 13.5 and 13.6.
Only deliverable mitigation measures should be taken into account in the assessment. It may be useful to provide a copy of the draft CEMP with the DCO application.	Section 13.5 (Paragraph 13.5.20). Point regarding draft CEMP noted.
Air quality in the UK has improved, however air pollution remains an issue (97% of sensitive habitat in England predicted to exceed critical loads for ecosystem protection from atmospheric nitrogen deposition). The ES should take account of the risks of air pollution and how these can be managed or reduced.	Section 13.5 and 13.6.

13.2.12 Consultation was undertaken with RCBC's Environmental Health Department in 2013 to discuss the proposals and initial proposed scope of works. An Environmental Scoping Report was submitted to the PINS in December 2013 and a Scoping Opinion received in January 2014. The Scoping Opinion agreed that the following elements with regard to air quality should be scoped out:

- assessment of construction phase impacts on residential receptors due to the distance from the development to the nearest receptor; and,
- assessment of the impacts of shipping vessel emissions movements on residential receptors due to the distance from any likely movements to the nearest receptor.

13.3 Methodology

Study area

Construction phase

13.3.1 The study area has been defined in accordance with guidance available from the IAQM as the area within 350m of the boundary of the proposed scheme footprint and 50m of the routes to be used by construction vehicles on the public highway, up to 500m from the site entrance.

Road traffic emissions assessment

13.3.2 In this case the study area has been defined as the spatial extent of the road network on which development-generated traffic is predicted to travel and identified receptor locations situated along the road network assessed.

Marine vessel emissions assessment

13.3.3 In this case the study area has been defined as sensitive receptor locations that may be impacted by emissions resulting from vessel movements associated with the marine terminal development.

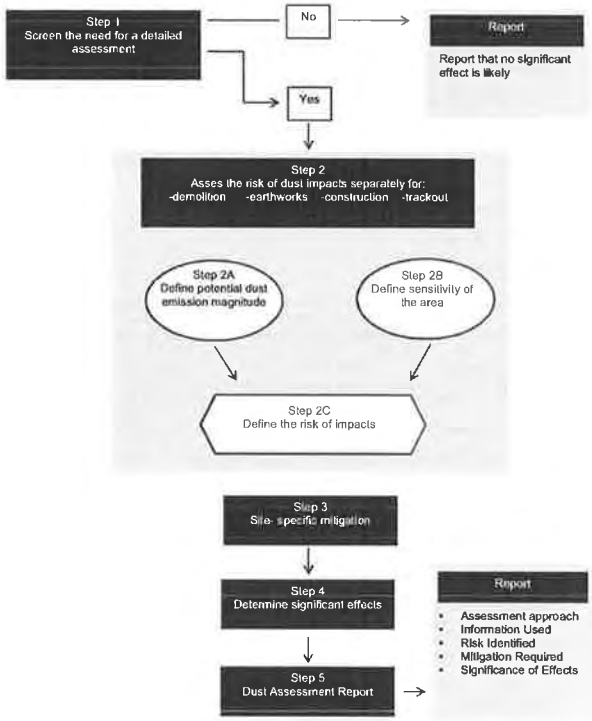
Existing environment

13.3.4 Air pollutant monitoring data were obtained from the RCBC 2013 Progress Report (RCBC, 2013). In addition background pollutant concentrations were obtained from the background maps provided by Defra.

Methodology for assessment of potential impacts

Construction phase dust assessment

13.3.5 A qualitative assessment of potential dust impacts associated with the construction phase will be undertaken in accordance with the IAQM guidance (IAQM, 2014). A summary of the assessment process is provided in the flowchart in **Figure 13-1** (Figure 1 in the IAQM guidance).



Construction phase road traffic emissions

13.3.6 Air pollution in urban areas is generally dominated by emissions from road vehicles. The quantities of each pollutant emitted are dependent on the type and quantity of fuel used, engine type and size, vehicle speeds and abatement equipment fitted. The main pollutants of concern from road traffic are oxides of nitrogen (NO_x/NO_2) and fine particulate matter (PM_{10}) since these pollutants are most likely to approach Air Quality Strategy objectives in proximity to major trunk roads.

13.3.7 It is proposed that the Atmospheric Dispersion Modelling System for Roads (ADMS-Roads) v3.2 is used to assess the local air quality impact of construction phase development-generated vehicle exhaust emissions, on concentrations of NO_2 and PM_{10}, at existing receptors located adjacent to the road network under consideration.

13.3.8 The ADMS-Roads model is a comprehensive tool for investigating air pollution in relation to road networks. The model uses algorithms for the height-dependence of wind speed, turbulence and stability to produce improved predictions. It can predict long-term and short-term concentrations, as well as calculations of percentile concentrations.

13.3.9 The ADMS-Roads model has been comprehensively validated in a large number of studies by the software manufacturer CERC (Cambridge Environmental Research Consultants). This includes comparisons with data from the UK's Automatic Urban Network (AUN) and specific validation exercises using standard field, laboratory and numerical data sets. CERC is also involved in European programmes on model harmonisation, and their models have compared favourably against other EU and US EPA systems. Further information in relation to this is available from the CERC web site at www.cerc.co.uk.

13.3.10 24 hour Annual Average Daily Traffic (AADT) flows, HGV percentages and speed information will be provided by the transportation consultants for the project in order to allow the assessment to be undertaken. Detailed traffic data for construction scenarios are not yet available for 'with scheme' scenarios, however the baseline traffic data which will be used in the assessment are provided in **Table 13-3**.

Table 13-3 Baseline 2014 surveyed traffic data

Link reference	Link description	2014 Surveyed Annual Average Daily Traffic (AADT) Flow	
		Total Vehicles (AADT)	HGV (%)
ATC Location 1	A1042 Kirkbatham Lane	11,048	2.96
ATC Location 2	A1085 Truck Road	16,161	4.82
ATC Location 3	A1053 Greystone Road	12,691	8.64
ATC Location 4	A174	32,037	4.17

Operational phase road traffic emissions assessment

13.3.11 YPL predicts an operational staff of six per shift during Phase 1 of the proposed scheme, with a total of 26 operational staff working at the proposed scheme over the duration of one day. YPL predicts an operational staff of eight per shift during Phase 2 of the proposed scheme, with a total of 34 operational staff working at the proposed scheme over the duration of one day. Traffic generated by the operation of the proposed scheme, therefore, would be minimal. Hence no detailed transport assessment will be undertaken for the operational phase of the proposed scheme and, consequently, an assessment of operational phase road traffic emissions is also not required.

13.3.12 Predicted NO_2 and PM_{10} concentrations will be compared to the relevant air quality Objectives as detailed in **Table 13-1**. Changes between without scheme and with scheme scenarios will be compared to significance criteria provided by Environmental Protection UK in the document 'Development Control: Planning for Air Quality (2010 Update)'.

Marine vessel emissions

13.3.13 Marine vessel movements would be associated with both the construction and operational phases of development.

13.3.14 The area proposed to be dredged is shown in **Drawing PB1586-SK58**. Dredging is required during both Phase 1 and Phase 2 construction periods and would occur for a period of 16 weeks for Phase 1 and 12 weeks for Phase 2 (open structure), and 13 weeks for Phase 1 and 10 weeks for Phase 2 (solid structure). The area to be dredged is not located in close proximity to any existing residential receptors or designated ecological sites and the short term nature of the dredging operation would not result in significant long term effects/emissions. A quantitative assessment of emissions from dredgers, therefore, will not be undertaken.

13.3.15 During the operation of the marine terminal, the throughput of the facility is estimated to be 6.5mtpa in Phase 1 (0 to six years following the end of construction) and 13mtpa in Phase 2 (six to 50 years following the end of construction).

13.3.16 Vessels using the marine terminal are predicted to be bulk carriers in the range of 55,000 DWT to 85,000 DWT. When Phase 2 is complete and the facility is handling 13mtpa, it is estimated that there would be approximately 191 vessel calls per year to the marine terminal.

13.3.17 **Table 13-4** details the vessel movements experienced within the Tees estuary between January 2013 and September 2013. The number of movements in this nine month period totals 8,050. Assuming a similar number of movements were experienced in the last three months of the year to that experienced in February (i.e. the lowest number of monthly movements), approximately 10,500 vessel movements would have been made within the Tees estuary in 2013.

Table 13-4 Tees estuary vessel movements in 2013

Month	Vessel movements
January	824
February	808
March	981
April	922
May	1009
June	871
July	899
August	867
September	869

13.3.19 The generation of an additional 191 vessel movements per year when compared to the existing 10,500 annual movements (a 1.8% increase) is not considered to be significant and it is unlikely that vessel movements associated with the operational facility would have an impact on air quality. No detailed assessment, therefore, will be undertaken to consider the impact of vessel emissions on air quality.

13.4 Existing environment

13.4.1 The proposed scheme is not located within a designated Air Quality Management Area (AQMA) and RCBC has not declared any AQMAs within their administrative area.

13.4.2 RCBC undertakes ambient monitoring of NO_2 and PM_{10} at one automatic monitoring location in Dormanstown. This monitoring site has been operational since January 2012. Prior to 2012 the monitor was located at Corporation Road. The Dormanstown monitoring site is classified as a suburban industrial location and is located approximately 3.7km to the east of the proposed marine terminal. Monitoring data for 2008 to 2012 are detailed in **Table 13-5**.

Table 13-5 Monitored NO_2 and PM_{10} Concentrations

Site ID	Pollutant	Annual Mean Concentration (µg.m^{-3})				
		2008*	2009*	2010*	2011	2012
Dormanstown	NO_2	15.1	16.4	17.4	16.2	15.7
	PM_{10}	18.4	18.5	18.1	20.1	17.3

** Monitor was located at Corporation Road until 2011*

13.4.3 The monitored pollutant concentrations detailed in **Table 13-5** are well below the annual mean air quality objective of 40µg m^{-3} for both NO_2 and PM_{10}.

13.4.4 The 2013 Progress Report (RCBC, 2013) states that NO_2 diffusion tube monitoring is not undertaken within the Borough in view of the relatively low traffic densities in areas of relevant public exposure.

13.4.5 Air quality monitoring at background locations is not undertaken by RCBC within the Borough. Background concentrations of NO_x, NO_2 and PM_{10} were therefore obtained from the background concentration maps provided by Defra for the 1km x 1km grid squares covering the study area and potential receptor locations to be considered. Annual mean background concentrations for these grid squares are presented in **Table 13-6** for 2014.

Table 13-6 2014 NO_x, NO_2 and PM_{10} annual mean background concentrations for the 1km x 1km grid squares covering the proposed scheme footprint

Grid square	2014 (µg.m^{-3})		
	NO_x	NO_2	PM_{10}
457500, 523500	28.29	18.59	14.25
456500, 523500	26.36	17.48	12.76
455500, 523500	34.55	21.69	13.22
455500, 524500	31.87	20.35	13.40
456500, 524500	26.97	17.80	12.60
457500, 524500	33.03	20.95	18.72
458500, 524500	26.53	17.62	14.04
458500, 523500	31.22	20.14	14.15
457500, 522500	28.90	18.86	13.83
458500, 522500	67.22	34.91	18.18
455500, 525500	28.80	18.76	12.68

13.4.6 The annual mean background NO_2 and PM_{10} concentrations, shown in **Table 13-6** are below their respective Air Quality Objectives.

13.4.7 Grid square 458500, 522500 experiences the highest background concentrations in 2014. This grid square is located adjacent and downwind of the Wilton Chemical works and existing industrial area, which is likely to explain the increased background concentrations in relation to the surrounding area.

Identification of receptor locations

Construction phase

13.4.8 Locations potentially sensitive to construction dust emissions were identified with reference to guidance provided by the IAQM. Human receptors within 350m of the site boundary and 50m of the routes used by construction vehicles on the public highway, up to 500m from the site should be considered, in addition to ecological receptors within 50m of the site boundary.

13.4.9 There are no ecological receptors present within 50m of the site boundary. However, there are human receptors present within 350m of the site. Receptors are likely to include:

- car depot to the west of the site; and,
- PRoW to the south of the site.

Road traffic emissions assessment

13.4.10 The closest existing residential receptor locations to the proposed marine terminal are situated in Dormanstown, Grangetown and South Bank approximately 1.15km to the east, 3.1km to the south and 4.0km to the south-west respectively. Representative receptor locations will be identified within these areas adjacent to the road network to be considered in the assessment.

13.5 Assessment of potential impacts during construction

Construction dust impact assessment

13.5.1 The following section outlines criteria developed by the IAQM for the assessment of air quality impacts arising from construction activities. The assessment procedure is divided into five steps and is summarised below. This method will be followed to determine the significance of air quality impacts arising from construction activities.

Step 1: Screening the need for a detailed assessment

13.5.2 An assessment will normally be required where there are human receptors within 350m of the site boundary and/or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s). Ecological receptors within 50m of the site boundary or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s), are also identified at this stage. An ecological receptor refers to any sensitive habitat affected by dust soiling. For locations with a statutory designation, such as a SSSI, SACs and SPA, consideration should be given as to whether the particular site or species present are sensitive to dust. Some non-statutory sites may also be considered if appropriate.

13.5.3 Where the need for a more detailed assessment is screened out, it can be concluded that the level of risk is 'negligible'.

13.5.4 There are no designated ecological sites within 50m of the site boundary; however, there are human receptors within 350m. A detailed assessment is therefore required.

Step 2: Assess the risk of dust impacts

13.5.5 A site is allocated to a risk category on the basis of the scale and nature of the works (Step 2A) and the sensitivity of the area to dust impacts (Step 2B). These two factors are combined in Step 2C to determine the risk of dust impacts before the implementation of mitigation measures. The assigned risk categories may be different for each of the construction activities outlined by the IAQM (demolition, construction, earthworks and trackout).

13.5.6 The site can also be divided into zones, for example on a large site where there are differing distances to the nearest receptors.

Step 2A: Define the potential dust emission magnitude

13.5.7 The IAQM guidance recommends that the dust emission magnitude is determined for demolition, earthworks, construction and trackout. The dust emission magnitude is based on the scale of the anticipated works. **Table 13-7** describes the potential dust emission class criteria for each outlined construction activity.

Table 13-7 Criteria used in the determination of dust emission class

Activity	Criteria used to determine dust emission class		
	Small	Medium	Large
Demolition	Total building volume <20,000m^3. Construction material with low potential for dust release (e.g. metal cladding or timber). Demolition during wetter months	Total building volume between 20,000m^3 to 50,000m^3. Potentially dusty construction material.	Total building volume >50,000m^3. Potentially dusty construction material (e.g. concrete). On-site crushing and screening.
Earthworks	Total site area <2,500m^2	Total site area 2,500 to 10,000m^2.	Total site area >10,000m^2
Construction	Total building volume <25,000m^3	Total building volume 25,000 to 100,000m^3	Total building volume >100,000m^3
Trackout	<10 outward HDV trips in any one day. Unpaved road length <50m.	10 to 50 outward HDV trips in any one day. Unpaved road length 50 to 100m.	>50 outward HDV trips in any one day. Unpaved road length >100m.

13.5.8 The potential dust emission magnitude for the proposed development site was determined using the criteria detailed in **Table 13-7**

- **Demolition**: No demolition of buildings is required, although removal of the NWL Sludge Jetty may ultimately be required. The dust emission magnitude is therefore predicted to be small.
- **Earthworks**: Earthworks would be required as part of the construction phase. The site is over 10,000m^2 and there is likely to be more than 10 heavy earth moving vehicles on site at any one time. The dust emission magnitude is therefore considered to be large.
- **Construction**: Although the total building volume to be constructed is small, the construction works for the harbour facility as a whole are of significant scale and, therefore, the dust emission class is considered to be large.
- **Trackout**: There are likely to be over 50 HGV outward movements in any one day associated with the development. In addition, the unpaved road length is likely to be greater than 100 metres. The dust emission magnitude has therefore been determined as large.

13.5.9 The defined dust magnitudes for demolition, earthworks, construction and trackout are summarised in **Table 13-8**.

Table 13-8 Dust emission magnitude for the proposed scheme footprint

Activity	Dust emission
Demolition	Small
Earthworks	Large
Construction	Large
Trackout	Large

Step 2B: Define the sensitivity of the area

13.5.10 The sensitivity of the area takes into account the following factors:

- the specific sensitivities of receptors in the area;
- **the proximity and number of receptors;**
- the local background PM_{10} concentration; and,
- site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of windblown dust.

13.5.11 **Table 13-9** outlines the criteria used for determining the sensitivity of receptors.

Table 13-9 Criteria for determining sensitivity of receptors

Sensitivity of Receptor	Criteria for determining sensitivity	
	Dust soiling effects	Health effects of PM_{10}
High	Dwellings, museums and other culturally important collections, medium and long-term car parks and car showrooms	Residential properties, hospitals, schools and residential care homes
Medium	Parks, places of work	Office and shop workers not occupationally exposed to PM_{10}
Low	Playing fields, farmland, footpaths, short-term car parks and roads	Public footpaths, playing fields, parks and shopping streets

13.5.12 The criteria detailed in **Table 13-10** and **Table 13-11** were used to determine the sensitivity of the area to dust soiling effects and human health impacts.

Table 13-10 Sensitivity of the area to dust soiling effects on people and property

Receptor Sensitivity	Number of Receptors	Distance from Source (m)			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table 13-11 Sensitivity of the area to human health impacts

Receptor Sensitivity	Annual Mean PM_{10} Concentrations	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
High	>32µg.m^3 (>18µg.m^3 in Scotland)	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	>28-32µg m^3 (>16-18µg.m^3 in Scotland)	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low

Receptor Sensitivity	Annual Mean PM_{10} Concentrations	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
	>24-28µg m^3 (>14-16µg m^3 in Scotland)	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	>24µg m^3 (>14µg m^3 in Scotland)	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	-	>10	High	Medium	Low	Low	Low
	-	1-10	Medium	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

Sensitivity of people to dust soiling

13.5.13 An assessment of the sensitivity of people to dust soiling will be undertaken during the EIA process, with the results of the assessment presented in the ES.

Sensitivity of people to the health effects of PM_{10}

13.5.14 An assessment of the sensitivity of people to the health effects of PM_{10} will be undertaken during the EIA process, with the results of the assessment presented in the ES.

Step 2C: Define the risk of impacts

13.5.15 The dust emission magnitude and sensitivity of the area are combined and the risk of impacts from each activity (demolition, earthworks, construction and trackout) before mitigation is applied should be determined using the criteria detailed in **Table 13-12** to **Table 13-15**.

Table 13-12 Risk of dust impacts – Demolition

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low	Negligible

Table 13-13 Risk of dust impacts – Earthworks

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 13-14 Risk of dust impacts- Construction

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 13-15 Risk of dust impacts - Trackout

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

13.5.16 The risks for dust soiling and human health are to be determined using **Table 13-12** to **Table 13-15**.

Construction dust mitigation measures

Step 3: Site specific mitigation

13.5.17 Step 3 of the IAQM guidance identifies appropriate site-specific mitigation. These measures are related to whether the site is a low, medium or high risk site.

13.5.18 The measures detailed below are specific to a high risk site. Following thorough assessment of construction phase impacts, the site risk may be defined as low or medium; however, at this stage it has been assumed that the site is high risk to provide a conservative approach. As the assessment progresses it may be that some of the mitigation measure below are not necessary.

13.5.19 The recommendations below should be considered as part of an Environmental Management Plan (EMP) to prevent or minimise the release of particulate matter entering the almosphere and/or being deposited on nearby receptors. Particular attention should be paid to operations which must unavoidably take place close to the site boundary. The effective implementation of the EMP will ensure that any potential particulate releases associated with the construction phase will be reduced.

13.5.20 A list of mitigation measures that are "highly recommended" by the IAQM is provided below.

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
- Display the head or regional office contact information.

Dust management

- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority.
- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.
- Liaise with other high risk construction sites within 500m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.
- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to note any dust deposition, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of site boundary, with cleaning to be provided if necessary.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is practicable.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Consider enclosure of site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Take measures to control site runoff of water or mud.

- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible.
- Cover, seed or fence stockpiles to prevent wind whipping.
- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
- Impose and signpost a maximum-speed-limit of 15 mph on surfaced, and 10 mph on unsurfaced, haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- Implement a Travel Plan that supports and encourages sustainable travel for contractor operatives and staff (public transport, cycling, walking, and car-sharing).
- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
- Bonfires and burning of waste materials should not be permitted.

Measures specific to demolition

- Ensure effective water suppression is used during demolition operations.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives where possible.
- Bag and remove any biological debris or damp down such material before demolition.

Measures specific to earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.

Measures specific to construction

- Ensure sand and other aggregates are stored in surge bins, bunded areas or in a controlled and well-managed manner.
- Avoid scabbling (roughening of concrete surfaces) if possible.

- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in surge bins with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust release.

Measures specific to trackout

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site log book.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Install a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Locate site access gates at least 10m from receptors where possible.

Measures specific to Non Road Mobile Machinery (NRMM)

- Non Road Mobile Machinery (NRMM) and plant would be well maintained. If any emissions of dark smoke occur then the relevant machinery should stop immediately and any problem should be rectified. In addition, the following controls should apply to NRMM:
  - All NRMM should use fuel equivalent to ultralow sulphur diesel (fuel meeting the specification within EN590:2004).
  - All NRMM should comply with either the current or previous EU Directive Staged Emission Standards (97/68/EC, 2002/88/EC, 2004/26/EC). As new emission standards are introduced the acceptable standards should be updated to the previous and most current standard.
  - All NRMM should be fitted with Diesel Particulate Filters (DPF) conforming to defined and demonstrated filtration efficiency (load/duty cycle permitting).
  - The ongoing conformity of plant retrofitted with DPF, to a defined performance standard, should be ensured through a programme of onsite checks.
  - Implementation of energy conservation measures, including instructions to throttle down or switch off idle construction equipment; switch off the engines of trucks while they are waiting to access the site and while they are being loaded or unloaded, ensure equipment is properly maintained to ensure efficient energy consumption.

Step 4: Determine significant effects

13.5.21 With the implementation of the above mitigation measures, the residual impacts from construction can be considered to be not significant, in accordance with IAQM guidance.

Construction phase road traffic emissions assessment

Baseline road traffic emissions assessment

13.5.22 The ADMS-Roads model will be used to estimate contributions of vehicle exhaust emissions to annual and short term NO_2 and PM_{10} concentrations for the 'baseline' and 'without development' scenarios considered in the assessment.

13.5.23 The 24 hour Annual Average Daily Traffic (AADT) flows to be used in the assessment were not available at the time of writing this PER, therefore the baseline road traffic emissions assessment has not been undertaken to date. This will be undertaken during the EIA process.

Road traffic emissions impact assessment

13.5.24 The 24 hour AADT flows will be derived for with development scenarios for use in the air quality assessment to be undertaken during the EIA process. Mitigation will be recommended as necessary.

13.6 Potential impacts during operation

Operational phase dust assessment

13.6.1 An assessment of operational phase dust emissions arising from the transport and handling of product will be undertaken. Appropriate measures will be recommended to minimise and control dust emissions where required.

13.7 Summary

13.7.1 An assessment will be undertaken using the methodology outlined above to consider the potential impact of construction phase dust emissions on identified receptor locations. Potential mitigation measures (which may need to be implemented as part of the proposed scheme) have been recommended based on the conservative assumption that the site would be 'high risk' in terms of construction phase dust emissions. With the implementation of the recommended good practice dust control and management measures the impact of the construction of the development would be not significant in accordance with IAQM guidance.

13.7.2 A detailed construction phase road traffic emissions assessment will be undertaken to consider the impact of development-generated traffic on local air quality at identified receptor locations adjacent to the road network likely to be affected. Detailed 'without scheme' and 'with scheme' road traffic flow

data were not available at this stage and, therefore, it was not possible to undertake the assessment as part of this PER.

13.7.3 The traffic movements associated with the operation of the marine terminal would not be significant and, consequently, an assessment of road traffic emissions associated with the operation of the terminal will not be undertaken.

13.7.4 The operational marine terminal would generate approximately 176 vessel calls per year. In comparison to existing vessel movements within the Tees estuary this is not considered to be significant and exhaust emission effects from the marine terminal are unlikely to be significant.

13.7.5 Consideration of operational phase dust emissions will also be undertaken and appropriate measures to minimise and control emissions will be recommended where required.

14 NOISE AND VIBRATION

14.1 Introduction

14.1.1 This section of the PER describes the existing environment in relation to noise and vibration and the potential impacts of the construction and operational phases of the proposed scheme. Mitigation measures are detailed and a discussion of the residual impacts presented where potentially significant impacts have been identified.

14.2 Policy, guidance and consultation

Policy and guidance

NPS for Ports

14.2.1 The NPS for Ports (Department for Transport, 2012) provides relevant information with regard to the assessment of impacts to noise and vibration as a result of port infrastructure. The NPS states that excessive noise can have wide-ranging impacts on the quality of human life and health, use and enjoyment of areas of value such as quiet places and areas with high landscape value. Noise resulting from a proposed scheme can also have adverse impacts on wildlife and biodiversity. Where noise impacts are likely to arise from a proposed scheme, the NPS states that the applicant should include the following points within a noise assessment:

- a description of the noise-generating aspects of the development proposals leading to noise impacts on the marine and terrestrial environment, including the identification of any distinctive tonal, impulsive or low-frequency characteristics of the noise;
- identification of noise sensitive premises and areas and noise-sensitive species that may be affected;
- the characteristics of the existing marine and terrestrial noise environment;
- a prediction of how the noise environment would change with the proposed scheme;
- as assessment of the effect of predicted changes in the noise environment on any noise sensitive receptors and noise sensitive species; and,
- mitigation measures to reduce the significance of noise impacts.

14.2.2 The NPS states that the noise impact of ancillary activities associated with the development (e.g. increased road traffic) should also be considered. Construction and operational noise with respect to human receptors should be assessed using the principles of the relevant British Standard. The seasonality of potentially affected species in nearby sites may also need to be taken into account.

The National Planning Policy Framework

14.2.3 The NPPF was introduced in March 2012 and replaced the former Planning Policy Guidance 24: Planning and Noise. Paragraph 123 of the NPPF states that planning policies and decisions should aim to:

> *"avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;*
>
> *mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions;*
>
> *recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established; and*
>
> *identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason."*

14.2.4 The NPPF also refers to the Noise Policy Statement for England (Defra, 2010). This document has three policy aims:

> *"Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:*
>
> - *avoid significant adverse impacts on health and quality of life;*
> - *mitigate and minimise adverse impacts on health and quality of life, and*
> - *where possible, contribute to the improvement of health and quality of life."*

14.2.5 The first two points require that significant adverse impacts should not occur and that, where a noise level falls between a level which represents the lowest observable adverse effect and a level which represents a significant observed adverse effect:

> *"... all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life whilst also taking into consideration the guiding principles of sustainable development. This does not mean that such effects cannot occur."*

National Guidance

14.2.6 Relevant national guidance for noise and vibration assessment includes:

- British Standard (BS) 7445: Parts 1 and 2 - Description and measurement of environmental noise (Ref. 15.2 & 15.3). The Standard provides details of the instrumentation and measurement techniques to be used when assessing environmental noise, and defines the basic noise quantity as

the continuous A-weighted sound pressure level (LAeq). Part 2 of BS 7445 replicates ISO standard 1996-2.
- BS4142:1997 - Method for rating industrial noise affecting mixed residential and industrial areas (Ref. 15.4). The Standard provides a method for determining noise levels from factories and other industrial premises, and the existing background noise level. It also prescribes a method for assessing whether the industrial noise is likely to give rise to complaints.
- World Health Organisation (WHO) Guidelines for community noise - These guidelines present health-based noise limits intended to protect the population from exposure to excess noise. It presents guideline limit values at which the likelihood of particular effects, such as sleep disturbance or annoyance, may increase. The guideline values are 50 or 55dB LAeq during the day, related to annoyance, and 45 dB LAeq or 60dB LAmax at night, related to sleep disturbance.
- BS5228:1999+A1:2014 Code of practice for noise and vibration control on construction and open sites - Part 1 - This document provides recommendations for basic methods of noise and vibration control relating to construction and open sites where work activities/operations generate significant noise and/or vibration levels. The legislative background to noise and vibration control is described and recommendations are given regarding procedures for the establishment of effective liaison between developers, site operators and local authorities. This British Standard provides guidance on methods of predicting and measuring noise and assessing its impact on those exposed to it.
- Calculation of Road Traffic Noise (CRTN). This document provides a method for assessing noise from road traffic, in the UK. The calculation methods provided include correction factors to take account of variables affecting the creation and propagation of road traffic noise, accounting for the percentage of heavy goods vehicles, different road surfacing, inclination, screening by barriers and relative height of source and receiver.
- Design Manual for Roads and Bridges (DMRB). Volume 11, Part 3, Section 7 provides guidance on the environmental assessment of noise impacts from road schemes. DMRB contains advice and information relating to transport-related noise and vibration, which has relevance with regard to the construction and operational traffic impacts affecting sensitive receptors adjacent to road networks. It also provides guideline significance criteria for assessing traffic related noise impacts.
- BS8233:2014 – Guidance on sound insulation and noise reduction for buildings – Code of Practice. Provides a methodology to calculate the noise levels entering a building through facades and façade elements and provides details of appropriate measures for sound insulation between dwellings. Includes recommended internal noise levels which are provided for a variety of situations.

Local Planning Policy

14.2.7 Core Strategy Policy DP6 of the Redcar and Cleveland Local Development Framework (RCBC, 2007) states:

> *"Development that would give rise to increased levels of noise or vibration or which would add to air, land or water pollution, by itself or in accumulation with existing or other proposed uses, will only be permitted it is acceptable in terms of:*

- *human health and safety,*
- *environment; and*
- *general amenity.*

Where pollution is unavoidable, mitigation measures to reduce pollution levels will be required in order to meet acceptable limits."

Consultation

14.2.8 A summary of the comments received from PINS with regard to noise and vibration during January 2014 is presented in **Table 14-1**.

Table 14-1 Summary of comments received from PINS with regard to noise and vibration

Comment	Section of PER in which comment has been addressed
The Secretary of State recommends the choice of sensitive noise receptors to be included in the assessment is agreed with the Environmental Health Officer at RCBC.	Section 14.2 (Paragraphs 14.2.9 to 14.2.10)
Consideration should also be given to discussing with Natural England the appropriate study area and methodology to assess potential noise and vibration impacts on marine and terrestrial ecology.	Section 14.3. Discussions with Natural England are on-going.
Information on types of vehicles and plant and machinery to be used should be provided.	Section 14.3 (Table 14.2 and 14.3)
The applicant should include a detailed assessment on the noise and vibration impacts from piling and dredging on both humans and ecological receptors.	Section 14.5 and 14.6 (Paragraphs 14.5.1 to 14.5.9 and Paragraphs 14.6.1 to 14.6.3).
Noise impacts on people should be specifically addressed and particularly any noise disturbance at night and other unsocial hours such as weekends and public holidays.	Section 14.5 (Paragraphs 14.5.1 to 14.5.9)
Consideration should be given to monitoring noise complaints during construction and operation.	To be considered further once the noise impact assessment has been completed.
Given the proximity of the identified development site to designated sites, the piling element of both options under consideration should be fully assessed. A realistic worst case scenario should be identified and subsea acoustic modelling used to identify the potential impact zone. This should also include in-combination impact where appropriate.	Section 14.3 (Paragraphs 14.3.21 to 14.3.26) Section 14.5 (Table 14.18; Figure 14.3 and Paragraphs 14.5.4 to 14.5.7). Underwater noise modelling considered as part of Sections 8 and 11.

14.2.9 In January 2014, contact was made with RCBC's Environmental Health Department to discuss the proposed noise assessment for the harbour. Agreement on the proposed baseline noise assessment methodology and impact criteria, concerning potential noise and vibration from construction of the harbour facility, as well as noise associated with the operational phase, was reached. Agreement was also reached on the proposed receptor monitoring locations for the noise and vibration assessment.

14.2.10 Consultation with a representative from the Wilton Complex has also been undertaken. It was determined through this consultation that the recent economic downturn has resulted in a significant fall in the background noise levels around the Wilton Complex which could be reversed in the event of an economic up-turn.

14.3 Methodology

Study area

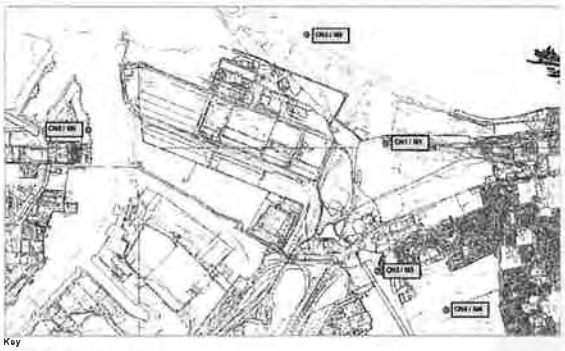
14.3.1 The study area for noise and vibration assessment generally comprises the area immediately adjacent to the proposed scheme footprint, up to a distance of around 200m. However, the closest noise sensitive receptors in each geographical direction are taken into account, on the basis that receptors further from the site would experience lower noise effects due to the increased distance. The study also comprises the area immediately surrounding the road network significantly affected by the development. The extent of the road network considered for this assessment has been dictated by the Transport Assessment.

14.3.2 For the purpose of the noise and vibration impact assessment, three categories of noise sensitive receptors have been defined to assess the potential direct and indirect impacts associated with noise impacts arising from the proposed scheme. These are:

1. sensitive ecological receptors immediately surrounding the proposed harbour facility;
2. sensitive residential receptors close to the proposed harbour facility; and,
3. sensitive residential receptors close to the proposed conveyor route.

14.3.3 The assessed noise sensitive receptors considered within this section of the PER are shown below in **Figure 14-1**.

Figure 14-1 Assessed receptor locations



Key

CN1/M1 Residence at Marsh House Farm
CN2/M2 Ecological receptors on South Gare and Coatham Sands SSSI
CN3/M3 Residences at junction of Broadway West and Wilton Avenue (Dormanstown)
CN4/M4 Residence at Foxrush Farm
CN5/M5 Ecological receptors on adjacent bank of River Tees

Existing environment

14.3.4 In order to characterise the existing environment within the study area, a baseline noise survey was undertaken. Measurements of the ambient noise level were taken at locations that were representative of nearby noise sensitive receptors that have the potential to be affected by the construction and operational phases of the proposed scheme. The noise survey took account of the following general descriptors of noise:

- L_{Aeq} – the equivalent continuous sound pressure level over the measurement period. This parameter was standardised as pertinent for land use within BS7445-2;
- L_{Amax} – the maximum sound pressure level occurring within the defined measurement period; and,
- L_{A90} – the sound pressure level exceeded for 90% of the measurement period and is indicative of the background noise level.

14.3.5 It is the equivalent continuous sound pressure level (LAeq) defined below which is the conventional descriptor of environmental noise.

$$L_{Aeq,T} = 10 \times \log\left[\frac{1}{T}\int \frac{p^2(t)dt}{p_0^2}\right] dB$$

14.3.6 Noise measurements are normally taken with an A-weighting (denoted by a subscript 'A') to approximate the frequency response of the human ear.

14.3.7 Sensitive receptors, in the context of noise and vibration, are typically residential premises but can also include schools, places of worship and noise/vibration sensitive commercial premises.

14.3.8 The noise environment around the proposed harbour and conveyor route is largely governed by three main noise sources: the A1085, the SSI Steel Works and the Wilton Complex.

14.3.9 In order to establish a good baseline dataset for receptors close to the Wilton Complex, it was deemed appropriate to use noise data collected by an existing monitor at Lazenby, on the southern boundary of the Wilton Complex. The location of the existing monitor is likely to provide an accurate representation of the noise environment at residential receptors close to the proposed scheme, namely Dormanstown and Foxrush Farm. Noise data from this existing monitor was acquired for a 15 month period from January 2013 to March 2014 and, therefore, the data acquired represents a long term measure of the existing noise environment, accounting for seasonal variations. Further existing baseline data is being sourced from monitoring that has been undertaken at the gas compound and further baseline noise surveys are being planned in the vicinity of Foxrush Farm and Manor Farm.

Construction phase noise assessment

Residential receptors

14.3.10 Noise levels for the construction phase were calculated using the methods and guidance in BS 5228. This Standard provides methods for predicting receptor noise levels from construction works based on the number and type of construction plant and activities operating on site, with corrections to account for:

- the 'on-time' of the plant, as a percentage of the assessment period;
- distance from source to receptor;
- acoustic screening by barriers, buildings or topography; and,
- ground type.

14.3.11 Source noise levels for each piece of plant equipment operating were used as the basis for the calculation and were derived from Annex C of BS 5228.

14.3.12 An indicative list of construction equipment has been developed (**Table 14-1**) and typical noise emissions, derived from BS5228, have been used for the noise assessment. The results of the

calculation were presented as the dB $L_{Aeq\,10h}$ noise levels, representing a conservative prediction of the noise level that might affect adjacent receptors during construction activity.

14.3.13 The following assumptions were made:

- Construction activities would take place 24 hours a day.
- All ground was assumed to be acoustically hard and reflective, i.e. concrete/tarmac.
- The 'on-time' for all plant was assumed to be 50%, with the exception of power generation plant and compressors which were assumed to operate 100% of the time.

14.3.14 The list of the assumed plant used for the construction noise assessment is presented in **Table 14-2** and **Table 14-3** for the quay and conveyors.

Table 14-2 List of assumed plant for quay construction noise assessment

Phase	Plant / Activity	No.	Noise level (dB L_{eq} at 10m)	On-time (%)
Ground preparation / Earthworks	Dozer (clearing)	1	80	50
	Tracked excavator (clearing)	2	77	50
	Dump truck	2	79	50
	Dozer (towing roller)	1	81	50
Piling	Percussive piling rig (0.9m hammer drop - 3000kgm/blow)	1	108	50
	Compressor	2	75	50
	Concrete pump	1	78	50
	Tracked excavator (inserting cages)	1	74	50
Concreting foundations	Concrete mixer truck & pump	1	75	50
	Poker vibrator	2	75	50
Capital dredging of berthing pocket	Dredging Ship	1	77	100
General construction	Tracked excavator	3	77	50
	Dump truck	2	79	50
	Tracked mobile crane	2	75	50
	Diesel Generator (site power)	2	60	100
General construction	Crane (land and floating)	9	82	100

Table 14-3 List of assumed plant for conveyor construction noise assessment

Phase	Plant / Activity	No.	Noise level ($dB\ L_{Aeq}$ at 10m)	On-time (%)
Ground preparation / Earthworks	Dozer (clearing)	1	80	50
	Tracked excavator (clearing)	2	77	50
	Dump truck	2	79	50
	Dozer (towing roller)	1	81	50
	Compressor	2	75	50
	Concrete pump	1	78	50
	Tracked excavator (inserting cages)	1	74	50
Concreting foundations	Concrete mixer truck & pump	1	75	50
	Poker vibrator	2	75	50
General construction	Tracked excavator	3	77	50
	Dump truck	2	79	50
	Tracked mobile crane	2	75	50
	Diesel Generator (site power)	2	60	100

14.3.15 Noise sensitive receptors, at which predicted construction noise impacts were assessed, were selected from the closest residential receptors, or groups of residential receptors, to the proposed scheme footprint. The receptors are listed in **Table 14-4** and shown on **Figure 14-1**.

Table 14-4 Construction noise receptor locations

Identifier	Description	Distance to site boundary (m)
CN1/M1	Residence at Marsh House Farm	3000
CN2/M2	Ecological receptors on South Gare and Coatham Sands SSSI	2800
CN3/M3	Residences at junction of Broadway West and Wilton Avenue (Dormanstown)	3180
CN4/M4	Residence at Foxrush Farm	4100
CN5/M5	Ecological receptors on the opposite bank of River Tees	615

14.3.16 The predicted construction noise levels were assessed against noise limits derived from advice within Annex E of BS5228. The Standard details the "ABC method", which specifies a construction noise limit

based on the existing ambient noise level. **Table 14-5**, reproduced from BS5228, demonstrates the criteria for selection of a noise limit for a specific receptor location.

Table 14-5 Construction noise threshold levels based on the ABC method (BS5228)

Assessment category and threshold value period (L_{Aeq})	Threshold value, in decibels (dB)		
	Category A	Category B	Category C [C]
Night time (23.00 to 07.00)	45	50	55
Evening and weekends [D]	55	60	65
Daytime (07.00 – 19.00) and Saturdays (07.00 - 13.00)	65	70	75
[A] Category A threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.			
[B] Category B threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.			
[C] Category C threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.			
[D] 19.00–23.00 weekdays, 13.00–23.00 Saturdays and 07.00–23.00 Sundays.			

14.3.17 The criteria for assessing the significance of predicted noise impacts in relation to the above construction noise thresholds, is detailed below in **Table 14-6**.

14.3.18 The significance criteria for construction noise are derived from the 'ABC method' described in BS 5228, which recommends three different construction noise thresholds depending on the existing ambient noise level. The subsequent thresholds for varying degrees of impact are defined for each category, A, B or C. The thresholds for change between the significance levels were determined on the basis that the smallest perceptible change in environmental noise is typically 3dB, and that a change of 10dB typically relates to a subjective doubling or halving of the apparent loudness of a noise source.

Table 14-6 Daytime and evening construction noise significance criteria (residential)

Construction noise level (dB)			Impact significance
A) 65dB threshold	B) 70dB threshold	C) 75dB threshold	
< 65	< 70	< 75	No impact
65 – 68	70 – 73	75 – 78	Negligible
68 – 70	73 – 75	78 – 80	Minor
70 – 75	75 – 80	80 – 85	Moderate
> 75	> 80	> 85	Major

Table 14-7 Night time construction noise significance criteria (residential)

Construction noise level (dB)			Impact significance
A) 45dB threshold	B) 50dB threshold	C) 55dB threshold	
< 45	< 50	< 55	No impact
45 – 48	50 – 53	55 – 58	Negligible
48 – 50	53 – 55	58 – 60	Minor
50 – 55	55 – 60	60 – 65	Moderate
> 55	> 60	> 65	Major

Waterbird receptors

14.3.19 Wright *et al* (2010) investigated the effects upon waterbirds to impulsive noise and have identified ranges in noise which caused behavioural responses (based on a measured L_{Aeq}). These can be generally outlined as:

- no observable behavioural response: 54.9 to 71.5dBA (with a high proportion of extreme outliers);
- non-flight behavioural response: 62.4 to 79.1dBA;
- flight with return: 62.4 to 73.9dBA; and,
- flight with all birds abandoning the site: 67.9 to 81.1dBA.

14.3.20 The above information highlights that below 55dBA effects will not be significant, but when noise levels increase, particularly approaching 70dBA, there is a range of bird responses, which have the potential to have significant effects.

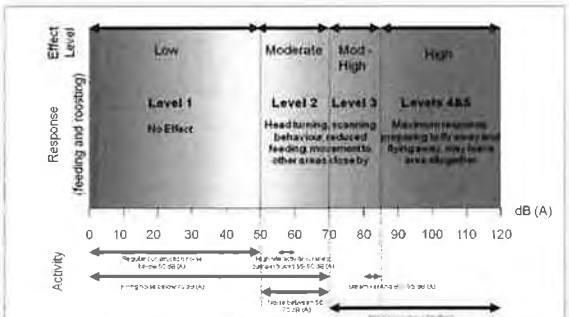
14.3.21 Further information on noise levels affecting waterbirds is provided by Cutts *et al* (2008). This provides a useful figure of waterbird response to construction disturbance, reproduced below within **Figure 14.2.** Cutts *et al* (2008) comment that:

> *"... ambient construction noise levels should be restricted to below 70dBA, birds will habituate to regular noise below this level. Where possible sudden irregular noise above 50dBA should be avoided as this causes maximum disturbance to birds".*

14.3.22 Based on these studies, the noise levels of 70dBA for temporary construction noise and 55dBA for general operational noise are considered to be suitable thresholds to indicate a level of effect where disturbance due to noise may cause a behavioural response.

14.3.23 The criteria for assessing the significance of predicted noise impacts in relation to ecological receptors are detailed in **Table 14-8**.

Figure 14-2 Waterbird response to construction disturbance



Source: Cutts, N; Phelps, A; Burdon, D. (2008) Construction and Waterfowl: Defining Sensitivity, Response, Impacts and Guidance. Report to Humber INCA. Institute of Estuarine and Coastal Studies, University of Hull

Table 14-8 Day, evening and night construction noise significance criteria (ecological)

Construction noise level (dB)	Impact significance
< 50	Negligible
50 – 70	Minor
70 – 85	Moderate
> 85	Major

Construction related traffic noise

14.3.24 Noise level increases due to increases in traffic volume and composition on surrounding local roads were calculated in accordance with the methodology contained in Calculation of Road Traffic Noise (CRTN). The significance of any predicted change in noise level was then assessed in accordance with the criteria contained in the Design Manual for Roads and Bridges (DMRB).

14.3.25 Following the methodology contained in DMRB, Volume 11, Section 3, Chapter 3 an initial screening assessment has been undertaken to assess whether there would be any significant changes in traffic volumes as a result of the proposed scheme. Any road links with a predicted increase in traffic volume

of 25%, or a decrease of 20%, will be identified. Such changes in traffic volume would correspond to a 1dB(A) change in noise level at the relevant road link. A change in noise level of less than 1dB(A) is regarded as imperceptible and, therefore, of negligible significance. If there are no increases greater than 25% or a decrease of 20% or greater, then the guidance indicates that no further assessment needs to be conducted (Highways Agency, 2011).

14.3.26 Where road links were predicted to have an increase of greater than 25% or a decrease of 20%, a noise level calculation should be undertaken following the procedure outlined in CRTN.

14.3.27 **Table 14-9** presents the 18-hour Annual Average Weekday Traffic (AAWT) data for the roads to be used during construction programme; data were sourced from the Transport Assessment (see **Section 12**). Traffic predictions have not yet been finalised for the baseline plus development scenario and are not, therefore, included in **Table 14-9**.

Table 14-9 AAWT traffic data used for the construction traffic noise assessment

Link Description	Baseline 2014 flows AAWT		Baseline + Development AAWT	
	Total Vehicles	Total HGVs	Total Vehicles	Total HGVs
ATC Location 1 A1042 (Kirkleatham Ln)	11,344	362	---	---
ATC Location 2 A1085 (Truck Road)	19,650	1,033	---	---
ATC Location 3 A1053 (Greystone Road)	13,865	1,335	---	---
ATC Location 4 A174	33,521	1,580	---	---
DfT CP4868* A1053 (Tees Dock Road)	22,255	1,705	---	---

14.3.28 **Table 14-10** shows noise impact criteria for the assessment of changes in road traffic noise due to the addition of project related construction traffic. This table has been reproduced from Table 3.1 of DMRB.

Table 14-10 Construction noise significance criteria

Increase in traffic noise level (dB $L_{A10,18h}$)	Impact magnitude
0.0 – 0.9dB	Negligible
1.0 – 2.9dB	Low
3.0 – 4.9dB	Medium
≥ 5.0dB	High

Construction related vibration

14.3.29 Ground borne vibration can result from construction works and may lead to perceptible levels of vibration at nearby receptors, which at higher levels can cause annoyance to residents. In extreme cases, cosmetic or structural building damage can occur, however vibration levels have to be very high for this effect to be manifested and such cases are rare.

14.3.30 High vibration levels generally arise from 'heavy' construction works such as piling, deep excavation, or dynamic ground compaction. The use of piling during the construction of the port terminal would be required; however, there is generally a large separation distance between all construction works and residential properties, with no residential properties within 3000m of the proposed piling works for the port terminal. There are however, residential properties within very close proximity (less than 100m) of the conveyor system envelope.

14.3.31 Annex E of BS5228-2:2009 contains empirical formulae derived by Hiller and Crabb (2000) from field measurements relating resultant peak particle velocity (PPV) with a number of other parameters for vibratory compaction, dynamic compaction, percussive and vibratory piling, the vibration of stone columns and tunnel boring operations. These prediction equations are based on the energy approach. Use of these empirical formulae enables resultant PPV to be predicted and for some activities (vibratory compaction, vibratory piling and vibrated stone columns) they can provide an indicator of the probability of these levels of PPV being exceeded.

14.3.32 The empirical equations for predicting construction-related vibrations provide estimates in terms of PPV and, therefore, the consequences of predicted levels in terms of human perception and disturbance can be established through direct comparison with the BS5228-2:2009 guidance vibration levels.

14.3.33 Using this approach to calculate the resultant vibration levels from percussive piling at the identified sensitive receptors (**Figure 14-1**), it has been concluded that the separation distance, as outlined in **Table 14-4**, is large enough to protect receptors from construction related ground borne vibration. It is predicted that vibration would not adversely affect residential receptors and, hence, this has not been assessed in detail.

Operational phase assessment

14.3.34 To predict the noise associated with the operational phase of the proposed scheme, the assessment utilised SoundPLAN noise modelling software. The software implements accepted national and international acoustic calculation standards. The calculation algorithm described in International Standard (ISO) 96133 was used in this assessment for calculating noise levels at noise sensitive locations in close proximity to the proposed scheme footprint. The calculation method takes account of air absorption, distance attenuation, barriers and topography and light downwind conditions from source to receptor. A three-dimensional model was created using topographical data of the local area and plans and elevations of the proposed development site. The model incorporated the proposed scheme, nearby residential dwellings, auxiliary buildings and the surrounding road network.

14.3.35 Traffic movements associated with the operational aspects of the proposed scheme were deemed to be negligible and, hence, have not been assessed in detail.

14.3.36 The following assumptions were made within the assessment:

- all ground was assumed to be acoustically hard and reflective, i.e. concrete/tarmac; and
- the 'on-time' for all cranes was assumed to be 50%, with the exception of vessels which were assumed to operate 100% of the time.

14.3.37 Operational activities would take place according to the hours outlined in **Table 14-11**.

Table 14-11 Operational activity

Operational activity	Indicative working hours
Vessel at berth Ship loader operations at berth (including conveyors)	Continuous operation

14.3.38 The list of the assumed plant used for the construction noise assessment is presented in **Table 14-12**.

Table 14-12 List of assumed plant for operational noise assessment

Phase	Plant / Activity	No.	Noise level (dB L_{Aeq} at 10m)	On-time (%)
Operational: Loading/Unloading/Docking	Vessel	1	77	100
	Ship Loader (including conveyors)	2	95	100

14.3.39 The following points should be noted regarding the noise model:

- All noise emitting equipment was modelled as a point source, at a height of 3m above ground.
- The ground surrounding the proposed harbour facility was assumed to be hard and acoustically reflective surfaces, such as concrete.
- Acoustic propagation effects were calculated using the ISO9613 method.
- Free field noise levels were calculated at first floor height for each receptor, as the results were slightly higher than at ground floor level.
- A +5dB 'acoustic feature' penalty, as defined in BS4142, was added to the noise level calculated at each receptor. This is to account for the impulse and irregular nature of noise from a port, and represents a conservative approach.

14.3.40 BS4142 states that an exceedance of background noise levels by 5dBA is of 'marginal significance' and an exceedance of 10dBA is "likely to cause complaints". Therefore the thresholds for medium and high impacts were set at 5dBA and 10dBA above the threshold level of 44dBA for residential receptors (**Table 14-13**).

Table 14-13 Harbour and conveyor operational noise impact magnitude criteria

Broadband operational port and conveyor noise level at residential receptor (dB $L_{Aeq,5min}$)*	Impact magnitude
≤ 44dB	Negligible
45dB to 49dB	Low
50dB to 55dB	Medium
> 55dB	High

**Based on the worst case night time level measured at the nearest residential receptor in Dormanstown.*

14.3.41 The 44dBA threshold at residential receptors used in this assessment applies to noise levels outside of a property. The harbour and conveyor assessment is based upon predicted rated levels being equal to the measured background. The thresholds for ecological receptors are shown in **Table 14-8**.

14.3.42 The combination of receptor sensitivity and impact magnitude will be used to derive the overall impact criteria, as shown in **Table 14-14**.

Table 14-14 Overall impact resulting from each combination of receptor sensitivity and the magnitude of the effect upon it

Magnitude	Sensitivity: High	Medium	Low	Negligible
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Minor
Low	Moderate	Minor	Minor	Negligible
Negligible	Minor	Negligible	Negligible	Negligible
No effect	No impact	No impact	No impact	No impact

14.4 Existing environment

14.4.1 As there was no existing noise monitoring data for the area around the proposed harbour facility, a baseline survey was determined to be required. The surrounding heavy industrial land uses (including the Norsea Oil Terminal at Seal Sands, North Tees Oil Refinery, Hartlepool nuclear power station, Seal Sands storage terminal) are considered likely to be the main contributors to the baseline noise levels. There are numerous other industrial and commercial activities in the surrounding area which operate for 24 hours a day. The adjacent rail and road network is also likely to contribute to the existing noise environment.

14.4.2 There are no significant sources of ground-borne vibration in the local environment and vibration levels are expected to be negligible. The main noise sensitive receptors associated with the proposed scheme include:

- residential properties at a significant distance from the proposed scheme;
- users of amenity areas around the mouth of the Tees and Coatham Sands,
- workers within the adjacent industrial areas; and,
- marine life and bird populations.

14.4.3 With respect to vibration, due to the reduction in ground-borne effects with distance from the source, no residential receptors are likely to be affected.

Continuous unattended survey

14.4.4 As set out in **Section 14.3**, the noise environment around the proposed harbour and conveyor route is largely governed by three main noise sources: the A1085, the Steelworks and the Wilton Complex.

14.4.5 In order to establish a good baseline dataset for receptors close to the Wilton Complex, it was deemed appropriate to use existing noise data collected for the Wilton site. This data extends from January 2013 until March 2014 and represents typical night time conditions, as this is the sensitive time for sleep disturbance, and to further characterise the existing noise climate in the vicinity of the site.

14.4.6 A summary of these noise measurement results are detailed in **Table 14-15**.

Table 14-15 Summary of Wilton baseline noise levels (January 2013 to March 2014)

Date	Period	Measured L_{Aeq} (dB)	Measured L_{A90} (dB)
01/01/13 to 31/12/13	Night (23:00 – 05:00)	47.95	44.10
01/01/14 to 31/03/14	Night (23:00 – 05:00)	48.50	44.12

Attended survey

14.4.7 An attended baseline noise survey was undertaken by Royal HaskoningDHV on 1 and 2 April 2014, representing typical night time and daytime conditions, to further characterise the existing noise climate in the vicinity of the site.

14.4.8 The noise measurement results are detailed below in **Table 14-16** and **Table 14-17** (representing daytime and night time periods respectively) with observations made regarding the character of noise and any specific noise sources audible during the surveys. The receptor locations are shown **Figure 14-1**.

Table 14-16 Measured daytime baseline noise levels

Location ID	Receptor Name	Period	Measured Noise Level (dB)			
			L_{Aeq}	L_{A90}	L_{A10}	L_{Amax}
M1	Marsh Farm House	00:30-00	56.4	39.2	58.2	77.3
M2	South Gare & Coatham Sands SSSI	00:30-00	57.8	42.7	61.3	71.9

Table 14-17 Measured night time baseline noise levels

Location ID	Receptor Name	Period	Measured Noise Level (dB)			
			L_{Aeq}	L_{A90}	L_{A10}	L_{Amax}
M1	Marsh Farm House	00:15-00	50.2	47.6	51.7	62.7
M2	South Gare & Coatham Sands SSSI	00:15-00	51.3	49.8	52.7	52.7

NB – Night time noise levels were slightly elevated due to an increasing breeze (<3.5m/s⁻¹)

14.5 Assessment of potential impacts during construction

Noise disturbance to sensitive receptors due to construction of the harbour facility

14.5.1 **Tables 14-18** and **14-19** shows the derived construction noise threshold level for the agreed noise receptors, based on the measured day and night time ambient noise level at the closest baseline monitoring location.

Table 14-18 Day and evening construction noise limits for each receptor

Receptor	Measured daytime / evening ambient noise level ($dB\ L_{Aeq}$)	Category	Daytime noise threshold ($dB\ L_{Aeq}$)	Evening noise threshold ($dB\ L_{Aeq}$)
CN1/M1	56	A	65	55
CN2/M2	58	n/a	50	50
CN3/M3	48*	A	65	55
CN4/M4	48*	A	65	55
CN5/M5	58**	n/a	50	50

**Derived from the night time Wilton measured level.*
***Measurement not possible at this location, therefore level is derived from the measured daytime level at South Gare/Coatham Sands SSSI.*

Table 14-19 Night construction noise limits for each receptor

Receptor	Measured night ambient noise level ($dB\ L_{Aeq}$)	Category	Night noise threshold ($dB\ L_{Aeq}$)
CN1/M1	50	B	50
CN2/M2	51	n/a	50
CN3/M3	48*	B	50
CN4/M4	48*	B	50
CN5/M5	51**	n/a	50

14.5.2 In order to predict the noise levels from the construction phase a computer noise modelling study was undertaken using SoundPLAN.

Predicted noise impact from piling and dredging activities

14.5.3 Based on the construction source noise levels listed in **Table 14-2** and the impact significance criteria set out in **Table 14-10** the following piling noise impact was predicted (**Tables 14-20** and **4-21**). Noise isopleth contour plots are also provided below in **Figures 14-3**, **14-4** and **14-5**.

Table 14-20 Predicted piling noise levels and comparison with daytime and evening noise limits

Construction Phase Activity	Receptor Number	Daytime / evening noise threshold	Predicted Construction Activity Level at NSR	Impact Magnitude
Piling	CN1/M1	65 dB $L_{Aeq\ 5min}$	31.2	Negligible
	CN2/M2	50 dB $L_{Aeq\ 5min}$	30.4	Negligible
	CN3/M3	65 dB $L_{Aeq\ 5min}$	31.7	Negligible
	CN4/M4	65 dB $L_{Aeq\ 5min}$	30.5	Negligible
	CN5/M5	50 dB $L_{Aeq\ 5min}$	52.6	Minor
Phase 1 Dredging	CN1/M1	65 dB $L_{Aeq\ 16hr}$	27.6	Negligible
	CN2/M2	50 dB $L_{Aeq\ 16hr}$	29.6	Negligible
	CN3/M3	65 dB $L_{Aeq\ 16hr}$	28.6	Negligible
	CN4/M4	65 dB $L_{Aeq\ 16hr}$	25.9	Negligible
	CN5/M5	50 dB $L_{Aeq\ 16hr}$	51.5	Minor
Phase 2 Dredging	CN1/M1	65 dB $L_{Aeq\ 16hr}$	29.4	Negligible
	CN2/M2	50 dB $L_{Aeq\ 16hr}$	29.1	Negligible
	CN3/M3	65 dB $L_{Aeq\ 16hr}$	29.1	Negligible
	CN4/M4	65 dB $L_{Aeq\ 16hr}$	26.3	Negligible
	CN5/M5	50 dB $L_{Aeq\ 16hr}$	49.4	Negligible

Table 14-21 Predicted piling noise levels and comparison with night noise limits

Construction Phase Activity	Receptor Number	Night noise threshold	Predicted Construction Activity Level at NSR	Impact Magnitude
Piling	CN1/M1	50 dB $L_{Aeq\ 5min}$	31.2	Negligible
	CN2/M2	50 dB $L_{Aeq\ 5min}$	30.4	Negligible
	CN3/M3	50 dB $L_{Aeq\ 5min}$	31.7	Negligible
	CN4/M4	50 dB $L_{Aeq\ 5min}$	30.5	Negligible
	CN5/M5	50 dB $L_{Aeq\ 5min}$	52.6	Minor
Phase 1 Dredging	CN1/M1	50 dB $L_{Aeq\ 8hr}$	27.6	Negligible
	CN2/M2	50 dB $L_{Aeq\ 8hr}$	29.6	Negligible
	CN3/M3	50 dB $L_{Aeq\ 8hr}$	28.6	Negligible
	CN4/M4	50 dB $L_{Aeq\ 8hr}$	25.9	Negligible
	CN5/M5	50 dB $L_{Aeq\ 8hr}$	51.5	Minor
Phase 2 Dredging	CN1/M1	65 dB $L_{Aeq\ 8hr}$	29.4	Negligible
	CN2/M2	50 dB $L_{Aeq\ 8hr}$	29.1	Negligible
	CN3/M3	65 dB $L_{Aeq\ 8hr}$	29.1	Negligible
	CN4/M4	65 dB $L_{Aeq\ 8hr}$	26.3	Negligible
	CN5/M5	50 dB $L_{Aeq\ 8hr}$	49.4	Negligible

Figure 14-3 Construction phase - Piling

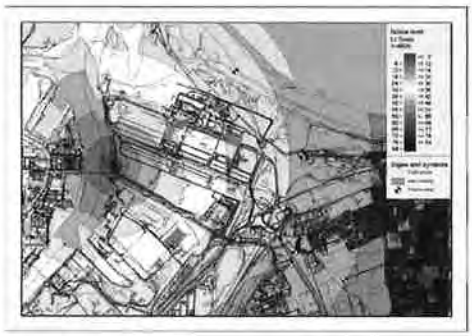


Figure14-4 Construction phase - Phase 1 dredging

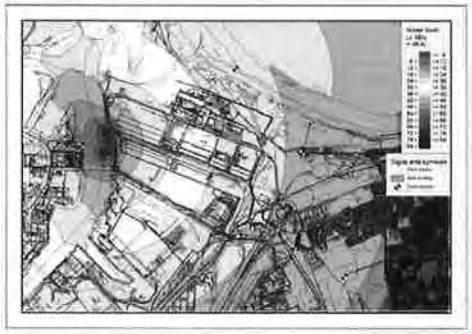
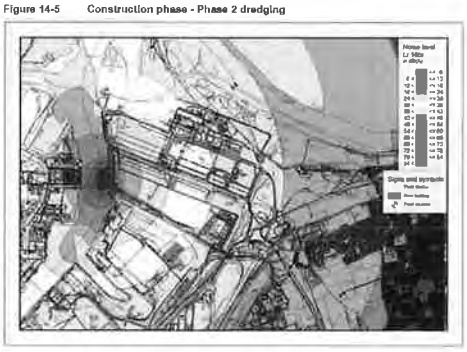


Figure 14-5 Construction phase - Phase 2 dredging



14.5.4 The results in **Table 14-20** and **Table 14-21** demonstrate that predicted construction noise levels are significantly below the proposed limits at residential receptors during the piling and dredging phases. Predicted construction noise levels are also significantly below the recommended internal levels in BS8233 Construction activities are predicted to have no impact at the selected residential receptor locations

14.5.5 There is also potential for the construction phase of the proposed scheme to result in noise disturbance to ecological receptors, including species utilising the nearby designated sites for nature conservation (as well as supporting habitat, including Bran Sands lagoon and Dabholm Gut) **(see Section 9.4)**

14.5.6 A minor impact is predicted at the ecological receptor CN5/M5 (ecological receptors on adjacent bank of the Tees estuary) during piling and Phase 1 dredging This is due to its close proximity to the works and a direct line of sight across the river The noise modelling exercise assumed that all construction equipment would be operating close to the site boundary, which would not necessarily occur at all times, therefore this represents a conservative assessment In addition, the baseline noise levels (58dB L_{Aeq} day and 51dB L_{Aeq} night) are in excess of the predicted construction noise level (52dB L_{Aeq}) during daytime, due to the dominant heavy industrial activities, making disturbance unlikely Construction noise levels are predicted to exceed the baseline levels by 1dB during night.

14.5.7 Due to the predicted minor impact at CN5/M5, the adoption of general good practice construction noise management measures (typically referred to as Best Practical Means (BPM) is recommended and discussed below in **Table 14-22**.

Construction traffic

14.5.8 It is considered likely that the proposed scheme would result in increased traffic movements on the road network Construction related traffic would be generated by site mobilisation at the start of the construction works (delivery of plant and equipment); delivery of materials during the construction works (piles, concrete, reinforcing); daily arrival and departure of site personnel at the start and end of the working day; and site demobilisation after the works are completed

14.5.9 The traffic associated with the activities outlined above has the potential to contribute to the ambient noise environment, and potentially cause disturbance to noise sensitive receptors It was not possible to undertake the Calculation of Road Traffic Noise at the time of writing this PER, as the baseline traffic flow data has not yet been generated from the traffic assessment; the assessment will be undertaken during the EIA process and the findings of the road traffic noise assessment will be presented in the ES

Potential mitigation measures

14.5.10 A generic noise mitigation scheme to reduce the significance of impacts to noise sensitive receptors (residential and ecological) is provided in **Table 14-22**

Table 14-22 Potential construction mitigation measures with regard to noise impacts

Mitigation measures
Examples of typical BPM proposed for adoption during the construction phase include: • Locating static noisy plant in use as far away from noise sensitive receptors as is feasible for the particular activity • Ensuring that plant and equipment covers and hatches are properly secured and there are no loose fixings causing rattling. • Using the most modern equipment available and ensuring such equipment is properly maintained and operated by trained staff. • Using silenced equipment where possible, in particular silenced power generators if night time power generation is required for site security or lighting. • Ensuring that vehicles and mobile plant are well maintained such that loose body fittings or exhausts do not rattle or vibrate. • Ensuring plant machinery is turned off when not in use. • Imposition of vehicle speed limits for heavy goods vehicle traffic travelling on access roads close to receptors and ensuring that vehicles do not park or queue for long periods outside residential properties with engines running unnecessarily. • Ensuring, where practicable, that site access routes are in good condition with no pot-holes or other significant surface irregularities. • Maintaining good public relations with local residents that may be affected by noise from the construction works. Effective communication should be established prior to construction works, keeping local residents informed of the type and timing of works involved, paying particular attention to potential evening and night time works and activities which may occur in close proximity to receptors. Leaflet drops, posters and public meetings or exhibitions are an effective method of keeping local residents informed. • Provision of contact details for a site representative in the event that disturbance due to noise or vibration from the construction works occurs; ensuring that any complaints are dealt with promptly and that subsequent resolutions are communicated to the complainant. • If night time works are envisaged, then a Section 61 Prior Consent Notice should be sort from RCBC. This is a formal agreement that construction noise would be managed in accordance with BPM.

14.6 Assessment of potential impacts during operation

Port and conveyor operation noise

14.6.1 The noise impact assessment is currently ongoing. However, noise emissions from all operational activities are not expected to significantly affect nearby residential receptors. The separation distance between the proposed harbour facility and the agreed receptors is sufficient to attenuate any potential noise emissions. The proposed scheme is located within an existing heavy industrial area and the baseline noise levels are elevated over both day and night periods.

14.6.2 There is potential for the proposed scheme to result in noise disturbance to ecological receptors present within the adjacent designated sites for nature conservation (as well as supporting habitat including Bran Sands lagoon and Dabholm Gut). This impact will be considered fully within the EIA once the noise assessments have been completed.

14.6.3 During the operational phase there is potential for the proposed scheme to result in noise level increases due to increases in traffic volume and composition on surrounding local roads. This impact will be considered fully within the EIA once the noise assessments have been completed.

14.7 Summary

14.7.1 Noise emissions from the worst case construction activities and all operational activities are not expected to significantly affect nearby residential receptors. The separation distance between the proposed construction works and the receptors, and the elevated baseline noise levels in an area dominated by heavy industrial activities, are sufficient to attenuate any potential noise and vibration emissions.

14.7.2 The potential exists for the construction and operational phases of the proposed scheme to adversely impact ecological receptors within the study area, including those utilising the adjacent designated sites for nature conservation and supporting habitat including the Bran Sands lagoon and Dabholm Gut. A conservative minor impact has been predicted at the ecological receptor CN5/M5 during piling and Phase 1 dredging. However, baseline noise levels are in excess of the predicted construction noise level due to the dominant heavy industrial activities, making disturbance unlikely.

15 ARCHAEOLOGY AND HERITAGE

15.1 Introduction

15.1.1 This section of the PER describes the existing environment with respect to the historic environment (archaeology and cultural heritage), and includes an assessment of the potential impacts of the construction and operational phases of the proposed scheme on the known archaeology and cultural heritage resource, including individual heritage assets.

15.1.2 Where considered appropriate, proposed mitigation measures are detailed and a discussion of the residual impacts presented where significant impacts have been identified.

15.1.3 Baseline information has been drawn from a range of sources, including an Archaeology and Heritage Desk-Based Baseline Appraisal Report (Technical Note) produced specifically for the YPP to cover the harbour facility (and Materials Handling Facility) (Royal HaskoningDHV, 2014) **(Appendix 15.1)**. The technical note was not intended to be a fully comprehensive archaeological desk-based assessment, but was conducted in order to specifically obtain the most recent historic environment records available and relevant to the scheme and to establish the main assets requiring further consideration and assessment within this section of the PER.

15.1.4 This section has also been compiled using existing information and reporting obtained from the various development proposals in the immediate area, including the NGCT, Tees Renewable Energy Plant, QEII Berth Development and Tees Dock No. 1 Quay. This approach of utilising existing information was outlined within the Environmental Scoping Report (Royal HaskoningDHV, 2013) and confirmed as acceptable within the PINS Scoping Opinion (PINS, 2014).

15.1.5 Much information has been drawn from, and can be found within, the Cultural Heritage Desk Based Assessment produced for the NGCT (AOC Archaeology, 2005) **(Appendix 15.2)**.

15.2 Legislation, policy and guidance

15.2.1 Further detail on relevant legislation, policy and guidance is included in the Technical Note **(Appendix 15.1 – specifically Section 3)**. Summaries of additional documents of note and those most relevant to the proposed scheme are also outlined below.

NPS for Ports

15.2.2 The NPS for Ports (Department for Transport, 2012) states that the construction, operation and decommissioning of port infrastructure has the potential to result in adverse impacts on the historic environment. As part of an ES, the NPS states that the applicant should provide a description of the significance of the heritage assets which have potential to be affected by the proposed scheme, and the contribution of their setting to that significance. The level of detail should be proportionate to the importance of the heritage assets and no more than is sufficient to understand the potential impact of the proposed scheme on the significance of the heritage asset. As a minimum, the applicant should

have consulted the Historic Environment Record (HER) and assessed the heritage assets themselves using expertise where necessary.

15.2.3 Where a proposed development site includes (or has potential for) heritage assets, the applicant should carry out a desk based assessment and, where the desk based research is insufficient to properly assess the interest, a field evaluation. The possibility of damage to buried features from disposal of dredged material should be taken into account. The applicant should ensure that the extent of the impact of the proposed scheme on the significance of any heritage assets can be adequately understood from the application and supporting documents.

National Planning Policy Framework

15.2.4 Designated and non-designated heritage assets are given protection under the NPPF. Provision for the historic environment is given principally in Section 12 'Conserving and Enhancing the Historic Environment' (paragraphs 126-141), which directs Local Planning Authorities to set out "*a positive strategy for the conservation and enjoyment of the historic environment, including heritage assets most at risk through neglect, decay or other threats. In doing so, they should recognise that heritage assets are an irreplaceable resource and conserve them in a manner appropriate to their significance*".

Protection of Wrecks Act (1973): Section One

15.2.5 Wrecks and wreckage of historical, archaeological or artistic importance can be protected by way of designation. It is an offence to carry out certain activities in a defined area surrounding a wreck that has been designated, unless a licence for those activities has been obtained.

Protection of Wrecks Act (1973): Section Two

15.2.6 This section provides protection for wrecks that are designated as dangerous due to their contents and is administered by the Maritime and Coastguard Agency through the Receiver of Wreck.

Ancient Monuments and Archaeological Areas Act (1979)

15.2.7 Under the terms of this Act, an archaeological site or historic building of national importance can be designated as a Scheduled Monument and is registered with the Department of Culture, Media and Sport (DCMS). Any development that might affect either the Scheduled Monument or its setting is subject to the granting of Scheduled Monument Consent. English Heritage advises the government on individual cases for consent and offers advice on the management of Scheduled Monuments.

Planning (Listed Buildings and Conservation Areas) Act (1990)

15.2.8 This Act covers the registration of Listed Buildings (buildings that are seen to be of special architectural or historic interest) and designation of Conservation Areas (areas of special architectural or historic interest the character or appearance of which it is desirable to preserve or enhance).

15.2.9 A Listed Building may not be demolished, altered or extended in any manner which would affect its character as a building of special architectural or historic interest without Listed Building Consent being granted. There are three grades of listing (in descending order):

- Grade I: buildings of exceptional interest;
- Grade II*: particularly important buildings of more than special interest; and,
- Grade II: buildings of special interest, warranting every effort to preserve them.

English Heritage Register of Parks and Gardens in England

15.2.10 The Register of Parks and Gardens of Special Historic Interest in England is maintained by English Heritage and divides the sites into three grade bands similar to those used for Listed Buildings.

English Heritage Setting Guidance

15.2.11 The Setting of Heritage Assets: English Heritage guidance includes sections outlining the definition of setting, the extent of setting and setting and the significance of heritage assets. Section 2.2 states that:

"Setting does not have a fixed boundary and cannot be definitively and permanently described as a spatially bounded area or as lying within a set distance of a heritage asset. Views on what comprises a heritage asset's setting may change as the asset and its surroundings evolve, or as the asset becomes better understood" (English Heritage, 2011).

Local Development Framework

15.2.12 Policy CS25 'Built and Historic Environment' of the RCBC Local Plan states that:

'Development proposals will be expected to contribute positively to the character of the built and historic environment of the Borough.

The character of the built and historic environment will be protected, preserved or enhanced. Particular protection will be given to the character and special features of: a) Conservation areas; b) Listed buildings, c) Historic parks and gardens, d) Archaeological sites; and e) The historic landscape of the Eston Hills.

Development which preserves or, where appropriate, enhances the character of important historic buildings and sites and their settings will be encouraged' (Redcar and Cleveland Borough Council, 2007)."

15.2.13 Also of note and relevant to historic environment considerations as part of the proposed scheme are:

- NPPF Planning Practice Guidance - Conserving and enhancing the historic environment.
- English Heritage Conservation Principles: policies and guidance for the sustainable management of the historic environment (2008).

- Institute for Archaeologists (IfA) Standard and Guidance for Historic Environment Desk-Based Assessment (revised 2012).
- Code of Practice for Seabed Development (Joint Nautical Archaeology Policy Committee, 2006).
- Protocol for Archaeological Discoveries Offshore Renewables Projects (The Crown Estate and Wessex Archaeology, 2010).
- Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector (The Crown Estate and COWRIE, 2011).
- Ports: the impact of development on the maritime historic environment (English Heritage, 2006).
- Marine Aggregate Dredging and the Historic Environment; Guidance note (BMAPA, English Heritage and Wessex Archaeology, 2003).

15.3 Consultation

15.3.1 **Table 15-1** provides a summary of comments received from PINS through the Scoping Opinion **(Appendix 4.1)** with respect to archaeology and cultural heritage.

Table 15-1 Summary of comments within the scoping opinion received from PINS during January 2014 with specific regard to archaeology and cultural heritage

Comment	Section of PER in which comment has been addressed (or details on how the comment will be addressed)
The archaeological assessment is to be based on existing data sources with further investigation proposed should the desk based study, baseline collation and walkover suggest further investigation is required. English Heritage is in general agreement with the applicants proposed approach.	Noted.
The SoS suggests that the need for vibrocore and borehole logs is discussed with English Heritage and the archaeologist of the local host authority, to assess the potential for peat and organic raw materials.	Consultation with English Heritage and RCBC is ongoing. This comment will be addressed during the subsequent stage of the EIA process.
English Heritage suggested the adoption of an archaeological reporting protocol to mitigate potential archaeological effects arising from dredging. The Crown Estates protocol would be a good example of such a document.	Section 15.6
English Heritage reiterated the need, as a matter of course (rather than if deemed appropriate) for all new vibrocore and borehole logs produced as a result of the works to be examined by a qualified geo-archaeologist to ascertain the presence / absence of peat or other organic raw materials.	Section 15.6 and Section 15.8 (Paragraph 15.8.4)

15 3 2 Consultation undertaken to date for the proposed scheme specific to archaeology and heritage includes:

Email contact and correspondence with RCBC's Strategic Planning Manager in order to introduce the project and later to request a search of the Redcar and Cleveland Historic Environment Record (HER) specific to the scheme – July and December 2013

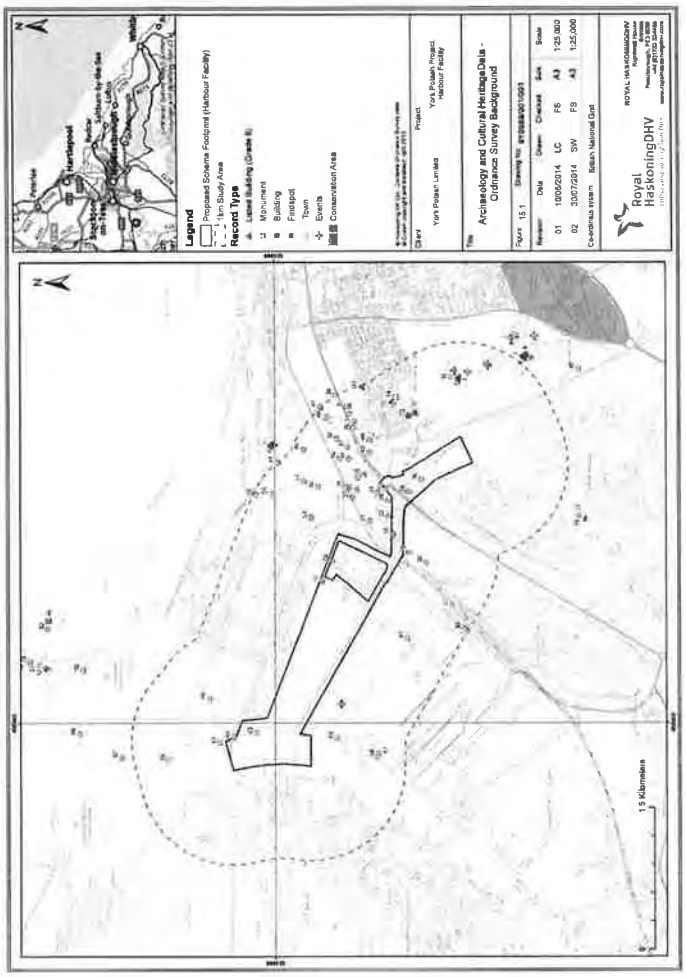
- Submission of the Environmental Scoping Report. Archaeology and heritage was covered under sub-section 5.11 – November 2013.
- PINS Scoping Opinion – January 2014. Archaeology and heritage was primarily dealt with under Section 3 - EIA Approach and Topic Areas (paragraphs 3.79 to 3.81) and in Appendix 2 (an emailed response from English Heritage – December 2013 to the Planning Inspectorate, as part of the scoping exercise)

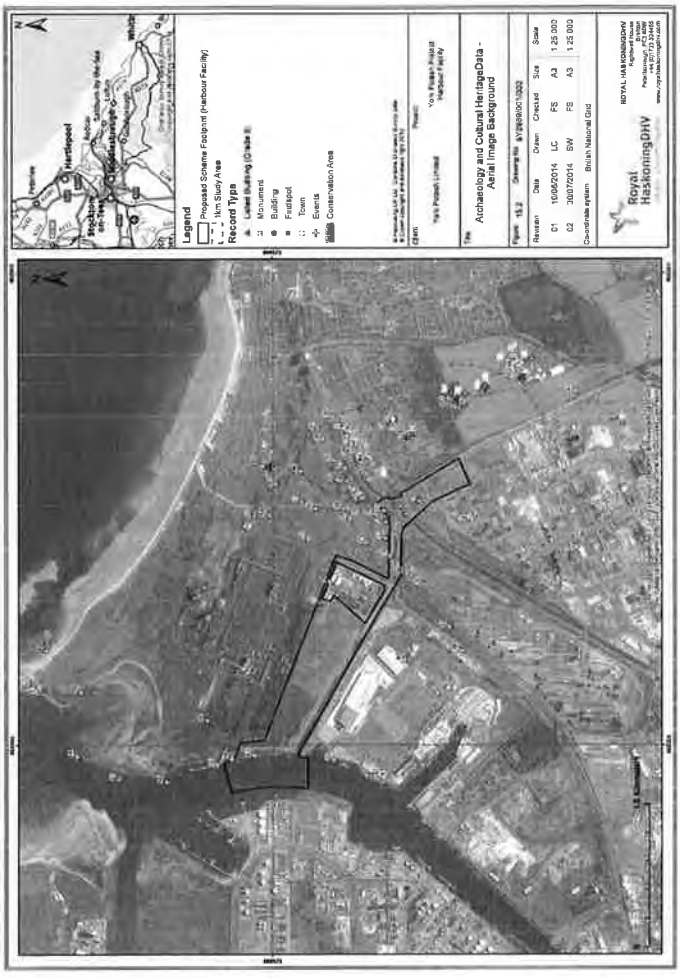
15.4 Methodology

Study area

15 4 1 A 1km study area was established for the purposes of the desk-based baseline appraisal (see Appendix 15.1) encompassing a sufficiently wide area that comprehensive baseline information could be collected and collated. In addition existing reporting was utilised from a variety of previous development proposals in the vicinity. The study area shown on Figure 15-1 and Figure 15-2 is focused specifically on the proposed scheme footprint for the harbour facility.

15 4 2 The study area broadly incorporates part of Seal Sands, the Teesside Works (SSI Steel Works), Dormanstown, Bran Sands sewage treatment works, a large car depot, Tesco's Teesport import warehouse and distribution centre, part of Wilton International Works, and the outskirts of Redcar.





Royal HaskoningDHV

Information resources

15 4 3 Information on all known heritage assets within the study area was collected from the Redcar and Cleveland HER as part of the Archaeology and Heritage Desk-based Baseline Appraisal (Technical Note) – see Appendix 15.1.

15 4 4 Further information was obtained from the Cultural Heritage Desk Based Assessment produced for the NGCT (AOC Archaeology, 2005).

15 4 5 A review of online records from the National Record of the Historic Environment (NRHE), National Heritage List online (http://list.english-heritage.org.uk/), was conducted in December 2013, predominantly to check for designated assets and to cross reference with data provided by the Redcar and Cleveland HER. A summary of the information sources used to inform this section of the PER is presented in Table 15-2.

Table 15-2 Main sources of archaeology and heritage information

Source	Data/Information
Redcar and Cleveland HER	Designated and Non-designated Heritage Assets
Redcar and Cleveland HER	Previous Archaeological Events / Investigations
English Heritage National Heritage List GIS Datasets	Designated Heritage Assets
Envirocheck Report / www.old-maps.co.uk	Cartographic Sources
AOC DBA (2005)	Cartographic Sources / Archaeological and Historical Background
Internet Sources	Further Archaeological and Historical Background
Redcar and Cleveland Historical Photo Archive / AOC DBA (2005)	Historic Aerial Photos

Impact assessment methodology

15 4 6 The impact assessment methodology adopted for archaeology and cultural heritage defines those assets likely to be impacted by the proposed development. The assessment is not limited to physical impact, but also assesses possible impact upon the setting of select heritage assets, whether visually, or in the form of noise, vibration, dust etc.

15 4 7 More specifically the impact assessment presents:

- The perceived heritage significance (importance) of any assets identified as being affected.
- The anticipated magnitude of effect (change) upon those assets.
- The significance of any identified impacts upon those assets.

15.4.8 In the absence of an industry standard methodology for heritage impact assessment, the impact assessment methodology adopted in this section is broadly in line with The Design Manual for Roads and Bridges, Volume 11, Section 3, Part 2 Cultural Heritage (Highways Agency document 208/07) (2008), in conjunction with various recent guidance documents such as 'Conservation Principles' (English Heritage, 2008) and 'The Setting of Heritage Assets' (English Heritage, 2011). Hence the methodology differs slightly (although not significantly) from the standard approach adopted more generally within this EIA, as set out in **Section 4**.

Heritage significance (importance)

15.4.9 The assessment of significance of any impact is largely a product of the heritage significance (importance) of an asset and the magnitude of the effect on it, qualified by professional judgement.

15.4.10 An assessment of effects on an asset involves an understanding of the heritage significance of the asset and in the case of an effect on the setting of that asset, the contribution that the setting makes to the significance of the asset. Policy sets out that the level of detail should be proportionate to the significance of the heritage asset and no more than is sufficient to understand the potential impact of the proposed development (NPPF paragraph 128, 2012).

15.4.11 The criteria for determining the heritage significance / importance of the assets are described in **Table 15-3** below.

15.4.12 The categories of heritage significance / importance do not necessarily reflect a definitive level of importance or value of an asset, but a provisional one based on a range of factors, including the evidential, archaeological, historical, aesthetic, architectural and communal heritage values of the assets. When combined, these factors offer representations of the importance (or significance) of a given asset and provide an analytical tool that can help inform later stages of archaeological assessment and the development of appropriate mitigation.

Table 15-3 Criteria for determining heritage significance (importance)

Heritage Significance (Importance)	Definitions / Examples of Assets / Receptors
High (International / National importance)	• World Heritage Sites • Scheduled Monuments • Grade I or II* Listed Building or structure • Designated historic landscapes of outstanding interest • Conservation Area containing very important buildings • Assets of acknowledged international / national importance • Assets that can contribute significantly to acknowledged international / national research objectives

Heritage Significance (Importance)	Definitions / Examples of Assets / Receptors
Medium (Regional importance)	• Grade II Listed Buildings or structures • Conservation Area containing buildings that contribute significantly to its historic character • Designated special historic landscapes • Assets that contribute to regional research objectives • Assets with regional value, educational interest or cultural appreciation
Low (Local importance)	• 'Locally Listed' building or structure • Assets compromised by poor preservation and/or poor contextual associations • Assets that contribute to local research objectives • Assets with local value, educational interest or cultural appreciation
Very Low	• Assets with no significant value or archaeological / historical interest
Uncertain (unknown)	• The importance / existence / level of survival of the asset has not been ascertained from available evidence

Magnitude of effect (change)

15.4.13 The classification of the magnitude of effect on heritage assets takes account of such factors as:

- the physical scale and nature of the anticipated disturbance; and
- whether specific features or evidence would be lost that are fundamental to the historic character and integrity of a given asset, and its understanding and appreciation.

15.4.14 Both physical and non-physical (e.g. visual, setting) impacts on heritage assets are considered. Impacts may be adverse or beneficial. Depending on the nature of the impact and the duration of development, impacts can also be temporary and / or reversible or permanent and / or irreversible.

15.4.15 The finite nature of archaeological remains means that physical impacts are almost always adverse, permanent and irreversible; the 'fabric' of the asset and, hence, its potential to inform our historical understanding, will be removed. By contrast, effects upon the setting of heritage assets will depend upon the scale and longevity of the development and the sensitivity with which the landscape is re-instated subsequent to decommissioning / demolition, if applicable.

15.4.16 The criteria used for assessing the magnitude of effects with regard to archaeology and heritage are presented in **Table 15-4**.

Table 15-4 Criteria for assessing magnitude of effects

Magnitude	Description / Definition
High	• Total loss of or substantial harm to an asset. • Complete and permanent loss of, or change to, those characteristics of an asset's setting which contribute to its significance, such as could be caused by its disassociation with its historical setting.
Medium	• Partial loss of, harm to or alteration of an asset which will substantially affect its significance. • Substantial change to the key characteristics of an asset's setting, which falls short of being a total disassociation with the historical context, or a more total loss which is temporary and/or reversible.
Low	• Minor loss of or alteration to an asset which leave its current significance largely intact. • Minor and/or short term changes to setting which do not affect the key characteristics and in which the historical context remains substantially intact.
Very Low	• Minor alteration of an asset which does not affect its significance in any notable way. • Minor and short term, or very minor and reversible, changes to its setting which do not affect the key characteristics.

Impact significance

15.4.17 An initial indication of impact significance is gained by combining the predicted magnitude of effect and heritage significance (importance) in accordance with the impact assessment matrix provided in **Table 15-5** below.

Table 15-5 Impact significance matrix

Heritage Significance (Importance)	Magnitude of Effect			
	High	Medium	Low	Very Low
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Minor
Low	Moderate	Minor	Minor	Negligible
Very Low	Minor	Minor	Negligible	Negligible

15.4.18 An impact significance of 'major' or 'moderate' would be considered 'significant' in EIA terms.

15.5 Existing environment

15.5.1 This section describes the baseline conditions of the site that are relevant to the Historic Environment (archaeology and cultural heritage) and should be read with reference to **Section 3** where a broader scheme description is provided.

15.5.2 More detail of the archaeology and cultural heritage baseline can be found in **Appendix 15.1** and within the Archaeological Desk Based Assessment produced by AOC Archaeology as part of the NGCT EIA (AOC Archaeology, 2005).

15.5.3 A brief overview of the most relevant aspects of the baseline conditions is provided below.

Previous reporting

15.5.4 As was outlined within the Environmental Scoping Report (Royal HaskoningDHV, 2013) (**Appendix 1.1**), there is an accepted view that the Tees Estuary is of both archaeological and historical interest. The surrounding landscape is one of 19th and 20th century industrial heritage and landscape change, and industry still defines and dominates the region today.

15.5.5 The Cultural Heritage desk-based assessment undertaken by AOC Archaeology in 2005 for the NGCT and the subsequent ES Non-Technical Summary concluded that:

> *"The majority of the proposed development area has been reclaimed during the past 150 years and has been subject to industrial use and dumping. The proposed development site itself, therefore, has no archaeological interest and no structures are covered by any form of archaeological designation"* (Royal Haskoning, 2006)

15.5.6 There are, however, records of shipwrecks thought to be located within the Tees Estuary. For example, the proposed development site is believed to be in the vicinity of where the vessel known as 'The Heckler' was lost in 1960, although the precise position is unknown. There are also a number of other ships thought to have been lost in the wider Tees area. The use of the estuary as a historic shipping, transport and trade route, and also as a port from at least the medieval period onwards, would also point to this possibility of surviving historic wreck material (AOC Archaeology, 2005).

15.5.7 Although extensive reclamation has taken place within the Tees estuary, the potential for the presence of prehistoric land surfaces (indicated by for example surviving peat deposits) also still remains, preserved beneath later sediments. The AOC Archaeology desk-based assessment also highlighted that within the Tees estuary the presence of peat and alluvial deposits *"may preserve evidence of early use of the Tees and as such should be subject to further investigation"* (AOC Archaeology, 2005).

15.5.8 Previous geotechnical investigation work includes vibrocores taken during site survey related to the QEII Berth (AEG, 2009). These showed evidence of occasional plant material, potentially indicative of a former land surface in previously undredged areas. However, data from a later geotechnical borehole

programme undertaken within Tees Dock indicated that there were *"no relict land surfaces present"*, and the boreholes recorded no peat or other organic remains (AEG, 2011)

Designated assets within the study area

15.5.9 There are no World Heritage Sites, Scheduled Monuments, Conservation Areas, Registered Parks and Gardens or Designated Battlefields within 1km of the site boundary

15.5.10 The nearest Scheduled Monuments are approximately 5km to the south on Eston Moor, and also within Wilton Moor Plantation and Court Green Wood. The nearest Conservation Areas are 'Coatham' located approximately 2km to the east / north-east and 'Kirkleatham' located approximately 1.5km to the south-east.

15.5.11 There are four Listed Buildings located within the 1km study area for the harbour facility, none of which are in the immediate vicinity of the site. The closest to the site are Foxrush Farmhouse and garden wall (**5**) and associated barn (**6**) located approximately 600-700m to the east / south-east.

15.5.12 There are currently 46 historic wreck sites designated in English waters (61 across the UK), with the nearest designated wreck site being located approximately 4.5km north of the site – '*Seaton Carew*'.

15.5.13 A full catalogue of designated heritage assets in relation to the site is provided within **Appendix 15.1** and shown on **Figure 15-1** and **Figure 15-2** specific to this section of the PER.

Non-designated assets within the study area

15.5.14 At least seven heritage assets (including one previous findspot) are recorded by the Redcar and Cleveland HER as being located broadly within or crossing the site (**Table 15-6**).

Table 15-6 Heritage Assets recorded as being located within the site (scheme footprint)

RHDHV ID No.	HER / SMR No.	Monument Type	Name / Description	Period
16	355	Deserted Settlement	West Coatham. Deserted medieval village. Documentary evidence. Also visible as a small settlement on the OS 1884 Solid geological map. The site is recorded in the HER as 'open space to the west of Meggitts Lane'.	Medieval
17	239	Spear	Warrenby. Early medieval iron spearhead with leaf shaped blade and closed socket. Length 36cm and blade width 3.1cm. The spearhead was found at a slag tip in the 1930's on the site of an old blast furnace.	Medieval
19	3751	Saltern	West Coatham Marsh Large ovale saltmound marked on OS 1st Edition map. Not now extant (i.e. no longer survives).	Medieval

RHDHV ID No.	HER / SMR No.	Monument Type	Name / Description	Period
23	3755	Saltern	West Coatham Marsh Ovate saltmound marked on OS 1st Edition map Not now extant (i.e. no longer survives).	Medieval
58	5716	Channel	The Mill Race. The OS 1857 1st Edition shows what is probably a drainage channel running north from Mains Dike (Kirkleatham), to West Coatham and then following a tortuous route to 'The Fleet'. The OS 1895 2nd Edition shows 'The Mill Race' may still survive shown as a drainage channel or ditch on modern mapping.	19th Century
59	5732	Tramway	Old Tramway. The OS 1895 2nd Edition shows the Tramway running from a mine in Neptune's Wood to Coatham Ironworks. Not shown on modern mapping.	19th Century
63	6057	Navigation	Seventh Buoy Light The OS 1895 2nd Edition shows a River Tees navigation light. Not shown on modern mapping.	19th Century

15.5.15 The recorded location of a deserted settlement (**16**) (possibly a deserted medieval village), is highlighted within the HER as having been identified through documentary evidence. However, during the site visit undertaken as part of the Archaeology and Heritage Desk-Based Baseline Appraisal Report (Technical Note) it was observed that this area has been recently developed, possibly as a briquette factory, and any associated remains are unlikely to survive. The recorded location is to the north of the MHF in the vicinity of where the conveyor system will transport material from the MHF to the harbour facility. The Light Detection and Ranging (LiDAR) data also suggests recent disturbance in this area, with nothing seen to be of obvious archaeological origin.

15.5.16 The iron spear (**17**) is believed to date to the 'early' medieval period and was found on a slag tip in the 1930s, on the site of an old blast furnace. The recorded location is in the immediate vicinity of the modern sewage works.

15.5.17 The recorded 'Salterns' or Saltmounds (**19** and **23**) as identified from first edition Ordnance Survey mapping within the HER are recorded as being located in the area between the Wilton MHF and the Bran Sands lagoon, east of the sewage works. This area has been previously heavily developed and is believed to contain substantial depths of made ground. All the Salterns in this area recorded in the HER are '***not now extant***' (i.e. no longer survive).

15.5.18 The Mill Race drainage channel (**58**) running north from Kirkleatham to West Coatham was a 19th century water channel used to power an industrial mill. The asset runs across the Wilton MHF site and

into the area to the north associated with the harbour facility. It is believed to still be a functioning channel on the Wilton site, but possibly not in the area to the north where the conveyor system would start. The asset is considered to be of limited archaeological interest.

15.5.19 The route of an old tramway (**59**) that ran from a mine site in Neptune's Wood to Coatham Ironworks as identified on 2nd Edition Ordnance Survey mapping within the HER is recorded as point data only on the site of the modern sewage works. The route is not shown on more modern mapping suggesting it was dismantled and is no longer extant (i.e. no longer survives).

15.5.20 The recorded location of the Seventh Buoy Light (**63**), a River Tees navigation light, is shown as being located in area of the proposed berth pocket and quay at Bran Sands, although this asset is not shown on modern mapping. On further inspection during the heritage site visit, a 'Dolphin' Mooring Bollard was observed at this location, possibly of 19th or 20th century date, and not the navigation light as recorded; further 'Dolphins' (**64** / **65**) are recorded as being located to the north away from the proposed scheme footprint.

Plate 15-1 Dolphin Mooring Bollard believed to be located at the recorded location of the Seventh Buoy Light (63)

Previous archaeological work

15.5.21 The main previous archaeological 'activity / event' record for the site is the desk based study produced by AOC Archaeology, which summarised the available historic data for the area between Tees Dock and Teesside Works on the south bank of the Tees (AOC Archaeology, 2005). This report provides useful detailed background to the history and archaeology of the proposed development area.

15.6 Assessment of potential impacts during construction

Deserted Settlement - West Coatham (16)

15.6.1 This asset comprises the recorded location of a possible deserted medieval settlement, as recorded by documentary sources within the HER. The asset, if present, is likely to be of low to medium heritage significance (importance). However, it is believed that the site has already been previously (recently) developed as a factory for the production of, possibly, briquettes and, as such, the asset is unlikely to survive in any discernible form. The LiDAR data also shows recent disturbance in the area, with nothing seen to be of obvious archaeological origin.

15.6.2 The nature of the proposed development in this area (the route of the conveyor system) is only likely to have a very low or low magnitude of effect on the asset. The resulting impact is therefore assessed to be of minor adverse significance (at worst). The route of the proposed conveyor system is anticipated to follow the route of an already existing underground gas mains pipeline in this area and there are also numerous other existing utilities, suggesting a substantial level of previous ground disturbance.

Potential mitigation measures and residual impact

15.6.3 It may be prudent to monitor any ground intrusive works in this area and, if identified, record any surviving features associated with the asset. This would ensure that the significance of the residual impact would be reduced to negligible. Ground truthing of the LiDAR data, through a site walkover, could potentially remove this requirement altogether.

Iron Spearhead – Warrenby (17)

15.6.4 This 'asset' (previous findspot) comprises the recorded location of an early medieval iron spearhead. The spearhead was found in isolation on a slag tip on the site of an old blast furnace and there is no evidence to suggest that it is associated with any surviving settlement or occupation related evidence. The site of the findspot is heavily made ground and, as such, the findspot has not been considered further as part of this assessment.

Salterns (Salt Mounds) – West Coatham Marsh (19 and 23)

15.6.5 Numerous saltmounds are recorded on historic OS mapping across the former extent of West Coatham Marsh. These are, however, all recorded as no longer extant (i.e. no longer survive) and as such have not been considered further as part of this assessment.

The Mill Race (Drainage Channel) (58)

15.6.6 The Mill Race survives on the proposed Wilton MHF site and is shown on modern OS mapping to continue through the area to the north into the proposed scheme footprint for the harbour facility, which is already heavily developed. The drainage channel's course is not considered to overlap with the proposed conveyor route heading from the Wilton site to the harbour facility and, therefore, the

combination of this and the limited archaeological interest of the asset means that it has not been considered further as part of this assessment.

Abandoned 19th century tramway (59)

15.6.7 The route of this tramway is believed to have been dismantled and no discernible remains survive. Combined with its limited archaeological interest it has therefore not been considered further as part of this assessment.

Seventh Buoy Light / Dolphin Mooring Bollard (63)

15.6.8 A Dolphin Mooring Bollard has been identified as being located in the area of the proposed berth pocket and quay (see **Plate 15-1, Figure 15-1** and **Figure 15-2**).

15.6.9 The asset comprises the surviving remains of a possible former navigation light and later mooring bollard. This asset is considered to be of low heritage significance. The nature of the proposed scheme in this area, however, is likely to have a high magnitude of effect on the asset, resulting in its complete and permanent removal and loss. The resulting impact significance is, therefore, assessed to be moderate adverse.

Potential mitigation measures and residual impact

15.6.10 It is recommended that a Level 1 Building Recording Survey (or equivalent) is carried out by a suitably qualified 'buildings' archaeologist prior to the demolition of the asset, in order to ensure the asset is documented and recorded. This would subsequently result in a residual impact of minor adverse significance, as the asset would be preserved 'by record'.

Potential for the presence of geoarchaeological / palaeoenvironmental remains indicative of former land surfaces

15.6.11 As highlighted in the Environmental Scoping Report (Royal HaskoningDHV, 2013) one of the potential issues associated with the scheme is the possibility of impacting upon any surviving prehistoric/historic land surfaces within the development footprint, which may also contain preserved archaeological remains. This is most relevant to the capital dredging requirement for part of the approach channel and berth pocket, which involves the deepening of these areas (see **Section 3** for more detail), and therefore there is the potential for an impact on previously undisturbed deposits.

15.6.12 The presence and therefore heritage significance and disturbance to any such remains are currently unknown. A programme of marine vibrocoring is planned and the vibrocore logs and/or cores themselves will be analysed by a suitably qualified geoarchaeologist in order to further establish the potential for prehistoric/historic land surfaces to be present and suggest appropriate mitigation where necessary.

Potential for the presence of remains associated with shipwrecks within the Tees estuary

15.6.13 The Tees estuary has been used as a historic shipping, transport, trade route and port since at least the medieval period and there are a number of ships known to have been wrecked in the Tees. The exact location of these wrecks or associated structures and finds is unknown. Dredging within the approach channel and berth pocket has the potential to impact upon these types of remains, if present. As such, it is proposed that an archaeological reporting protocol is adopted to mitigate the potential effects on any marine archaeological remains arising from dredging activity.

15.6.14 It is proposed that this protocol would be formalised in a scheme specific Written Scheme of Investigation (WSI) to specifically cover dredging activity, which would be produced by a suitably qualified marine archaeological specialist.

Setting effects on designated and non-designated heritage assets

15.6.15 Having visited the site and wider surrounds as part of a heritage specific site visit, and compared the location of predominantly designated, but also non-designated, heritage assets against the proposed scheme design, there are not anticipated to be any specific setting effects on designated or non-designated assets associated with the harbour facility. As such setting effects have not been considered further as part of this assessment.

15.7 Assessment of potential impacts during operation

15.7.1 Any potential impacts to the archaeological and heritage resource are anticipated to occur during the construction phase only.

15.8 Summary

15.8.1 New record searches were conducted of the Redcar and Cleveland HER in order to ensure that all known heritage assets were identified as part of the assessment and a short, concise Archaeological and Heritage Desk-Based Baseline Appraisal (Technical Note) outlining the updated baseline was produced, this also cover the proposed Wilton MHF site (see **Appendix 15.1**). The assessment utilised substantial existing information, predominantly the AOC Archaeology Desk-based Assessment produced for the NGCT (AOC Archaeology, 2005) (see **Appendix 15.2**).

15.8.2 Following the further desk-based baseline collation work and a heritage specific site visit the potential for setting effects associated with the harbour facility footprint were scoped out and not considered further as part of this assessment. At present the site and surrounding area shows very obvious signs of recent and in some cases now ceased modern industrial activity. It is considered that the scheme provides an opportunity to re-commence activity in an area that is currently characterised predominantly by landfill and made ground of previous modern workings in an area surrounded by heavy industry and manufacturing.

15.8.3 No areas of Greenfield land (previously undisturbed ground) were identified as falling within the proposed scheme footprint, with the exception of perhaps the extreme eastern most section of the harbour facility (proposed scheme footprint) adjoining the Wilton MHF site, and hence the requirement for further traditional non-intrusive and/or intrusive archaeological survey methodologies was not considered further or specifically recommended as part of the assessment.

15.8.4 Key features of the historic environment baseline, further considerations and potential impacts to the archaeology and heritage resource associated with the scheme include the following:

- The Dolphin Mooring Bollard located within the proposed berth pocket for the scheme. The mitigation recommendation being for the historic building recording of the structure prior to its demolition.
- The potential for the presence of geoarchaeological / palaeoenvironmental remains indicative of former land surfaces. The mitigation recommendation being that logs from the planned programme of vibrocores to be undertaken for the scheme should be analysed by a suitably qualified geoarchaeologist, with further associated recommendations provided, where appropriate. In their scoping response English Heritage reiterated the need for all new vibrocore and borehole logs produced as a result of the proposed works, to be examined by a qualified geoarchaeologist to ascertain the presence/absence of peat or other organic raw materials. As such the borehole logs from any planned programme of onshore geotechnical ground investigation should also be supplied and analysed, as requested, by a suitably qualified geoarchaeologist; tying in the findings from the offshore vibrocores within the onshore boreholes in order to further build knowledge of specific previous landuse within and at the edges of the Tees Estuary prior to extensive land reclaimation.
- Potential for the presence of remains associated with shipwrecks within the Tees Estuary. The mitigation recommendation being the production and implementation of an archaeological finds reporting protocol to be formalised within a Written Scheme of Investigation (WSI) for dredging and other marine related development activity undertaken as part of the scheme.
- With respect to ground works in the vicinity of the recorded location of a deserted medieval settlement, despite substantial previous ground disturbance in this area, and depending on the finalised conveyor route design and specific location of infrastructure, it may be prudent to make provision for archaeological watching brief to record any surviving features associated with the asset, if and where identified. Although ground truthing of the LiDAR data, through a site walkover, potentially could remove this requirement altogether.

15.8.5 None of the residual impacts identified as part of this assessment would constitute substantial harm under the terms of the NPPF (2012).

16 COMMERCIAL NAVIGATION

16.1 Introduction

16.1.1 This section of the PER describes the existing environment in relation to commercial navigation, prior to discussing the potential impacts of the construction and operational phases of the proposed scheme. Mitigation measures are detailed where it has been possible to undertake a full impact assessment, and a discussion of the residual impacts presented where significant impacts have been identified.

16.1.2 Potential mitigation measures have been identified in instances where it has not been possible to undertake a full impact assessment based on the existing environmental information available at the time of writing. The requirement for the implementation of the potential mitigation measures identified within this PER will be determined once all baseline information is available and significance has been assessed for all identified impacts.

16.1.3 The Scoping Opinion received from PINS during January 2014 confirmed that impacts to recreational users of the estuary via water could be scoped out of the assessment, on the basis of the Tees estuary being heavily industrialised, which significantly limits the presence of recreational vessel movements within the estuary. Potential impacts to recreational navigational within the estuary have not, therefore, been considered in the EIA process.

16.2 Policy and consultation

Policy

National Policy Statement

16.2.1 The NPS for Ports (Department for Transport, 2012) is of direct relevance to the proposed scheme, but does not provide any guidance or policy with regard to assessment of impacts to commercial navigation.

Marine Policy Statement

16.2.2 As outlined within the UK MPS (HM Government, 2011), port development may result in an increase in shipping activity. When considering any potential increase in shipping activity, the MPS states that marine plan authorities and decision makers should ensure that the social and economic benefits and environmental impacts are taken into account and that impacts are considered in line with sustainable development principles.

16.2.3 As outlined in the MPS, environmental impacts arising from shipping activity can be through accidental pollution from ships in the course of navigation or lawful operations, pollution caused by unlawful operations or physical damage caused by collisions. Other pressures on the environment from

shipping activity relate to noise and airborne emissions. These potential impacts have been assessed within this section of the PER.

16.2.4 The MPS states that marine plan authorities and decision makers should take into account and seek to minimise any negative impacts on shipping activity, freedom of navigation and navigational safety, and ensure that their decisions are in compliance with international maritime law.

Consultation

16.2.5 Table 16-1 provides a summary of the comments received from PINS within the Environmental Scoping Opinion (Appendix 4.1) with specific regard to commercial navigation.

Table 16-1 Summary of comments within the scoping opinion received from PINS during January 2014 with specific regard to commercial navigation

Comment	Section of PER in which comment has been addressed
The Secretary of State noted that a Marine Navigation Risk Assessment will be undertaken to inform the EIA. The Secretary of State suggests that the methodology and proposed mitigation are agreed in consultation with PD Ports as the harbour authority, MMO and Trinity House.	The outputs of the Marine Navigation Risk Assessment will be discussed with these organisations, and the results presented in the PER form part of this consultation process.
The Marine Navigation Risk Assessment should consider both the potential lower number of larger vessels and the potential higher number of smaller vessels. It would also be helpful to assess the most likely scenario.	A range of scenarios were modelled within the Marine Navigation Risk Assessment, as outlined within Section 16.3 (Paragraph 16.3.3 to 16.3.11).
The EIA must assess the commercial navigation in-combination and cumulatively with other projects, including NGCT, QEII and Tees Dock No.1 quay.	The Marine Navigation Risk Assessment has taken into account proposed import of bulk material to Tees Dock as well as increased vessels due to the proposed scheme. The CIA will also address navigation risks from other committed development in the Tees estuary.
The proposed channel dredge should cover the full width of the navigation channel. Dredged quantities should be updated based on the full channel width.	Dredged quantities proposed for the proposed scheme are presented in Section 3. The dredging proposed within the channel covers the whole channel width.

16.2.6 Royal HaskoningDHV also requested and received shipping traffic data for the Tees estuary from PD Teesport and discussions with the Harbour Master have been undertaken with respect to safe useable channel depths and widths.

16.3 Methodology

Study area

16.3.1 The study area for this section of the PER comprises the Tees estuary, extending from the mouth of the estuary at the North and South Gare breakwaters upstream to the Transporter Bridge.

Existing environment

16.3.2 This section of the PER has been informed through a Marine Navigation Risk Assessment (Royal HaskoningDHV, 2014; **Appendix 16.1**) which was specifically produced for the Tees estuary and the proposed scheme. The results of this study were used to inform the impact assessment for this section of the PER.

Marine Navigation Risk Assessment

16.3.3 Royal HaskoningDHV was commissioned by YPL to undertake a Marine Navigation Risk Assessment in order to predict any likely delays to existing and future vessel movements along the Tees estuary as a result of the proposed scheme (both Phase 1 and Phase 2). The study methodology is presented in full within **Appendix 16.1**, and summarised below.

Model parameters

16.3.4 The Marine Navigation Risk Assessment utilised a version of Royal HaskoningDHV's Marine Traffic Model (MARTRAM) to simulate potential delays to shipping traffic within the estuary. MARTRAM focusses on both the potential for vessel interaction where one or more vessels are under navigation, and the delays that would be caused to scheduling in order to avoid such encounters.

Channel depths used within the model

16.3.5 Discussions with the Harbour Master were undertaken in order to agree the effective safe useable channel depths and widths to use within the model. The agreed effective channel depths used within the model were less that those published on the Admiralty Chart due to sedimentation within the approach channel reducing the safe navigable depth of the channel.

16.3.6 In order to model the current situation as closely as possible, the effective depths presented in **Table 16-2** were used rather than the stated Admiralty Chart depth. This approach resulted in the reduction of the available tidal window for vessel movements and represents a 'worst case' scenario for use within the model.

Table 16-2 Observed and effective channel depths within the Tees estuary

Location	Current Dredged Depth (m CD)	Margin (under keel allowance) (m)	Effective Depth (m CD)
Channel Sea Reach	14.7	2.3	12.4
Seaton Channel Turning Area	13.3	0.9	12.4
Channel Lower Reach	13.3	0.9	12.4
Channel Upper Reach	9.9	0.9	9.0
Tees Dock Turning Area	8.3	0.9	7.4
North Tees Berths 3 and 4 and Teesport Oil Jetties	9.9	0.9	9.0
North Tees Berth 2 and South Bank Wharf	8.0	0.9	7.1
Teesport Commerce Park Upstream	Generally 5.2 reducing to 4.5	0.9	4.3 reducing to 3.6

Anticipated operational phase vessel movements

16.3.7 By combining the data from the historic vessel movements within the Tees estuary and the forecasts for future vessel movements as a result of the proposed scheme, a combined forecast was made regarding the anticipated vessel traffic within the Tees estuary for use within the model.

16.3.8 Based on an export volume of 6.5mtpa from the port terminal at Bran Sands (Phase 1), a total of 96 vessels per year are anticipated to arrive at, and depart from the terminal; a total of 191 vessels per year are anticipated to arrive at, and depart from the terminal during Phase 2 of the scheme. These predicted vessel numbers were used within the MARTRAM model.

Model scenarios

16.3.9 A total of six scenarios were modelled as part of the Marine Navigation Risk Assessment, comprising:

- Scenario 0 (existing vessel movements. Validation and calibration model to create a base case).
- Scenario 1 (existing vessel movements, export of 6.5mtpa of product from Bran Sands, using one berth, plus Tees Dock bulk import vessels).
- Scenario 2 (existing vessel movements, export of 13mtpa of product from Bran Sands, using one berth, plus Tees Dock bulk import vessels).
- Scenario 3 (existing vessel movements, export of 13mtpa of product from Bran Sands, using two berths, plus Tees Dock bulk import vessels).
- Scenario 4 (existing vessel movements, export of 6.5mtpa of product from Bran Sands using one berth).
- Scenario 5 (existing vessel movements, export of 13mtpa of product from Bran Sands using one berth).

- Scenario 6 (existing vessel movements, export of 13mtpa of product from Bran Sands using two berths)

16.3.10 Each of the model scenarios was run at least ten times in order to generate several different variations on vessel arrivals. Each scenario was run for a simulation period of 14 days.

16.3.11 The scenarios of direct relevance to the proposed scheme (based on the scheme description presented in **Section 3**) are Scenarios 1, 3, 4 and 6. Scenarios 2 and 5 are not of direct relevance to the proposed scheme, given the current proposal to export product from a terminal with two berths following completion of Phase 2, rather than a terminal with one berth.

Methodology for assessment of potential impacts

16.3.12 The assessment methodology used to determine the potential environmental impacts on commercial navigation associated with the proposed scheme is provided within **Section 4**.

16.3.13 Reference to **Section 5.5** and **Section 5.6** of this PER has also been made to determine the potential significance of any impacts to navigational safety as a result of changes to the hydrodynamic regime during construction and operation of the proposed scheme.

16.4 Existing environment

16.4.1 Many of the riverside industrial plants along the 17km stretch of the River Tees have docking and cargo facilities and, therefore, the River Tees experiences significant commercial vessel traffic. At present, there are up to approximately 1,000 shipping movements on the river every month (YPL, 2012). **Table 16-3** presents a summary of the number of vessel movements within the Tees estuary on a monthly basis from January to September 2013. This data was sourced from PD Teesport and used to form the base case for the simulation model used within the Tees Marine Risk Assessment Study.

Table 16-3 Summary of monthly vessel movements within the Tees estuary from January to September 2013

Month	Vessel movements
January	824
February	806
March	981
April	922
May	1009
June	871
July	899
August	867
September	969

16.4.2 **Table 16-3** indicates that the total monthly vessel numbers within the Tees estuary did not materially change over the first nine months of 2013, with vessel movements peaking in May 2013.

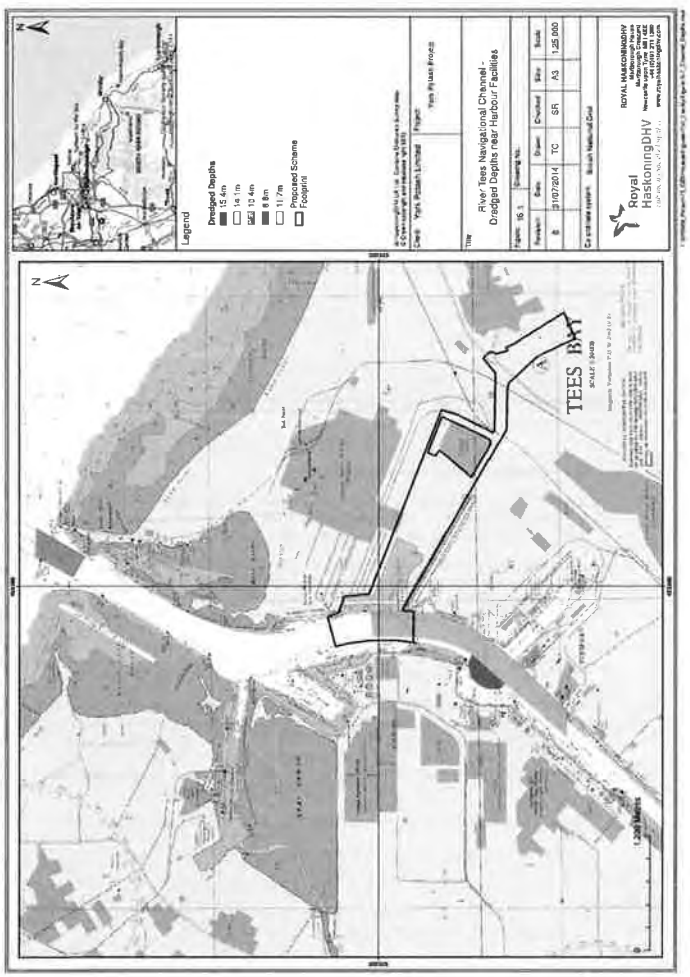
16.4.3 The Tees estuary is approached from the north-east through a deep water channel in Tees Bay. The approach channel has an advertised depth of 15.4m below CD from Tees fairway light buoy to the entrance, where it reduces to 14.1m below CD. Thereafter the maintained depth is progressively reduced to 4.5m below CD, seven nautical miles from the entrance. The current advertised depths of the channel are shown in **Figure 16-1** (as discussed in **Paragraphs 16.3.5** and **Paragraph 16.3.6**, the Harbour Master has stated that the current channel depths do not match the advertised depths due to sedimentation within the channel).

16.4.4 There are currently two turning areas within the estuary, one within the Seaton Channel area which can accommodate vessels 350m in length and is regularly used for large tankers which berth at the Tees North Sea Oil Terminal and large bulk carriers bringing coal and ore to Redcar Ore Terminal. The second is the Tees Dock turning area which is used to turn vessels which berth at Tees Dock and at the bulk liquid jetties opposite.

16.4.5 Large deep drafted ships bound for Tees North Sea Oil Terminal and the Redcar Ore terminal pick up tug assistance after passing South Gare. Fully laden ships can only enter on the high tide but can leave at any time once their cargo has been discharged. Similarly, any fully laden ships to exit the river must wait for the high tide. Vessels are turned when unloaded either in the Seaton Channel turning area or in the Tees Dock Turning Area depending on which quay or jetty they are destined for.

16.4.6 The channel is maintained by PD Teesport which has a statutory responsibility to maintain the channel for safe navigation. Additionally, traffic in the Tees estuary is controlled by a sophisticated vessel traffic system (VTS).

16.4.7 Key receptors include all commercial shipping and any other activities of other operators present within the vicinity of the proposed construction works.



16.5 Assessment of potential impacts during construction

Potential interference with existing commercial navigation due to presence of construction vessels

16.5.1 During the construction phase there is the potential for conflict between the construction vessels (including dredging and piling vessels) and existing commercial vessels operating within the Tees estuary. There is also potential for conflict between vessels transporting construction materials (i.e. combi-piles for the solid quay structure only) to an existing quay within the estuary and existing vessels operating within the estuary. However, it is anticipated that less than five shipments would be required to transport combi-piles for the solid quay structure and, as such, a disturbance impact is not anticipated to arise given the very low number of anticipated vessel movements required for this purpose.

16.5.2 Disturbance to existing vessel movements as a result of the proposed scheme would be likely to take the form of delays to vessel movements or increased collision risk within the estuary. Piling and dredge vessels would be predominantly focussed on the area in the immediate vicinity of the proposed port terminal during Phase 1 (outside of the approach channel), with only localised dredging required in the main channel during Phase 1 (dredging of an area approximately 25,000m^2). Such localised dredging within the approach channel would result in temporary disturbance to existing users (approximately 7 weeks), with the disturbance impact being reversible once the dredging activity in the main channel has ceased.

16.5.3 On this basis, it is considered that there is limited potential for the construction phase vessels to impact upon existing navigational practices as the main dredge and construction vessels would be located outside of the main navigation channel. It is therefore predicted that there would be no impact on existing navigational practices during Phase 1 of the proposed scheme.

16.5.4 During Phase 2 of the proposed scheme, there would be a requirement for capital dredging within a section of the approach channel, as well as capital dredging to extend the berth pocket. The dredging within the approach channel to be undertaken during Phase 2 of the proposed scheme, therefore, has the potential to cause disturbance to existing navigational practices, in the form of increased collision risk, obscuring navigational aids and the prevention / interference to activities being undertaken by other operators along the banks of the estuary. As for Phase 1 dredging of the approach channel, this potential conflict would be temporary, lasting only for the duration of the Phase 2 dredging works (approximately 6 weeks) for both of the quay construction options within a localised area of the approach channel (approximately 94,000m^2). The effect would be reversible once the dredging activity has ceased.

16.5.5 PD Teesport would manage any potential conflicts in the same way as routine dredging and other construction activities, through co-ordination via the Harbour Master. Management of dredging operations within a busy port environment is a standard activity for the Harbour Master. It is considered

that the use of a VTS would provide a satisfactory mechanism for the effective management of all shipping traffic within the Tees estuary and Tees Bay.

16.5.6 Based on the above, the magnitude of the impact is anticipated to be very low on a medium sensitivity receptor. The proposed scheme is, therefore, predicted to have an impact of negligible significance on commercial navigation during the construction phase.

16.5.7 No mitigation measures are required.

16.6 Assessment of potential impacts during operation

Potential interference with existing commercial navigation due to increased vessel numbers

16.6.1 The results of the navigation risk assessment model scenarios of relevance to the proposed scheme are presented within **Table 16-4**. These results have been used to inform this impact assessment.

Table 16-4 Results of relevant model scenarios from the Marine Navigation Risk Assessment (Royal HaskoningDHV, 2014)

Scenario	Total averaged waiting time per day (minutes)	Model vessel movements (14 day model period)	Failed vessel movements
0 (existing vessel movements)	3.1	372	0
1 (existing vessel movements, export of 6.5mtpa of product from Bran Sands, using one berth, plus Tees Dock bulk import vessels)	19.1	388	1
3 (existing vessel movements, export of 13mtpa of product from Bran Sands, using two berths, plus Tees Dock bulk import vessels)	22.1	395	1
4 (existing vessel movements, export of 6.5mtpa of product from Bran Sands using one berth).	8.1	380	0
6 (existing vessel movements, export of 13mtpa of product from Bran Sands using two berths).	11.9	387	0

16.6.2 The predicted delays to shipping vessel movements within the Tees estuary, due to the various scenarios modelled as part of the Marine Navigation Risk Assessment, as presented within **Table 16-4**, indicates that the proposed scheme is unlikely to cause a significant delay to existing vessel movements during the operational phase. A maximum delay of 11.9 minutes per day was predicted for Scenario 6 with no failed vessel movements, which in comparison to the existing delay of 3.1 minutes is not considered to be significant.

16.6.3 The introduction of additional vessels into the Tees estuary in order to transport bulk material to Tees Dock alongside the predicted increase in vessel numbers as a result of the proposed scheme

(modelled within Scenario 1 and 3), is predicted to cause a slight increase in average daily delays to vessels, as well as one failed vessel movement during both Scenario 1 and Scenario 3.

16.6.4 Analysis of the modelled data with regard to the failed scenarios revealed that such situations would have been effectively managed by the Harbour Master to prevent the failure from occurring (i.e. the Harbour Master would have co-ordinated the movements of vessels to ensure movements could be successfully completed within the tidal windows required, based on the vessel size).

16.6.5 All vessel traffic in the Tees estuary and Tees Bay is controlled by the VTS and this would, therefore, be applicable to all vessel traffic generated as a consequence of the proposed scheme.

16.6.6 The magnitude of this impact is considered to be low, upon a low sensitivity receptor. Based on the above, it is anticipated that the proposed scheme would have an impact of negligible significance on existing commercial navigation within the estuary during the operation phase.

16.6.7 No mitigation measures are required.

Potential impacts to navigational safety due to changes to the hydrodynamic regime

16.6.8 The proposed scheme has the potential to indirectly impact upon navigation safety as a result of effects on the existing physical processes within the estuary. The predicted effects of the proposed scheme on existing physical processes are discussed in **Section 5.5** and **5.6**.

16.6.9 As discussed within **Section 5.6**, the preliminary results from the wave propagation modelling indicate a relatively localised effect of the port terminal options with regard to existing wave heights. Wave propagation modelling undertaken for the open quay structure has predicted no effect on wave heights for return period winds less than five years. The wave propagation modelling undertaken for the solid quay structure has predicted an increase in significant wave height in the range of 0.05m to 0.10m within the lower estuary.

16.6.10 Based on the hydrodynamic modelling results undertaken to date, the predicted effects of the proposed scheme due to changes to the hydrodynamic regime are relatively small and localised without any obvious implications for the overall morphological regime of the Tees estuary. As such, risks to navigational safety during the operational of the proposed scheme are not anticipated. This impact will be fully assessed within the EIA and the results presented in the ES.

Potential mitigation measures

16.6.11 Measures to mitigate potential effects of a proposed scheme on morphology are limited to altering the design of the proposed scheme. Based on the preliminary results of the hydrodynamic modelling work undertaken for the proposed scheme at the time of writing and the results of modelling work undertaken for similar schemes within the Tees estuary, however, it is considered unlikely that mitigation measures would need to be implemented with regard to this impact.

16.7 Summary

16.7.1 The Tees estuary experiences significant commercial vessel traffic, with up to approximately 1,000 shipping movements taking place on the river every month during 2013. The approach channel is maintained by PD Teesport, which has a statutory responsibility to maintain the channel for safe navigation. Additionally, traffic in the Tees estuary is controlled by a sophisticated VTS.

16.7.2 It is predicted that the proposed scheme would result in impacts of negligible significance on commercial navigation during both the construction and operational phases. A full assessment of the implications of the proposed scheme on the existing hydrodynamic regime will be undertaken to determine any implications for vessel safety during the EIA process. Based on the hydrodynamics modelling results undertaken at the time of writing this PER, the predicted effects of the proposed scheme due to changes to the hydrodynamics regime are relatively small and localised, without any obvious implications for the overall morphological regime of the Tees estuary. Significant impacts to navigation safety during the operational phase of the proposed scheme are not therefore anticipated.

16.7.3 Further consultation with the Harbour Master will be undertaken during the EIA process to determine whether the increased vessel numbers proposed during the construction and operational phase represent a concern based on the existing levels of shipping traffic in the estuary.

17 COASTAL PROTECTION AND FLOOD DEFENCE

17.1 Introduction

17.1.1 This section of the PER describes the existing environment in relation to coastal protection and flood defence prior to discussing the potential impacts of the construction and operational phases of the proposed scheme. Mitigation measures are detailed where it has been possible to undertake a full impact assessment, and a discussion of the residual impacts presented where significant impacts have been identified.

17.1.2 Potential mitigation measures (which may need to be implemented during the construction and operation phase) have been identified where it has not been possible to undertake a full impact assessment based on the existing environmental information available to date. The requirement for the implementation of the potential mitigation measures identified within this PER will be determined once all baseline information is available and the level of significance has been determined for all identified impacts.

17.2 Policy and consultation

Policy

National Policy Statement for Ports

17.2.1 The assessment of potential impacts to coastal protection and flood defence has been made with reference to the NPS for Ports. The NPS for Ports states that all applications for port development of 1 hectare of greater in Flood Zone 1, as well as all proposals for projects in Flood Zone 2 and 3, should be accompanied by a Flood Risk Assessment (FRA). Given the location of the proposed scheme within Flood Zone 2 and Flood Zone 3, an FRA will be undertaken for the proposed scheme.

17.2.2 The minimum requirements for FRAs (as outlined within the NPS) are that they should:

- be proportionate to the risk and appropriate to the scale, nature and location of the project;
- consider the risk of flooding arising from the project, in addition to the risk of flooding to the project;
- take the impacts of climate change into account, clearly stating the development lifetime over which the assessment has been made;
- be undertaken by a competent person, as early as possible in the process of preparing the proposal;
- consider both the potential adverse and beneficial effects of flood risk management infrastructure, including raised defences, flow channels, flood storage areas and other artificial features, together with the consequences of their failure;
- consider the vulnerability of those using the site, including arrangements for safe access;
- consider and quantify the different types of flooding (whether from natural or human sources and including joint and cumulative effects) and identify flood risk reduction measures, so that assessments are fit for the purpose of the decisions being made;

- consider the effects of a rage of flooding events, including extreme events on people, property, the natural and historic environment and river and coastal processes;
- include the assessment of the remaining (known as 'residual') risk after risk reduction measures have been taken into account and demonstrate that this is acceptable for the particular project;
- consider how the ability of water to soak into the ground may change with development, along with how the proposed layout of the project may affect drainage systems;
- consider if there is a need to be safe and remain operational during a worst case flood event over the development's lifetime; and,
- be supported by appropriate data and information, including historical information on previous events.

17.2.3 The requirements identified above will be incorporated into the FRA, which will be used to inform this section of the ES.

National Planning Policy Framework

17.2.4 The publication of the NPPF revoked Planning Policy Statement 25 (PPS25): Development and Flood Risk (which previously set out the requirements for FRA). However, the technical guidance to the NPPF includes flood risk guidance and retains key elements of PPS 25, including the Sequential and Exception Tests, climate change allowances and development classifications. The information contained in the new technical guidance, together with the NPPF, guidance contained in PPS25: Development and Flood Risk Practice Guide and the British Standard BS 8533-2011 form the basis of flood risk documentation. Due consideration has also been given to the Floods and Water Management Act, 2010.

17.2.5 The NPPF sets out the criteria for development and flood risk by stating that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere.

Consultation

Comments received on the Environmental Scoping Report

17.2.6 The Environmental Scoping Report identified the potential impacts of the proposed scheme on coastal protection and flood defence, and the Scoping Opinion received from PINS sets out the issues to be addressed as part of the EIA process. Table 17-1 presents a summary of the comments raised by PINS.

Table 17-1 Summary of comments within the scoping opinion received from PINS during January 2014 with specific regard to coastal protection and flood defence

Comment	Section of PER in which comment has been addressed (or comment on how it would addressed during the EIA)
The assessment of impacts on flood defences should also consider the potential for breaching / overtopping of the flood defence under present and project sea level scenarios.	Point noted. To be considered within the FRA.
The Secretary of State recommends that the sections considering the water environment should be cross-referenced within this chapter.	Point noted. To be undertaken during the EIA.

Additional consultation undertaken

17.2.7 A meeting between Royal HaskoningDHV and the Environment Agency was held on 7 January 2014 regarding flood risk and coastal defence. The following bullet points provide a summary of the outcomes of the meeting:

- The Environment Agency was not aware of any recent flood impacts to / around the proposed scheme footprint from tidal events during December 2013 and January 2014.
- The Environment Agency was aware of local flood issues within the Tees estuary, including a recent (December 2013 and January 2014) breach at Greatham South embankment (north Tees / Seal Sands) and recent flooding at Port Clarence (north Tees). The Environment Agency was not aware of any flooding experienced along the south side of the Tees estuary or within Teesport during these events.
- The Environment Agency informed Royal HaskoningDHV that it has completed an update of the tidal flood zones along the Tees estuary.
- The Environment Agency stated that in accordance with PPS25 requirements, a sequential and exception test will be required and it was recognised that the port facility would be water compatible development.
- The FRA undertaken for the NGCT predicted an increase of 1 to 2mm on upstream tidal levels. The Environment Agency confirmed that this order of impact would be considered negligible.
- The Environment Agency stated that free discharge of water would be acceptable at the proposed estuarine location, as this would not have any flood risk implications elsewhere.
- The Environment Agency stated that the drainage design for the proposed scheme would need to address tide-locking.

17.2.8 Following discussion with the Environment Agency during January 2014, Royal HaskoningDHV contacted RCBC in relation to specific drainage requirements for the FRA. The following bullet points provide a summary of the discussions with RCBC:

- RCBC stated that they were in general agreement with the proposed approach to the FRA.

- RCBC confirmed that Sustainable urban Drainage Systems (SuDS) would not be obligatory for the drainage for flood risk purposes and that direct discharge of surface water drainage into the Tees estuary would likely be acceptable, on the basis that this would not exacerbate flood risk elsewhere.
- RCBC stated that surface water attenuation may be required with regard to water quality.
- RCBC stated that drainage attenuation may be required if discharging from the proposed scheme footprint into Dabholm Gut.

17.3 Methodology

Study area

17.3.1 The study area for this section of the PER comprises the area which has the potential to be directly and indirectly impacted upon by the proposed scheme. This therefore comprises the proposed scheme footprint, as well as adjacent sites which could be indirectly impacted as a result of the proposed scheme.

Existing environment

17.3.2 The existing environment information presented within this section of the PER has been based on desk based review of existing information, including the Environment Agency's Tees Tidal Flood Risk Management Strategy (Environment Agency, 2009) and the Tidal Tees Integrated Flood Risk Modelling Study (JBA, September 2011).

Methodology for assessment of potential impacts

17.3.3 The assessment methodology used in for determining the potential environmental impacts on coastal protection and flood defence associated with the proposed scheme is provided within **Section 4**.

17.4 Existing environment

17.4.1 There are 11km of flood defences located on the Tees estuary, which contribute to minimising the risk of flooding (Environment Agency, 2009). These include defences along the Tees at the confluence with Lustrum Beck and Billingham Beck, and at Port Clarence. There are also defences along Greatham Creek and at Hartlepool Power Station, along the Old River Tees around Teesside Park and the tidal barrier across Marton West Beck. The Tees Barrage is not a flood defence asset. In addition to the above, there are many informal defences which provide a range of levels of protection, such as sand dunes, embankments and also quays and wharves.

17.4.2 The Environment Agency's Tees Tidal Flood Risk Management Strategy (Environment Agency, 2009) identified the need for improvements or raising of existing flood defences within the Tees estuary, up to the Tees Barrage. This report also highlighted areas which may be at risk of flooding, either at present or in the future. Areas identified as being at risk are referred to as 'flood cells', and are located where ground levels are less than 5.0m above OD. This level carries a 0.1% (1 in 1,000) probability of a flood event occurring in any one year. The highest recorded flood event along the Tees occurred in 1953.

and reached a level of 4.0m above OD. A water level with a 0.5% (1 in 200) probability of occurrence in any one year is 4.19m above OD (Environment Agency, 2009). The existing cope level at Tees Dock is 7.39m above CD, which equates to 4.54m above OD (CD is 2.85m below OD in the Tees estuary).

17.4.3 The Environment Agency's Tidal Tees Integrated Flood Risk Modelling Study (JBA, September 2011) has expanded on this strategy understanding and developed an ESTRY-TUFLOW model that covers the Tees estuary from Teesmouth at the coast upstream to the Tees Barrage. The report concludes the differences between the existing Flood Zones and the undefended scenario indicates that a reduction in Flood Zones 2 and 3 is recommended particularly towards the coast. However, the footprint of the proposed port terminal is identified as still being at Flood Zone 3, 1 in 200yr return period tidal flood risk.

17.5 Assessment of potential impacts during construction

Flood hazard to construction workers

17.5.1 The location of the proposed construction footprint (within and immediately adjacent to the Tees estuary) inherently presents risks to construction workers associated with drowning or accidents during flood or storm events within the estuary.

17.5.2 As it is difficult to quantify the likely severity of any flood events / storms in the estuary, it is not possible to predict the significance of the potential impact. However, the risk of a flood event occurring and its impact on human health can be controlled through the implementation of the mitigation measures outlined below.

Potential mitigation measures

17.5.3 All construction workers would undergo site induction training prior to being allowed access to the Teesport Estate. This would include actions required in the event of a number of emergency incidents, including that of flood risk. This would include warning sirens used and escape routes in the event of a site evacuation. No workers would be allowed on site unless they have undergone such an induction.

17.6 Assessment of potential impacts during operation

Potential for effect on risk of tidal flooding at and adjacent to the proposed development site

17.6.1 The principal environmental issue in relation to coastal protection and flood defence is whether the proposed scheme could alter the risk of flooding, both to the development site and other areas within the Tees estuary.

17.6.2 As stated within the Environmental Scoping Report (Royal HaskoningDHV, 2013), the assessment of impacts with regard to flood risk and coastal protection is to be informed by a site specific FRA.

17.6.3 It is accepted, and appreciated in the FRA, that the proposed port terminal comprises 'water-compatible' development and would be constructed in a high flood risk area. The FRA will aim to ensure that flood risk from all sources is taken into account for the proposed development.

17.6.4 As the proposed port terminal is considered as water compatible development, the associated policy addressed in the FRA will be to make it safe without increasing flood risk elsewhere, and where possible, reduce flood risk overall. The FRA will be appended to the ES.

17.7 Summary

17.7.1 The Tees estuary contains both formal and informal flood defences which contribute to minimising the risk of flooding to adjacent developments. The Tees Tidal Flood Risk Management Strategy identified the requirement to raise existing flood defences within the estuary, upstream to the Tees Barrage.

17.7.2 The footprint of the proposed port terminal is within Flood Zone 3. It is accepted that the proposed port terminal comprises 'water-compatible' development and would be constructed in a high flood risk area. The FRA will aim to ensure that flood risk from all sources is taken into account for the proposed development. The results of the FRA and the hydrodynamic modelling will be used to determine the impacts associated with flooding and coastal defence during the EIA process, and the results of the assessment will be presented in the ES.

18 INFRASTRUCTURE

18.1 Introduction

18.1.1 This section of the PER describes the existing environment in relation to infrastructure, prior to presenting the potential impacts of the construction and operational phases of the proposed scheme. Mitigation measures are detailed where it has been possible to undertake a full impact assessment, and a discussion of the residual impacts presented where significant impacts have been identified.

18.1.2 Potential mitigation measures have been identified where it has not been possible to undertake a full impact assessment based on the existing environmental information available to date. The requirement for the implementation of the potential mitigation measures identified within this PER will be determined once all baseline information is available and the level of significance has been determined for all identified impacts.

18.1.3 Flood and coastal defences are excluded from this section of the PER, as these are addressed within **Section 17**. Land drainage issues have been addressed within **Section 6** and are therefore excluded from this section (see **Table 18-1**).

18.2 Policy and consultation

Policy

NPS for Ports

18.2.1 The NPS for Ports (Department for Transport, 2012) is of direct relevance to the proposed scheme. The NPS states that a port infrastructure project will have direct effects on the existing use of the proposed site and may have indirect effects on the use, or planned use, of land in the vicinity for other types of development. The NPS does not, however, provide guidance on the assessment of impacts with regard to existing infrastructure assets.

National Planning Policy Framework

18.2.2 Section 7 of the NPPF sets out the Government's guidance with regard to the design of proposed developments; the most appropriate guidance of relevance to this section of the PER includes:

- The Government attaches great importance to the design of the built environment. Good design is a key aspect of sustainable development, is indivisible from good planning, and should contribute positively to making places better for people.
- Planning policies and decisions should not attempt to impose architectural styles or particular tastes and they should not stifle innovation, originality or initiative through unsubstantiated requirements to conform to certain development forms or styles.
- Applicants will be expected to work closely with those directly affected by their proposals to evolve designs that take account of the views of the community.

Redcar and Cleveland Borough Council Local Plan

18.2.3 RCBC Development Plan Document policies of relevance when considering the proposed scheme in relation to infrastructure and land drainage include:

- CS20: Good quality and inclusive design will be promoted in all new developments.
  - This policy states that all development proposals will incorporate sustainable construction techniques and design concepts for buildings and their layouts to reduce the local and global impact of the development particularly on climate change.
- DP3: Sustainable development – all development will need to be designed to a high standard.

Consultation

18.2.4 A summary of the comments received from PINS with specific regard to infrastructure and land drainage are presented in **Table 18-1**.

Table 18-1 Summary of scoping comments received from PINS with regard to infrastructure and land drainage

Comment	Section of PER in which comment has been addressed
The applicant is advised to identify all infrastructure users and operators that may be affected by the proposed development and investigate potential effects of the development on their infrastructure.	Section 18.4 (Paragraph 18.4.1 to 18.4.11), Section 18.5 and Section 18.6
The ES should consider the impacts of connecting into the existing utility infrastructure and the capacity to do so.	Section 18.2 (Paragraph 18.2.5 to 18.2.6)
The SoS advises consideration of potential impacts on land drainage is provided within the proposed hydrology, hydrogeology and soils chapter of the ES as land drainage is considered to be an integral part of this assessment.	Section 6
The Environment Agency wish to promote the use of SUDS and seek to promote its use for any permanent above ground elements of the development. The Environment Agency expects the developer to submit detailed investigations such that the use of SUDS has been fully explored.	To be included within the drainage design for the proposed scheme.

18.2.5 The power and water requirements during the operational phase of the proposed scheme are being determined through consultation with design engineers to inform the assessment of potential for impacts to arise during installation of any utility infrastructure. This process will also determine the capacity of the existing utility network to accept an additional user (i.e. YPL).

18.2.6 Consultation with land owners and asset owners is on-going regarding the alignment and design of the proposed conveyor system.

18.3 Methodology

Study area

18.3.1 The study area for this section of the PER comprises the area which has the potential to be directly and indirectly impacted upon by the proposed scheme, as illustrated on **Figure 1-2**.

Existing environment

18.3.2 The description of the existing environment with regard to infrastructure has been informed predominantly through desk based assessment. A number of documents have been reviewed as part of the desk based assessment, including the ESs undertaken for the NGCT, the QEII Berth Development and the Tees Dock No.1 Quay. A review of Ordnance Survey mapping and aerial photography publicly available online (Google Earth) has also been undertaken.

18.3.3 Data collected during site visits undertaken by Royal HaskoningDHV environmental consultants during December 2013 and Royal HaskoningDHV engineers during April 2014 has also been used to assist with the identification of existing infrastructure within the study area.

Methodology for assessment of potential impacts

18.3.4 The assessment methodology used to determine the potential environmental impacts on infrastructure associated with the proposed scheme is provided within **Section 3**.

18.4 Existing environment

Infrastructure within the vicinity of the proposed port terminal

18.4.1 The Tees estuary is bordered by industrial developments including chemical, petrochemical and steel works, sites of former industry and open areas of ground originally intended for industrial use. There is a concentration of oil-related industry near the river mouth including a large petrochemical works and an oil refinery at Seal Sands. There is a large titanium pigment plant south of Seaton Carew, on the north side of Teesmouth, and a second oil refinery and chemicals processing plant is located next to Teesport on the south side of the estuary, adjacent to the major steelworks at Bran Sands.

18.4.2 Hartlepool nuclear power station is located on the east side of Seaton Channel. Further upstream in the Tees estuary, there is a former ICI agrochemical plant at Billingham which was a sister to the former ICI chemical plant at Wilton (now owned by Sembcorp). There are also several ship repair yards and large port facilities, including Tees Dock, on the south shore.

18.4.3 NWL's Bran Sands Sewage Treatment Works (STW), which incorporates the Regional Sludge Treatment Centre (RSTC), is located directly adjacent to the footprint of the proposed scheme. This is the largest STW (Ofwat size band 5) in the Northumbria area of NWL's activities. It is understood that the STW discharges into Dabholm Gut through an outfall.

18.4.4 A small jetty and pumping station are located at the confluence of Dabholm Gut and the Tees estuary. This infrastructure is owned by NWL and was historically used for the import of sludge to their sewage treatment works.

18.4.5 Bran Sands lagoon is located immediately landward of the proposed port terminal. At the eastern end of the lagoon, the land rises at a gradient of approximately 1 in 3 to a level track at approximately +11m OD before rising again at a gradient of approximately 1 in 20 to a top level of approximately +16m OD. The northern side of the lagoon is close to the boundary fence with the SSI Steel Works. The steel plant land beyond the fence forms a coal stockyard.

18.4.6 Along its western side, the lagoon is separated from the estuary by a slag bund. The bund has been formed behind a training wall towards the edge of the main estuary channel. The foreshore between the bund and the training wall is exposed on spring tides and comprises sediments accumulating over rip-rap of road planings (similar in nature to crushed tarmac). The masonry remains of a navigation marker are visible which delineates the line of the training wall.

Infrastructure within the vicinity of the proposed conveyor routes

18.4.7 The routes of the proposed conveyor systems from the MHF to the port terminal intercept a range of existing infrastructure including:

- an embankment approximately 6m in height (Redcar Trunk Road Landscaping historic landfill site);
- roads and access tracks including the A1085;
- road and railway bridges including the SSI 'Hot Metal' rail bridge and the NWL road bridge;
- Sembcorp drains, sewers and main site outfall culvert to penstock;
- underpasses under internal roads and public railway track;
- pipelines located within the existing service corridor, including an underground gas mains pipe line (further discussed within **Section 18.4 (Paragraph 18.4.10)**;
- NWL water lines;
- the pipe and road bridge to the south of the NWL sewage works; and,
- power lines owned by the National Grid and high level cable crossings.

18.4.8 The location of the above infrastructure in relation to the proposed conveyor routes is illustrated on **Figure 18-1**. The routes and form of the proposed conveyors are to be designed so that interference with existing infrastructure is minimised.

Surface water abstractions within the Tees estuary

18.4.9 Two surface water abstractions are located within the vicinity of the proposed scheme. The first is located in Tees Dock (NZ 546 235) and is held by Tees Bulk Handling Ltd. The second is located within the main navigable channel (NZ 547 259) and is held by Corus UK Ltd. A third abstraction licence located further outside of the vicinity of the scheme is held by Hartlepool nuclear power station.

The nuclear power station is licensed to abstract 35 5 $m^3 s^{-1}$ of surface water from Seaton Channel for cooling water

Pipelines

18.4.10 A track which runs along the edge of Dabholm Gut gives access to the NWL jetty, to pipelines and to the eastern end of the pipe tunnel that runs beneath the bed of the estuary. The following infrastructure runs between the track and the lagoon

- A pipe track carrying pipes which pass through the pipe tunnel beneath the estuary (Pipe Tunnel No 2). At the head of the tunnel is a brick head house. The centreline of the pipe track is approximately 20m from the edge of Dabholm Gut
- A buried natural gas pipeline which takes gas from the south side of the river via a second pipe tunnel to the north side of the estuary (BP AMOCO CATS Pipeline)
- A buried natural gas pipeline which brings gas from the north side of the estuary to the south side via a third under river crossing (Teesside Power Gas Pipeline – formerly referred to as the Enron Pipeline).
- Three pipes associated with the treatment and transfer of sludge from the NWL jetty to the Bran Sands sewage treatment plant.

18.4.11 The location of these pipelines in relation to the footprint of the proposed scheme is illustrated on **Figure 18-1**.

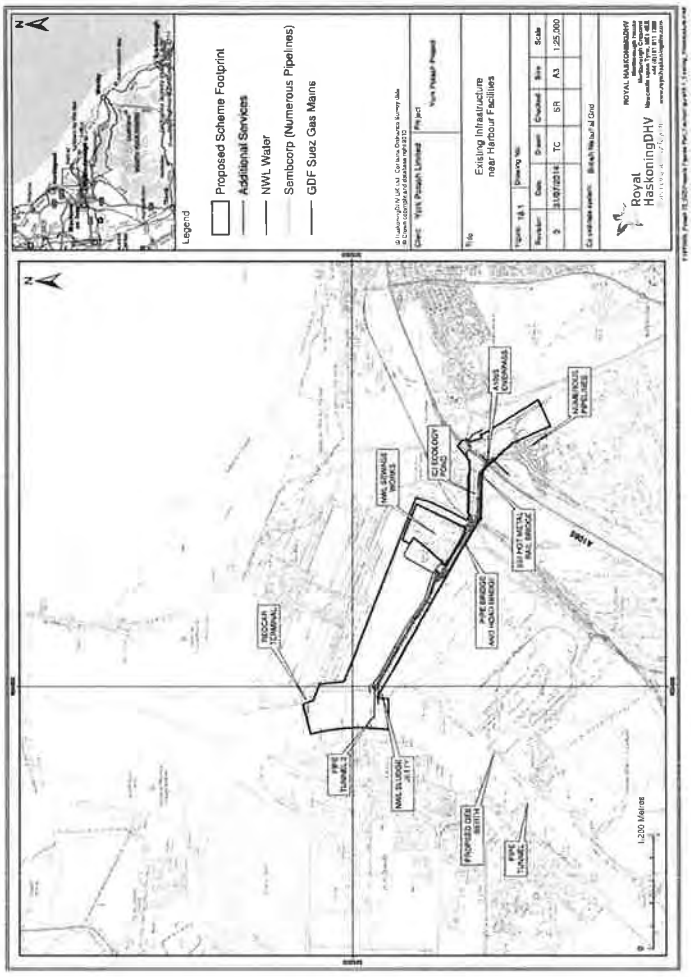
18.5 Assessment of potential impacts during construction

Potential direct impacts on existing infrastructure

Dredging related impacts

18.5.1 The dredging works required for the proposed port terminal have the potential to directly impact upon existing infrastructure including several groups of cables, pipelines and tunnels that cross the Tees estuary

18.5.2 With respect to capital dredging, the potential direct effect of the construction phase is limited to impacts on pipelines and cables that cross the Tees estuary. The proposed dredge footprint within the approach channel for Phase 2 is located within the route of Pipe Tunnel No.2. Pipe Tunnel No.2 is located at a depth of at least 22.45m below CD (Royal Haskoning, 2006), which is significantly lower than the proposed dredge depth of 14.1m below CD. There are no other known pipelines present within the estuary which could be directly impacted upon by the proposed dredging. Based on the above, the dredging works required within the approach channel are anticipated to have no impact on pipelines, cables and tunnels within the Tees estuary



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18.5.3 During Phase 2 of the proposed scheme, the proposed berth pocket (to be dredged in front of the proposed quay structure) may extend into the area currently occupied by the NWL Sludge Jetty, which may ultimately be removed as part of the proposed scheme for the fully developed berth

Impacts associated with installation of the conveyor routes

18.5.4 As discussed within **Section 18.4**, there is a range of existing infrastructure assets present within the footprint of the proposed conveyor routes which have potential to be impacted as a result of the conveyor system construction. The design for the conveyor system is being developed and the working assumption for the PER is that the installation of the conveyor would not result in unacceptable disturbance or disruption to the existing infrastructure, given that its design needs to take account of the presence of existing infrastructure.

18.5.5 Given the current position regarding the design of the conveyor system, assessment of significance has not been undertaken for this potential impact. However, based on the above, the working assumption is that the installation of the conveyor system would not result in unacceptable impacts to existing infrastructure.

Potential mitigation measures

18.5.6 Based on the working assumption outlined above, it is considered that no mitigation measures are required in relation to this impact. However, given the number of existing assets and land owners present along the routes of the conveyor system, the on-going consultation with land owners and asset owners will be continued under both the formal and informal engagement processes, throughout the design and construction processes to ensure that the evolving design of the conveyor system accommodates the existing infrastructure wherever possible.

Potential impact on water abstraction points

18.5.7 The proposed dredging and piling activities within the Tees estuary have the potential to impact upon water quality by temporarily increasing TSS concentrations within the water column. This has potential to impact upon third party users who abstract surface water from the Tees estuary (an increase in TSS concentration within the water abstracted from the estuary could impact upon the processes for which the water is used).

18.5.8 As discussed in **Section 8.5**, the tidal exchange within the Tees estuary during dredging and piling would remain unrestricted, with peaks in TSS expected on a short term basis during both Phase 1 and Phase 2 of the proposed scheme.

18.5.9 As the full modelling results of the hydrodynamic and sedimentary modelling were not available at the time of writing this PER, it has not been possible to determine the significance of this impact on surface water abstractions at this stage. This impact will be fully assessed within the EIA and presented within the ES.

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Potential mitigation measures

18.5.10 The mitigation measures outlined within **Section 7.5 (Paragraphs 7.5.5 to 7.5.8)** are also of relevance to this impact.

18.6 Assessment of potential impacts during operation

18.6.1 No operational phase impacts on existing infrastructure are anticipated as a result of the proposed scheme.

18.7 Summary

18.7.1 This section of the PER has been informed by desk based assessment, interrogation of 'Linesearchbeforeudig.com' and the results of site walkovers undertaken by Royal HaskoningDHV staff during December 2013 and April 2014.

18.7.2 The Tees estuary is bordered by a number of industrial developments, including chemical, petrochemical and steel works, sites of former industry and open areas of ground originally intended for industrial use. The route of the two proposed conveyor systems intercepts a number of infrastructure assets, including an underground gas main pipeline, a railway line, roads, an embankment (classified as a landfill site) and bridges.

18.7.3 Based on the information available at the time of writing, the installation of the port terminal and the proposed capital dredging are not anticipated to have any significant impacts upon existing infrastructure during the construction and operation phases. However, additional assessment will be undertaken once the results of the hydrodynamic and sedimentary modelling are available to further inform the impact assessment with regard to infrastructure and land drainage.

18.7.4 Given the presence of existing infrastructure along the route of the conveyor systems, there is the potential for impacts to arise during the construction phase. The route and design of the conveyor system is currently evolving. However, the working assumption for the conveyor system is that the construction and operation of the conveyors would not significantly impact upon existing infrastructure assets within the study area, as the design of the system will accommodate the presence of existing infrastructure. A full impact assessment will be undertaken once the design and route of the conveyor systems has been fixed, and the results presented in the ES.

19 SOCIO-ECONOMICS

19.1 Introduction

19.1.1 This section of the PER describes the existing environment in relation to socio-economics and the potential impacts of the construction and operational phases of the proposed scheme.

19.1.2 It sets out the methods and assumptions used to assess potential effects, the relevant baseline conditions and context around the proposed scheme footprint, and presents a qualitative and (where possible) a quantitative assessment of the potential effects of the proposed scheme, appropriate mitigation measures and the residual effects that could remain after mitigation.

19.2 Legislation, policy and guidance

19.2.1 **Appendix 19.1** sets out the legislation, policy and guidance which are relevant to this section of the PER.

19.3 Consultation

19.3.1 **Table 19-1** provides a summary of the comments received from PINS in the Scoping Opinion (**Appendix 4.1**) with specific regard to socio-economics.

Table 19-1 Summary of comments within the scoping opinion received from PINS during January 2014 with specific regard to socio-economics

Comment	Section of PER in which comment has been addressed
The applicant is advised to consult with the local planning authority of the approach to the assessment as they may be able to provide relevant data.	To be undertaken during the subsequent stage of the EIA process.
The Secretary of State recommends that the assessment criteria should be locationally specific and consider the potential significance of impacts within the local and regional context.	Section 19.4 (Paragraph 19.4.1 to 19.4.16).
The Secretary of State recommends that the types of jobs generated should be considered in the context of the available workforce in the area.	Sections 19.6 and 19.7.
The ES should quantify the likely influx of people to the area and therefore consider the impact of bringing workforce into the area, including impacts upon housing, healthcare and potential educational needs.	Sections 19.6 and 19.7.

19.4 Methodology

Scope and objectives of the assessment

19.4.1 The objectives underlying the socio-economic impact assessment are to provide an assessment of:

- gross employment opportunities related to construction and operation;
- the effect of this gross employment creation in the context of the labour market and within the proposed schemes travel to work area;
- the potential effect with respect to demand for accommodation associated with the construction and operation stage employees;
- assessment of the net economic impacts, taking into account the extent of deadweight and the displacement of economic impacts;
- socio-economic impacts arising as a result of other impacts (e.g. noise and landscape and visual impacts) due to the construction and operation of the proposed scheme and their likely impact on tourism;
- the potential wider economic impacts, including the likely effects of spending, investment, exports, tax, supply chain and multiplier impacts, and economic effects of national significance; and,
- mitigation and enhancement options.

Methodology for determining baseline conditions and sensitive receptors

19.4.2 In order to assess the potential impacts of the proposed scheme, it is essential that the socio-economic characteristics of the baseline environment are identified and described. Baseline socio-economic conditions have been established through the interpretation of nationally recognised research and survey information, and work undertaken for other environmental topics, including:

- 2001 Census Data (ONS)
- 2011 Census Data (ONS)
- Business Register and Employment Survey (BRES) (ONS).
- Indices of Multiple Deprivation (IMD) (2010) (DCLG)
- Claimant Count Data (ONS)
- Department for Work and Pensions Labour and Benefits Data (ONS).
- Annual Population Survey (ONS)
- Annual Survey of Hours and Earnings (ONS).

Identification of relevant spatial scale

19.4.3 The geographical extent of the study area for this socio-economic assessment includes Dormanstown ward; the ward in which the proposed scheme is located.

Administrative areas

19.4.4 In terms of socio-economic baseline data, the study area is based on areas of administrative geography, including national boundaries (England and Wales); regions (Yorkshire and Humber and the North East); and districts (Redcar and Cleveland, Middlesbrough and Stockton-On-Tees).

Identification of sensitive receptors

19.4.5 The spatial spread of effects varies depending on the different topic area. The sensitive receptors against which impacts have been assessed are:

- the economy at all spatial scales;
- businesses within the immediate area, the surrounding districts and the region;
- existing residents within surrounding districts; and,
- potential employees within the surrounding districts.

Receptor sensitivity

19.4.6 The main sensitive receptors for the socio-economic assessment are the accommodation and labour markets, businesses and communities at a number of spatial levels. It is not possible to ascribe specific 'values' to socio-economic sensitive receptors due to their diversity in nature and scale. There has, therefore, been a focus on the qualitative (rather than quantitative) "sensitivity" of each receptor and, in particular, their ability to respond to change based on recent rates of change and turnover. The socio-economic environment is a dynamic and adaptive one with constant background change and turnover, for example people moving into and out of the area and changing jobs. This is a particular feature of the construction sector.

19.4.7 This qualitative sensitivity is based on professional judgement but broadly ascribes low sensitivity to those receptors that are easily adaptive to change and high sensitivity to those receptors that are not easily adaptive to change. Broadly speaking, in the context of the size, change and turnover of the three districts' population and economy, these factors are of lower sensitivity, whilst provision of local services for which there is greater lead time and less dynamism, are of higher sensitivities. More specific quantitative values in order to assess these changes cannot be realistically made.

Magnitude and significance

19.4.8 The assessment of significance levels, therefore, combines an assessment of the overall magnitude or scale of the impact, and compares this to the ability of each receptor to respond to change. Potential impacts have been considered in terms of permanent or temporary, adverse (negative) or beneficial (positive) and cumulative.

19.4.9 Some impacts cannot be quantitatively assessed; in such cases a qualitative assessment has been undertaken. In addition, the magnitude of the impact does not necessarily correlate with the impact significance. The key influences on the determination of impact significance include:

- the magnitude of the potential impact;
- the geographical extent of the impact;
- the duration and reversibility of the impact;
- the capacity of the relevant area to absorb the impact; and,
- recent rates of change in the locality.

19.4.10 The duration of effects has been assessed to be either temporary or permanent:

- short term (<5 years);
- medium term (5-10 years);
- long term (> 10 years); or,
- permanent (e.g. once the proposed scheme is completed and operational).

19.4.11 The assessment process aims to be objective and to quantify effects as far as possible. However, as set out above, some effects can only be evaluated on a qualitative basis. Effects are defined as follows:

- beneficial classifications of significance indicate an advantageous or beneficial effect, which may be minor, moderate, or major in effect;
- neutral classifications of significance indicate no significant beneficial or adverse effect; and,
- adverse classifications of significance indicate disadvantageous or adverse effects, which may be minor, moderate or major in effect.

19.4.12 Where adverse or beneficial effects have been identified these have been assessed against the following scale:

- negligible;
- minor;
- moderate, or,
- major.

19.4.13 For example, a key (major or moderate) significant impact (in either construction or operation) would be likely to be of major or at least moderate magnitude, affect a wide area, be permanent or irreversible and difficult to absorb in the relevant area.

19.4.14 Most of the temporary assessments focus on the 'peak' of the construction period. This enables it to demonstrate the maximum scale of beneficial impacts and ensure mitigation measures meet the worst case for adverse impacts.

Acknowledging a degree of uncertainty

19.4.15 It is necessary to acknowledge that there is a degree of uncertainty in the accuracy of the baseline characterisation, the prediction of the magnitude and significance of effects and the vulnerability of

receptors. Wherever possible baseline characterisation and predictions in this PER have been supported by large volumes of data and high level technical expertise of the project team.

19.4.16 Where there is a significant level of uncertainty, sensitivity testing has been undertaken to obtain a range of potential values and capture the likely worst case scenario.

Assumptions and limitations

19.4.17 There are no further assumptions and limitations over and above those detailed in this sub-section.

19.5 Existing environment

Population

19.5.1 The total population of Dormanstown ward is approximately 6,755. The population profile of Dormanstown is similar to Redcar and Cleveland as a whole. As set out in **Table 19-2** and **Figure 19-1**, the proportion of the total population aged 65 and over is higher in Dormanstown than in the North East and in England and Wales.

19.5.2 Dormanstown experienced a significant decline in population between 2001 and 2011, of -7%. This is in the context 8% growth across England and Wales. The population of under 16s and 16 to 64 year olds both declined over this period while the population of over 65s remained the same. The population of under 16s in the ward declined significantly (by 24%).

19.5.3 Redcar and Cleveland's population also declined, although projections for 2021 show that this decline will stop, but no growth in population is predicted between 2011 and 2021. Population projections are not available at a ward level. Population dynamics data is presented in **Table 19-3**.

Table 19-2 Population and age profile of local, regional and national areas

Area	All	% Under 16	% 16-64	% 65+
Dormanstown (ward)	6,755	19%	62%	19%
Redcar and Cleveland	135,177	18%	63%	19%
Middlesbrough	138,412	20%	65%	15%
Stockton-On-Tees	191,610	19%	65%	16%
Yorkshire & the Humber	5,283,733	19%	65%	17%
North East	2,596,866	18%	65%	17%
England and Wales	56,075,912	19%	65%	16%

Figure 19-1 Age profile of local, regional and national areas

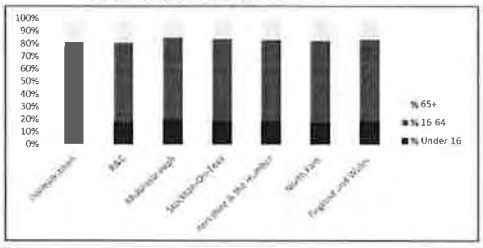


Table 19-3 Population dynamics within local, regional and national areas

	Population 2001	Population 2011	Projected Population 2021	% growth 2001-2011	% growth 2011-2021
Dormanstown (ward)	7,267	6,755	N/A	-7%	N/A
Redcar and Cleveland	139,130	135,177	135,466	-3%	0%
Middlesbrough	134,863	138,412	144,275	3%	4%
Stockton-On-Tees	178,414	191,160	206,717	7%	8%
Yorkshire & the Humber	4,964,830	5,283,730	5,657,240	6%	7%
North East	2,515,450	2,596,890	2,723,840	3%	5%
England and Wales	52,041,920	56,075,910	60,868,800	8%	9%

19.5.4 The population across Redcar and Cleveland is projected to age significantly between 2011 and 2021. The proportion of people aged 65 and over is projected to rise from 19% of the population in 2011 to 23%. The proportion of individuals under 16 is projected to remain steady at around 18% with the working age population declining from 63% to 58%.

19.5.5 Overall this will result in a rising dependency ratio across Redcar and Cleveland from 0.59 dependent residents per working age resident to 0.71.

The size of the labour market

19.5.6 As set out in **Table 19-4**, there are 4,837 people aged between 16 and 74 within Dormanstown ward. Of these, 54% are economically active. Unemployment within Dormanstown is relatively high, at 7% of the population aged 16 to 74, although this is in line with the average across Redcar and Cleveland (but lower than the rate in Middlesbrough).

Table 19-4 Labour market within local, regional and national areas

	All persons 16-74	Active: part time	Active: full time	Active: self employed	Active: unemployed	All economically active 16-74 (not including full time students)
Dormanstown (ward)	4,837	16%	34%	6%	7%	2,644
Redcar and Cleveland	99,177	15%	34%	6%	7%	54,558
Middlesbrough	100,551	15%	31%	5%	8%	51,535
Stockton-On-Tees	140,654	16%	36%	6%	6%	83,938
Yorkshire & the Humber	3,875,219	15%	37%	8%	5%	2,513,141
North East	1,924,206	14%	37%	7%	5%	1,209,222
England and Wales	41,126,540	14%	38%	10%	4%	27,249,399

19.5.7 The proportion of those aged 16 to 74 who have retired within Dormanstown is 18% of the population, significantly higher than the average across England and Wales (14%), Middlesbrough (14%) and Stockton-On-Tees (15%), but slightly lower that the average in Redcar and Cleveland (19%).

19.5.8 The overall employment rate measures the proportion of people aged 16 to 65 who are in employment (full-time, part-time or self-employed) as per the European Commission official statistics. As **Table 19-5** sets out, the Employment Rate within Dormanstown is 64%, which is in line with average for Redcar and Cleveland but lower than the average for the North East and significantly lower than the Government's target of 73%, which is currently not achieved in any of the comparator areas.

Table 19-5 Employment rate within local, regional and national areas

Area	Employment Rate 16 to 64
Dormanstown (ward)	64%
Redcar and Cleveland	65%
Middlesbrough	60%
Stockton-On-Tees	69%
Yorkshire & the Humber	69%
North East	67%
England and Wales	71%
Government Target	73%

Job seekers claimants

19.5.9 The Claimant Count measures the number of people who are claiming Job Seekers Allowance. Within Dormanstown (2003 Ward) the latest claimant count, for February 2014, was 5.5%. This is relatively high compared to rates in comparator areas, as set out in **Table 19-6**. The only area reporting a higher claimant count rate is Middlesbrough with a rate of 6.7%.

Table 19-6 Job seekers claimants rate (population aged 16 to 64)

Area	Job Seekers Claimant Rate
Dormanstown	5.5%
Redcar and Cleveland	5.3%
Middlesbrough	6.7%
Stockton-On-Tees	4.8%
Yorkshire & the Humber	3.9%
North East	4.4%
Local Enterprise Partnership (LEP)	2.5%
England and Wales	3.0%

19.5.10 The majority of job seekers in Dormanstown ward are looking for personal service, sales, customer service, process, plant and elementary positions, as is the pattern generally in the economy. Within Dormanstown ward, there are approximately 170 job seekers looking for work in these types of occupations. However, there is still a small proportion of local job seekers (9%) looking for work in managerial and professional occupations and in administrative and secretarial occupations as set out in **Table 19-7**.

Table 19-7 Job seekers claimants by sought occupation (population aged 16 to 64)

Area	Managers, professionals and associate professionals	Administrative and secretarial occupations	Skilled trades	Personal services, sales and customer services	Process, plant and machine operatives and elementary occupations
Dormanstown (ward)	10	10	20	80	90
Redcar and Cleveland	245	250	405	1,550	1,705
Middlesbrough	295	280	445	2,080	2,545
Stockton-On-Tees	460	355	520	2,040	2,240

Figures have been rounded to the nearest 5 for confidentiality reasons.

Youth unemployment

19.5.11 Between 20% and 30% of Job Seekers Allowance claimants in each of the study areas are aged under 24. Within the Dormanstown ward this amounts to 65 young people; 1,155 within Redcar and Cleveland; 1,470 within Middlesbrough, and 1,620 within Stockton-On-Tees.

Benefit claimants rate

19.5.12 As shown in **Table 19-8**, Dormanstown has one of the highest rates of working age benefit claimants of the comparator areas. Both Middlesbrough and Redcar and Cleveland have relatively high benefit claimant rates. Redcar and Cleveland district has a benefit claimant rate of 19.7%, which is 6.2 percentage points higher than the England and Wales average. Dormanstown also records a high rate of out-of-work benefits when looking at the wider area; at 16.2% compared to 14.5% in the North East, and 10.8% across England and Wales.

Table 19-8 Working age benefit claimants rate (population aged 16 to 64)

Area	All working age benefit claimants 16-64	Out-of-work benefits for working age claimants 16-64
Dormanstown (ward)	20.1%	16.2%
Redcar and Cleveland	19.7%	15.8%
Middlesbrough	23.5%	19.6%
Stockton-On-Tees	17.1%	13.7%
Yorkshire & the Humber	15.1%	12.2%

Area	All working age benefit claimants 16-64	Out-of-work benefits for working age claimants 16-64
North East	17.9%	14.5%
England and Wales	13.5%	10.8%

Qualifications

19.5.13 As set out in **Table 19-9** and **Figure 19-2**, the population of Dormanstown is relatively poorly skilled, with the highest rate of residents with no formal qualifications amongst the comparator areas. A third of the population (33%) has gained a Level 1 or 2 qualification. Dormanstown and surrounding districts show a much lower proportion of the population holding a Level 4+ qualifications compared to 27% across England and Wales.

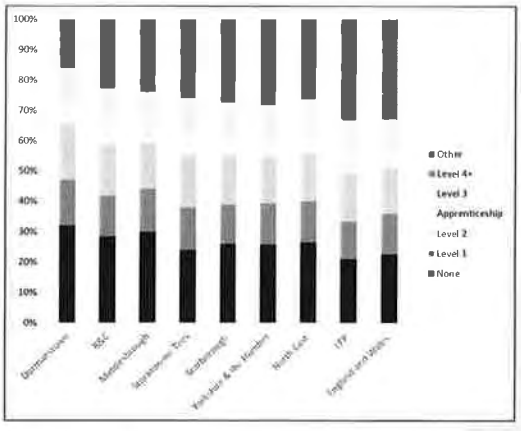
19.5.14 Levels of apprenticeships are slightly higher in Dormanstown at 6% of the working aged population when assessed to the comparator areas of 4 to 5% of the population aged 16 to 74.

Table 19-9 Qualifications (population aged 16 to 74) within local, regional and national areas

Area	None	Level 1	Level 2	Apprenticeship	Level 3	Level 4+	Other
Dormanstown (ward)	32%	15%	18%	6%	13%	13%	4%
Redcar and Cleveland	28%	13%	16%	6%	13%	19%	4%
Middlesbrough	30%	14%	15%	4%	13%	19%	5%
Stockton-On-Tees	24%	14%	17%	5%	14%	23%	4%
Yorkshire & the Humber	26%	14%	15%	4%	13%	23%	5%
North East	26%	14%	16%	5%	13%	22%	4%
England and Wales	23%	13%	15%	4%	12%	27%	6%

19.5.15 The number of apprenticeships achieved in Yorkshire & the Humber and the North East increased steadily between 2005/6 and 2011/12 from an annual total of 33,950 to 52,420. Redcar and Cleveland Local Education Authority experienced a growth in apprenticeship achievements of 640, to 1,140 in 2011/12. In 2011/12, 60 of these apprenticeships (9%) were in construction, planning and the built environment sectors and 150 (23%) were in engineering and manufacturing technologies.

Figure 19-2 Qualifications profile (population aged 16 to 74)



Occupational and industrial sector of working residents

19.5.16 The occupation profile of the population of Dormanstown and comparator areas is set out in **Table 19-10**. Dormanstown has a higher proportion of residents engaged in process and elementary occupations and service occupations than the comparator areas. A much lower proportion of Dormanstown residents are engaged in managerial, professional and associate professional occupations than comparator areas at 31% compared to Redcar and Cleveland at 32% and nationally at 41%.

Table 19-10 Occupation profile (resident population aged 16 to 74)

Area	Managers	Professionals and associate professionals	Administrative and secretarial occupations	Skilled trades	Caring, leisure, service occupation, sales and customer services	Process, plant and machine operatives and elementary occupations
Dormanstown (ward)	7%	17%	10%	15%	25%	26%
Redcar and Cleveland	8%	24%	11%	14%	22%	22%
Middlesbrough	7%	23%	10%	12%	23%	25%
Stockton-On-Tees	9%	28%	11%	12%	20%	20%
Yorkshire & the Humber	10%	27%	11%	12%	19%	21%
North East	9%	26%	12%	12%	21%	21%
England and Wales	11%	30%	11%	11%	18%	18%

19.5.17 The industry of employment of working age residents in Dormanstown is set out in **Table 19-10**. As is the case generally in the economy of England and Wales, wholesale and retail trades and health and social work are amongst the most significant employers. The proportion of residents engaged in manufacturing is slightly higher than the national average (10.3% compared to 8.9%). Information and communication sectors, professional and scientific sectors and financial services are all significantly under represented as employers of local people (listed amongst other in **Table 19-11**).

19.5.18 **Table 19-12** below sets out the numbers of residents engaged in the manufacturing sector in Dormanstown and in comparator areas. There are approximately 280 residents of Dormanstown engaged in manufacturing. Almost half of these employees take part in low-tech manufacturing (C23-25) which has been defined by the ONS as the manufacture of non-metallic mineral products, basic metals and of fabricated metal products, expect machinery and equipment. The rate of low-tech manufacturing is higher in Dormanstown and Redcar and Cleveland, at 4%, when compared to other areas which range from 1 to 2%.

Table 19-11 Industrial profile of Dormanstown (resident population aged 16 to 74)

Sector	% of residents Dormanstown	Total employed residents Dormanstown (figures have been rounded)	% of residents R&C	Total employed residents R&C (figures have been rounded)
Wholesale and retail trade; repair of motor vehicles and motor cycles	18.1%	500	15.7%	8,630
Human health and social work activities	14.7%	400	15.6%	8,790
Manufacturing	10.3%	280	10.3%	5,820
Construction	8.6%	240	8.8%	4,980
Education	8.2%	220	9.8%	5,550
Accommodation and food services	6.5%	180	5.4%	3,030
Administrative and support service activities	6.0%	160	4.3%	2,440
Transport and storage	5.6%	150	4.7%	2,650
Public administration and defence; compulsory social security	5.5%	150	6.4%	3,620
Other	16%	450	19%	10,858
TOTAL		2,730		56,370

Table 19-12 The manufacturing sector (resident population aged 16 to 74)

Area	% of residents	Total employed residents (figures have been rounded)	% of residents manufacturing low-tech (C23-25)	Total employed residents (figures have been rounded)
Dormanstown (ward)	10%	280	4%	115
Redcar and Cleveland	10%	5,815	4%	2,310
Middlesbrough	8%	4,430	2%	1,301
Stockton-On-Tees	10%	6,670	2%	2,090
Yorkshire & the Humber	11%	272,750	2%	58,815
North East	10%	117,995	2%	23,650
England and Wales	9%	2,370,000	2%	404,800

19.5.19 The construction sector broadly represents 8% of working aged residents across all spatial scales This equates to 240 residents engaged in the construction sector in Dormanstown and 4,980 in Redcar and Cleveland, as set out in **Table 19-13**

Table 19-13 The construction sector (resident population aged 16-74)

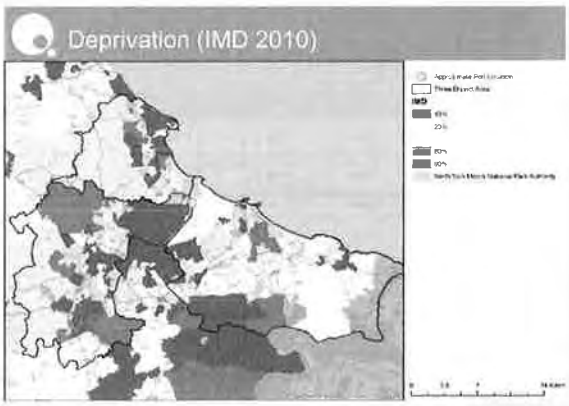
Area	% of residents	Total employed residents (figures have been rounded)
Dormanstown (ward)	8.6%	240
Redcar and Cleveland	8.8%	4,980
Middlesbrough	8.5%	4,620
Stockton-On-Tees	8.3%	7,200
Yorkshire & the Humber	8.0%	193,645
North East	7.9%	91,300
LEP	7.8%	43,296
England and Wales	7.7%	2,043,229

Deprivation

19.5.20 The Indices of Multiple Deprivation measures relative deprivation of neighbourhoods in England, taking into account a range of indicators including employment, crime, health and access to services As set out in **Figure 19-3**, there are areas within the three district areas of Redcar and Cleveland, Middlesbrough and Stockton-on-Tees which are amongst the most and least deprived in England

19.5.21 **Figure 19-3** below shows the three district areas of Redcar and Cleveland, Middlesbrough and Stockton-On-Tees High deprivation is concentrated where these districts meet along the River Tees and along the coast in Stockton-On-Tees, including the proposed scheme footprint, which is an area that is amongst the 20% most deprived in England Low deprivation is concentrated in rural areas around the North York Moors National Park

Figure 19-3 Deprivation in Three District Area



The Local Economy

Employment

19.5.22 There are approximately 10,000 people working within Dormanstown ward The largest sector of employment is the manufacturing sector making up 34.6% of all employment in Dormanstown ward Other major employment sectors within Dormanstown ward are transportation/storage, administrative and support service activities, wholesale and retail trade, and public administrative and defence

19.5.23 Transportation and storage is a proportionality large and important sector here, linked to the operation of the ports with 1,740 people engaged in the sector in Dormanstown alone, and 2,240 people engaged in the sector across Redcar and Cleveland Further detail regarding employment within Dormanstown and Redcar and Cleveland as a whole is provided in **Table 19-14**.

Table 19-14 Employment (employees + proprietors, workplace)

Industry	Employment (Employees + proprietors) (Dormanstown Ward)	Proportion	Employment (Employees + proprietors) (Redcar and Cleveland)	Proportion
Manufacturing	3,457	34.6%	6,558	16.4%
Transportation and storage	1,744	17.4%	2,636	6.6%
Administrative and support service activities	1,101	11.0%	2,099	5.3%
Wholesale and retail trade; repair of motor vehicles and motorcycles	656	6.6%	6,137	15.4%
Public administration and defence; compulsory social security	598	6.0%	1,956	4.9%
Real estate activities	507	5.1%	857	2.1%
Water supply; sewerage, waste management and remediation activities	416	4.2%	595	1.5%
Professional, scientific and technical activities	383	3.8%	1,774	4.4%
Human health and social work activities	310	3.1%	5,609	14.1%
Education	192	1.9%	4,407	11.0%
Other	*336*	*3.3%*	*3,184*	*7.9%*
	10,000		39,907	

Employment in construction

19.5.24 The Business Register and Employment Survey, from which this data is drawn, is survey based and therefore subject to sampling errors which means that it should be used with caution, especially when used for time series or at a local level

19.5.25 However, recent trends indicate that the number of people engaged in construction in the three districts considered within this section of the PER declined between 2009 and 2012 (the most recent data available), with an unconsolidated increase in 2011. This is set out in **Table 19-15**

Table 19-15 Employment in construction

Date	Redcar and Cleveland	Middlesbrough	Stock-On-Tees	Total
2009	2,510	4,550	6,710	13,770
2010	2,210	3,630	5,840	11,470
2011	2,280	3,780	6,760	12,620
2012	1,780	4,000	5,650	11,430

The public sector

19.5.26 Exact numbers of people working in the public sector at a ward level was not available from national datasets. However, estimates of public sector prevalence can be made using the health, education and public administration and defence sectors as a proxy, although this likely to be an overestimate. For wider spatial scales, BRES provides an estimate of public sector reliance. Comparative levels of estimated public sector employment are set out in **Table 19-16** below. Public sector employment in Dormanstown is estimated to be higher than the comparator areas.

Table 19-16 Public sector employment estimates

Area	Public Sector Number BRES	Public Sector Proportion BRES
Dormanstown (ward)	780*	28%*
Redcar and Cleveland	8,280	21%
Middlesbrough	19,740	33%
Stockton-On-Tees	16,880	22%
Scarborough	9,000	22%
Yorkshire and Humber	483,180	22%
North East	258,670	25%
England and Wales	4,816,810	19%

Housing and accommodation

19.5.27 According to the 2011 Census there are 2,953 households in Dormanstown. The majority (65%) of these are semi-detached houses, 20% are terraces, and a very small proportion are flats and detached houses. **Table 19-17** sets out the number and type of dwellings in Dormanstown and comparator areas.

Table 19-17 Housing type within Dormanstown

Area	Unshared Dwelling	Detached	Semi-detached	Terrace	Flat/maisonette
Dormanstown	2,953	6%	65%	20%	9%
Redcar and Cleveland	59,534	16%	45%	28%	9%
Middlesbrough	57,070	14%	41%	32%	13%
Stockton-On-Tees	79,091	25%	42%	23%	10%
Scarborough	49,181	23%	33%	22%	22%
Yorkshire & the Humber	2,219,167	21%	37%	28%	14%
North East	1,129,032	16%	39%	30%	14%
England and Wales	23,286,109	23%	31%	25%	21%

19.5.28 The predominant tenure in Dormanstown is private ownership, accounting for nearly two thirds of all dwellings. There is a significantly lower proportion of private rented housing within the ward than in comparator areas, and a significantly higher proportion of social rented households, as set out in **Table 19-18**.

Table 19-18 Housing tenure in Dormanstown

Area	Unshared Dwelling	Owned	Social Rented	Private Rented	Other
Dormanstown	2,953	63%	27%	9%	2%
Redcar and Cleveland	59,534	67%	19%	12%	2%
Middlesbrough	57,070	57%	24%	17%	2%
Stockton-On-Tees	79,091	69%	17%	13%	1%
Scarborough	49,181	66%	12%	20%	2%
Yorkshire & the Humber	2,219,167	64%	18%	16%	2%
North East	1,129,032	62%	23%	14%	2%
LEP	483,178	71%	11%	16%	2%
England and Wales	23,286,109	64%	18%	17%	2%

Private rented bedrooms

19.5.29 There are 67,500 private rented bedrooms in the three districts, of which nearly 18,000 are in Redcar and Cleveland and 730 are in Dormanstown, with the majority in three bedroom units.

Wages

19.5.30 Wages in the area vary according to location and between resident based measures and workplace based measures. Figures for both the gross annual pay of full time residents and those working in the same geographies were obtained from the Annual Survey of Hours and Earnings from the ONS.

19.5.31 Resident based average annual pay in Redcar and Cleveland is £3,090 lower than the national average, and £5,460 lower in Middlesbrough. Middlesbrough and Stockton-On-Tees have large discrepancies between resident based and workplace based incomes. Residents in Middlesbrough earn significantly less than employees in the district, indicating that higher value jobs tend to go to residents who live outside the borough. The opposite is true in Stockton-On-Tees.

19.5.32 **Table 19-19** below outlines the figures for gross annual pay based on residents and workplaces.

Table 19-19 Median gross annual pay 2013 (resident based and workplace based)

Area	Resident based median gross annual pay (full time) £	Workplace based median gross annual pay (full time) £
Redcar and Cleveland	24,105	23,684
Middlesbrough	21,732	24,030
Stockton-On-Tees	26,659	24,070
North East	24,229	24,084
Yorkshire and Humber	24,982	24,954
England and Wales	27,193	27,177

19.5.33 Over the period from 2002 to 2012, workers based in all areas analysed experienced an increase in gross annual pay, however wages for both residents and employees in Redcar and Cleveland experienced significantly smaller increases than the national average.

19.5.34 It should be noted that some figures have been omitted by ONS due to being statistically unreliable and therefore data for all years is not always available to accurately represent the changes over a period of time.

Wider economic context

19.5.35 In 2012, Tees Valley contributed £10.7 billion of Total Gross Value Added (GVA) to the national economy[6]. The Total GVA in all areas in the wider area increased in the seven year period from 2005 to 2011. The LEP economy experienced a rise of 15.9% over this period, lower than the England percent increase of 18.8% but higher than the North East region with an increase of 12.6%.

19.5.36 The Total GVA (£ million) over the period of 2005 to 2011 for the wider economic area (where available) is outlined in **Table 19-20** below.

Table 19-20 Total GVA (£ million) 2005 to 2011

Area	2005	2006	2007	2008	2009	2010	2011	2012
Tees Valley LEP	-	-	-	-	-	-	-	10,700
North East[7]	36,572	38,630	39,249	40,261	38,666	40,271	41,188	-
England	947,218	997,356	1,056,933	1,080,363	1,063,683	1,099,713	1,124,881	-

19.6 Assessment of impacts during construction

Peak construction employment

19.6.1 The duration of the construction phase for Phase 1 of the proposed harbour facility would be 17 months, with a further 17 months for Phase 2. The total person months required to construct the harbour facility would be 4,140 (1,760 for each phase of construction). This would equate to an average of 122 construction employees per month and a peak of 175, reached at month 5 of each phase, and represents 1.7% of the total employment in Dormanstown ward. In this context the impact on the churn of the labour market would be of negligible significance.

19.6.2 YPL is committed to maximising the number of firms within the LEP that are able to access and succeed in tendering for opportunities and is currently working in partnership with the LEP stakeholders towards this goal. In the context of the LEP economy, the indirect effects of investment and job creation could, therefore, have beneficial impacts in terms of local employment.

Demand for temporary accommodation by construction employees

19.6.3 It is expected that the vast majority of construction employees would be home based and would travel from within the three districts. Even if a proportion of construction workers were to require temporary accommodation, there are 67,500 private rented bedrooms in the three districts, of which nearly 18,000

[6] Tees Valley Unlimited, *Tees Valley Strategic Economic Plan*, April 2014
[7] Office for National Statistics, *Regional Gross Value Added (Production Approach)*, December 2013

are in Redcar and Cleveland and 730 are in Dormanstown, with the majority in three bedroom units. In addition, there would be hotel and B&B bed spaces.

19.6.4 In this context the impact of construction workers on temporary accommodation would be of negligible significance.

Indirect employment effects resulting from construction expenditure

19.6.5 Expenditure on construction of the proposed harbour facility would result in indirect beneficial economic effects in the wider supply chain. Indirect employment has been estimated using a breakdown of construction spending provided by YPL and drawing on the ONS Input-Output tables. These show that 60% of construction spending goes on materials and other parts of the supply chain – the remaining 40% is the Value Added. Most of the purchases (nearly 65%) remain within the construction supply chain, with a further 20% going to manufacturing companies and the remainder split between energy and business and financial services. The methodology used to derive these figures will be set out in detail in the *Summary of Economic Benefits* to be submitted with the DCO application.

19.6.6 **Table 19-21** sets out the expected indirect effects resulting from construction expenditure required for Phase 1.

Table 19-21 Total indirect spending effects during construction of Phase 1 (rounded figures)

Impact	Spending (Phase 1: 6.5mtpa)
Investment	£174,000,000
Purchases	£100,000,000
Of which: Construction	*£60,500,000*
Manufacturing	*£10,000,000*
Utilities and Services	*£29,000,000*
Indirect jobs (one year)	970

19.6.7 Through the supply chain, the indirect effect of spending would result in **970 indirect jobs in the economy**. In the context of the UK economy, this expenditure and job creation would result in an impact of negligible significance.

19.6.8 As set out above, YPL is committed to maximising the number of firms within the LEP that are able to access and succeed in tendering for opportunities. In the context of the LEP economy, the indirect effects of investment and job creation could, therefore, have temporary beneficial impacts at a LEP level.

19.6.9 For Phase 2, a further £306m of investment would take place. This is spread across the YPP as a whole and cannot be disaggregated by element at this stage. The further indirect employment generated by Phase 2 of the proposed harbour facility will be considered as part of the CIA.

Induced employment effects resulting from construction expenditure

19.6.10 The additional construction employees would spend some of their increased incomes and thereby increase employment in local shops and services. In some cases workers would move directly from unemployment to employment at the proposed harbour facility. In other cases they would move from existing jobs, thereby creating vacancies that other residents can fill. The overall result is that more people would have a job and there would be an overall increase in wages and in spending. This spending would then support more employment and economic activity at other local businesses.

19.6.11 Induced employment resulting from increased local expenditure is estimated to be a further 970 jobs (one year) for Phase 1. The geographical distribution of this expenditure cannot be accurately estimated but a significant proportion could be within the three districts and the LEP. As with indirect employment (see above), the further induced employment generated by further investment at the proposed harbour facility would be considered as part of the CIA.

Increase in GDP resulting from construction expenditure

19.6.12 The ONS estimates that approximately 40% of spending on construction is "value added", which is the sub-national measure of GDP.

19.6.13 For a £174m of construction investment, the direct GVA would, therefore, be approximately £69.5m, all of which would relate to the initial phase of production at 6.5mtpa (Phase 1). The estimated annual GVA generation by 6.5mtpa represents 0.64% of the current estimated GVA of the Tees Valley LEP. This would result in an impact of minor beneficial significance at a LEP level.

19.6.14 As with employment, this would result indirect and induced GVA effects via the supply chain and labour market, predicted to be a total of £73.1m of additional GVA in the wider economy (at 6.5mtpa), as set out in **Table 19-22**.

19.6.15 The geographical distribution of this indirect and induced increase in output cannot be accurately estimated. At a UK level, the effects with respect to GVA would be negligible.

Table 19-22 GVA effects during construction

Impact	Phase 1 (6.5mtpa)
Direct GVA	£70,000,000
Indirect GVA	£42,000,000
Induced GVA	£5,000,000
Total GVA	**£117,000,000**
GVA per year (over 1.6 years)	£73,125,000

19.6.16 GVA effects with respect to the increase in output from 6.5mpta to 13mpta cannot be disaggregated from the YPP as a whole and will be considered as part of the CIA.

19.7 Assessment of impacts during operation

Operational employment

19.7.1 The operational workforce at the proposed harbour facility would be 26 employees per day (Phase 1) and 34 employees per day (on completion of Phase 2). These jobs would be across a wide range of roles. The majority of the YPP workforce would need to have relevant experience for the jobs for which they are applying, but in the case of the proposed harbour facility, this would not need to be specific to the polyhalite industry and would not, therefore, put pressure on the existing employment supply of experienced workers in this industry.

19.7.2 In the context of natural labour churn (approximately 25% of the private sector workforce year on year), unemployment in the local labour market (16,320 people across the three districts) and relatively low economic activity rates, and the existing size of the transportation and storage sector (1,750 people within Dormanstown; 2,640 within Redcar and Cleveland); there would be no significant impact with respect to pressure on the labour market.

19.7.3 YPL is committed to maximising local employment and on-the-job training. This would be achieved through stakeholder consultation and partnership and would result in beneficial local impacts with respect to employment.

Indirect and induced effects of operation

19.7.4 As with the construction phase, there would be wider multiplier benefits during the operational phase as YPL spends money through the supply chain, supporting jobs in the wider economy and as these employees spend their wages.

19.7.5 Unlike the construction phase, during operation, some account of deadweight and displacement must be taken. Allowance needs to be made for product market displacement that could affect other UK producers of potash.

19.7.6 There are no means of knowing in advance whether the YPP would displace UK or overseas producers from the market, but assuming both are affected equally this would equate to a loss to the UK equivalent to 1% of the YPL's impacts in the initial production phase and 0.7% under full production. It would, therefore, be of negligible significance.

19.7.7 Modelling of the expected indirect and induced economic and labour market impacts has been untaken, taking account of projected:

- operational spending at the proposed harbour facility;
- maintenance expenditure;
- salary expenditure, and,
- employment numbers (as outlined above).

19.7.8 The results are set out in **Table 19-23** and **Table 19-24**.

Table 19-23 Indirect and induced operational effects: GVA (figures have been rounded)

Impact	6.5mtpa	13mtpa
Direct GVA	£591,000,000	£1,190,000,000
Indirect GVA	£5,562,000	£9,000,000
Induced GVA	£500,000	£700,000
Total GVA	£597,062,000	£1,199,700,000

Table 19-24 Indirect and induced operational effects: labour market

Impact	6.5mtpa	13mtpa
Direct Jobs	26	34
Indirect Jobs	80	130
Induced Jobs (1 year)	15	20

19.7.9 In the context of the wider labour market this would have a negligible effect with respect to job creation.

19.8 Summary

19.8.1 Construction employment for the proposed harbour facility would average at 122 employees per month with two peaks of 175 employees. This peak represents 1.7% of the total employment in Dormanstown ward.

19.8.2 The operational workforce would be 26 employees at 6.5mtpa and 34 employees at 13mpta. In the context of the local labour market, this increase in demand for labour would not result in a significant effect.

19.8.3 There would be beneficial indirect and induced effects resulting from the investment in construction and through operational expenditure. Initial investment to reach an output of 6.5mtpa would be £174m – of which £100m would be purchases. Through the supply chain, this would result in 970 indirect jobs and 970 induced (one year) jobs in the economy. In the context the economy of the UK, this expenditure and job creation would result in a negligible effect.

19.8.4 For a £174m of construction investment the direct GVA, therefore, would be approximately £69.5m, all of which would relate to the initial phase of production at 6.5mtpa. The estimated annual GVA generation by 6.5mtpa represents 0.64% of the current estimated GVA of the Tees Valley LEP. This would result in a total of £73.1m of additional GVA in the wider economy at 6.5mtpa.

19.8.5 Once operational, there would be wider multiplier benefits during the operational phase due to spending through the supply chain, supporting jobs in the wider economy and as these employees spend their wages. The total GVA generated by the operation of the proposed harbour facility would be £0bn at 6.5mtpa and £1.2bn at 13mpta, including direct, indirect and induced effects. This would also result in indirect and induced jobs.

20 LANDSCAPE AND VISUAL CHARACTER

20.1 Introduction

20.1.1 This section of the PER describes the existing environment in relation to landscape and visual resources and considers the potential effects of the construction and operational phases of the proposed scheme on these resources.

20.1.2 At the time of writing this PER, the conveyor alignment and design between the MHF and the proposed port terminal was still being developed. Hence this section of the PER represents a preliminary study, which will be developed once final design information is available.

20.2 Legislation, policy and guidance

NPS for Ports

20.2.1 The NPS for Ports (Department for Transport, 2012) states that the landscape and visual effects of proposed projects will vary on a case by case basis according to the type of proposed scheme, its location and the landscape setting of the proposed scheme. The NPS states that the applicant should carry out a landscape and visual assessment and report the findings in the ES. The landscape and visual assessment should include reference to any landscape character assessment and associated studies, as a means of assessing the impacts relevant to the proposed scheme.

20.2.2 The assessment should include the effects during construction of the proposed scheme and the effects of the completed scheme and its operation on landscape components and landscape character. The assessment should also include the visibility and conspicuousness of the proposed scheme during construction and of the presence and operation of the proposed scheme and potential impacts on views and visual amenity. This should include any light pollution effects on local amenity, rural tranquillity and nature conservation.

20.3 Consultation

20.3.1 A summary of the comments received from PINS, as part of the Scoping Opinion, with specific regard to landscape and visual character is presented in **Table 20-1**.

Table 20-1 Summary of scoping comments received from PINS with regard to landscape and visual character

Comment	Section of PER in which comment has been addressed
The Secretary of State recommends the applicant discusses the proposed LVIA with the local authorities on the opposite side of the Tees estuary, in addition to RCBC.	To be undertaken during the subsequent stage of the EIA process

Comment	Section of PER in which comment has been addressed
The Secretary of State advises the use of a Zone of Theoretical Visibility (ZTV) to provide information on the potential visibility of the proposed development site.	Appendix 20.1 (Point 6).
The ES should describe the methodology and model used, provide information on the area covered and timing of any survey work.	Section 20.4 and Appendix 20.1.
The Secretary of State advises that viewpoints are agreed with the local authorities and should include the key road and rail viewpoints as mentioned in the scoping report, and publically available viewpoints within the area. Views from across the estuary should be included as well as night time views.	Section 20.4 (Paragraph 20.4.1) Appendix 20.1 (Point 3).
The Secretary of State requests that consideration should be given to the form, siting and use of materials and colours to minimise adverse effects.	Appendix 20.3.
The applicant is advised to consider how the landscape proposals on the site can be developed to minimise visual impact and consider effects on landscape character.	Appendix 20.3.
Consideration should be given to any visual impacts on areas used by feeding / roosting SPA / Ramsar birds (for example reduced site lines) both within and adjacent to the footprint. This should include any potential shadowing that may be caused by large buildings.	Appendix 20.3. To be considered further as part of the subsequent stage of the EIA process.
The EIA should include a full assessment of potential impacts on local landscape character. Natural England encourages the use of Landscape Character Assessment (LCA) based on the good practice guidelines produced by the Landscape Institute and Institute of Environmental Assessment.	Section 20.6 (Paragraph 20.6.1 to 20.6.3)

20.4 Methodology

Study area

20.4.1 The extent of the study area adopted for this assessment was a 1km zone from the boundary of the proposed scheme. Within this zone, receptors with potential visibility of any part of the proposed scheme were identified. In addition, selected distant receptors outside the 1km zone have also been considered.

Specific methodology and overview of approach

20.4.2 The assessment methodology used within this section of the PER is based on the Guidelines for Landscape and Visual Impact Assessment, Third Edition, Landscape Institute and Institute of Environmental Management and Assessment, 2013.

20.4.3 The Guidelines for Landscape and Visual Impact Assessment are not prescriptive and set out a general approach that should be tailored to the specific circumstances of the proposed scheme that is being

assessed. The methodology that was adopted for the proposed scheme is presented within **Appendix 20.1**. Briefly, the assessment process comprises:

- establishment of baseline landscape and visual conditions within the study area, including reference to any existing Landscape Character Assessments (LCA) that may be available;
- identification of potential landscape and visual receptors and assessment of their sensitivity to change; and,
- assessment of the effects of the proposed scheme on receptors at construction and operational stages of the project.

20.4.4 Mitigation measures to be employed at construction and operational stages are described where appropriate. They are assumed to be inbuilt to the project and have been taken into account for the purposes of assessing scheme effects.

20.4.5 Landscape and visual effects have been considered separately, to enable an understanding of both the general effects of the scheme and effects on specific receptors. Landscape effects relate to both direct physical effects of the scheme (for example changes to topography or loss of existing vegetation cover) and effects on wider landscape character, including perceptual effects. Visual effects include those on people within the landscape including residents, users of PRoW and roads and recreational users of the landscape. Views from Conservation Areas, Listed Buildings and Scheduled Monuments have also been considered where these features are expected to be used by tourists. It should be noted that this part of the PER has only addressed effects in views of cultural heritage resources, with effects on settings being considered as part of the cultural heritage assessment (see **Section 15**).

20.4.6 Effects have been identified as either reversible or irreversible and the duration of effects have been considered. Effects are described as being either beneficial or adverse depending on whether they are considered to have a positive or negative respective effect on the landscape or within views.

Likely significant effect

20.4.7 For the purposes of the EIA Regulations, landscape and visual effects identified as being moderate, moderate major or major should be considered as being significant effects and should be taken into account during the decision making process.

Development options and phasing

20.4.8 Design options have been retained for the scheme as follows:

- two conveyor routes from the proposed MHF site passing to the north and south of Bran Sands lagoon; and,
- solid or open quay structure alternatives are proposed for the port terminal at Bran Sands, both with accompanying 35m high (maximum) twin surge bins including conveyor access and shiploader cranes.

20.4.9 The assessed horizontal and vertical alignments of the conveyor route options are shown on Drawing PB1586-SK89 and SK59. The conveyor structure is anticipated to be between 10m and 25m in height under typical conditions, with the final section at the port terminal rising to feed the storage surge bins from the top. Tranfer towers, rising to 25m height are proposed at changes in direction or level along the conveyor route. The conveyor would pass over the A1085 road corridor and the Middlesbrough to Redcar railway line.

20.4.10 The port terminal would be constructed in two phases with one storage surge bin, the northern section of quay and a single shiploader forming the first phase and a southern quay extension, additional shiploader and an additional storage surge bin forming the second phase. For the purposes of this assessment it has been assumed that construction access for both phases would run along the southern edge of the Bran Sands lagoon and that this route would also be used for operational access.

20.4.11 For the purposes of LVIA assessment it is considered that there is no material difference between the open or solid quay alternatives in terms of likely effects, with the taller (and more visible) surge bins and shiploader structures being common to both options.

20.5 Existing environment

Location

20.5.1 The proposed port facility is located at Bran Sands on the south bank of the Tees estuary within the borough of Redcar and Cleveland. The port terminal is proposed to be linked via conveyor to the proposed MHF site at Wilton to the south west, beyond the A1085 trunk road.

20.5.2 **Figure 2316-LVIA-01** shows the development in aerial photographic context and **Figure 2316-LVIA-02** shows the wider topographic context. Photographs (reference view 1 to 20) on **Figures 2316-LVIA-05** to **Figure 2316-LVIA-11** illustrate the nature of existing landscape character within the study area. Photographic view locations are shown on **Figure 2316-LVIA-01**.

Designated sites

20.5.3 The proposed scheme footprint does not contain any features or areas designated for their landscape value.

Physical landscape features

20.5.4 The proposed port terminal site comprises a grassed man-made embankment with access road and associated river frontage on the south bank of the Tees estuary to the immediate south of the SSI Steel Works. The footprint of the proposed port terminal is backed by an artificial lagoon (Bran Sands lagoon) and raised landforms.

20.5.5 The proposed conveyor corridors comprise grassland with occasional scrub to boundaries within the Wilton MHF site, semi-mature tree and shrub cover along the A1085 road corridor and coarse

grassland with occasional regenerating scrub along the proposed conveyor routes. Typically the conveyor routes follow existing industrial pipeline and access corridors. Topography within the quay site and along the conveyor routes is flat at between 5-10m above OD but is often surrounded or interrupted by higher man-made ground and embankments, including road and rail access corridors and a raised landfill site across the eastern section of the Bran Sands site (see views 16 and 17).

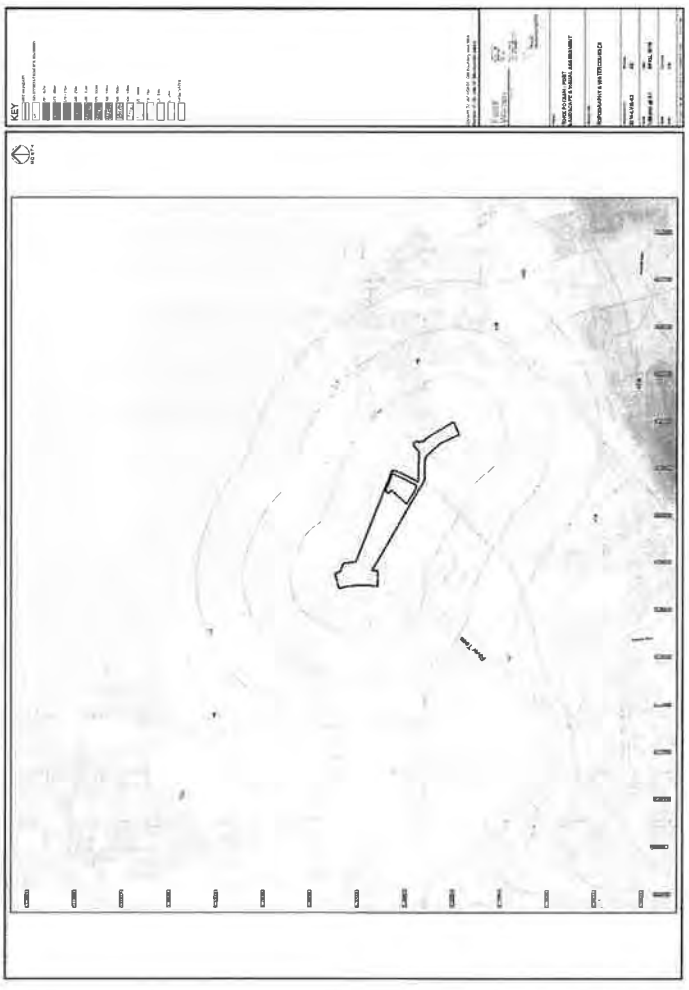
Landscape character

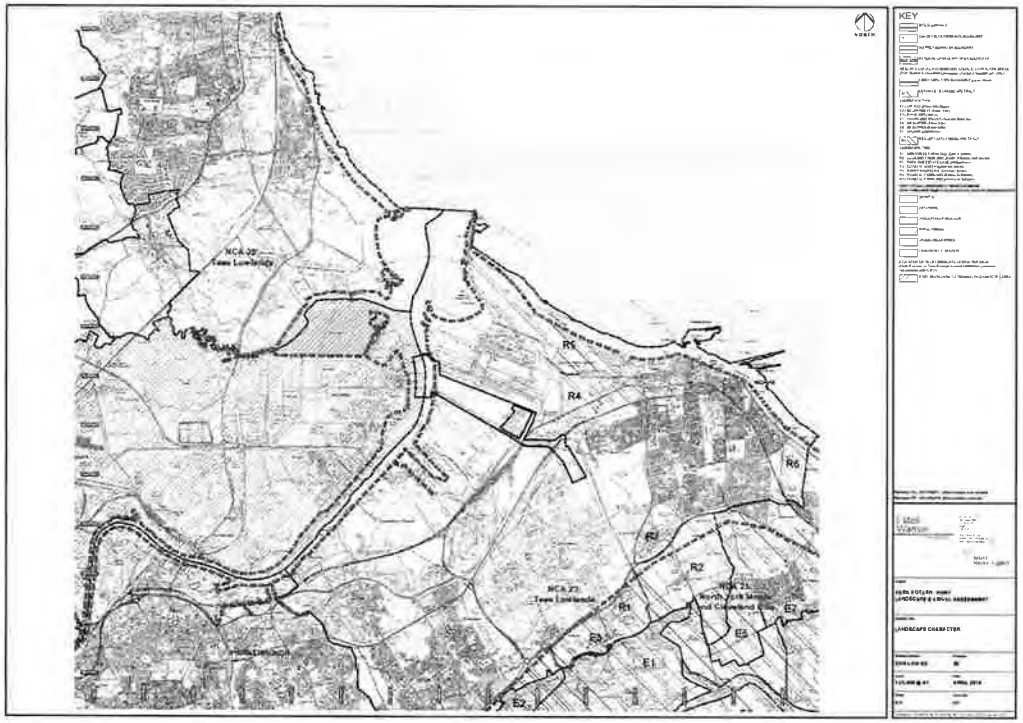
20 5 6 Landscape character within the study area is shown on **Figure 2316-LVIA-03**

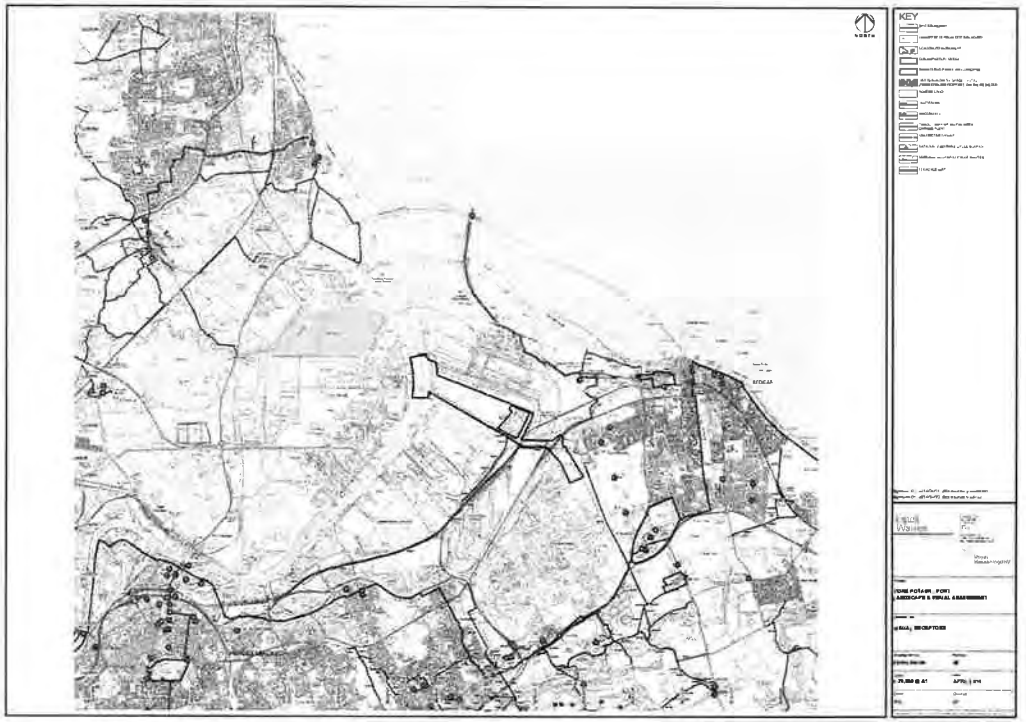
Regional scale landscape character

20 5 7 At a national scale, landscape character within England is subject to national mapping by Natural England, with the country being sub divided into a series of National Character Area (NCA) profiles. Each NCA profile is based on distinct regional scale landscape and natural features and is reported in the form of a boundary, key characteristics and textual description. The site and surrounding study area lie within NCA 23: Tees Lowlands. Key characteristics for the Tees Lowlands are described as follows (with key characteristics or elements of key characteristics relevant to the site and study area shown in bold text):

- a broad, low-lying and open plain of predominantly arable agricultural land, with low woodland cover and large fields, defined by wide views to distant hills;
- **a large area of urban and industrial development around the Tees Estuary, much of which is on reclaimed land**, contrasts with the quieter rural areas to the south and west;
- **major industrial installations around Teesmouth form a dramatic skyline, but are juxtaposed with expansive mudflats, sand dunes and salt marshes which are nationally and internationally designated for their assemblage of waterfowl;**
- slow-moving rivers Tees and Leven meander through the landscape with steep, **well-wooded banks;**
- a distinctive area of low-lying farmland with remnants of former wetland habitat in the flood plain of the River Skerne to the north-west;
- Permo-Triassic red mudstones and sandstones are masked by glacial drift and **alluvial material but** can be seen outcropping at the coast in places;
- **brownfield sites where semi-natural vegetation has started to regenerate on previously developed land;** and,
- **green corridors such as minor valleys and former railway lines provide links between urban areas and the surrounding countryside.**







VIEW 1. Looking south east from North Gare Sands (Teesmouth National Nature Reserve)

VIEW 2. Looking south from Teesdale Way across Paddy's Hole Marina

VIEW 3. Looking south from South Gare Breakwater across Bran Sands (Saltholme Nature Reserve)

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VIEW 4. Looking south west from dunes at South Gare Breakwater across Bran Sands

VIEW 5. Looking west from Teesdale Way near Warrenby

VIEW 6. Looking south west from A1085

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EXISTING SITE PHOTOGRAPHS
2316-LVIA-06

VIEW 7. Looking south from West Cowthorn Lane

VIEW 8. Looking west from rear of Broadway West (Dormanstown)

VIEW 9. Looking west from public open space off Hobson Avenue (Dormanstown)

VIEW 10. Looking north west from Wilton Avenue (Dormanstown)

VIEW 11. Looking north east along A1085 from southern cycleway (north of Lord McGowan Bridge)

VIEW 12. Looking north east along A1085 from northern cycleway (north of Lord McGowan Bridge)

VIEW 13. Looking west from northern cycleway on A1085 at Lord McGowan Bridge

VIEW 14. Looking south east from southern cycleway on A1085 at Lord McGowan Bridge

VIEW 15. Looking north from northern cycleway on A1085 at Lord McGowan Bridge

VIEW 16. Looking north and west from near bridleway 116/9/2 (Teesdale Way)

VIEW 17. Looking north and west from near footpath 116/31/2

VIEW 18. Looking north from Eston Nab (northern rock outcrop)

the proposed scheme within views from the character area and the distance involved the character area is not considered to be susceptible to the changes proposed and was not considered further in this assessment.

20.5.14 Landscape character within the core of the study area is not described in the Redcar and Cleveland LCA but can be described as Industrialised Estuary, with key characteristics as follows;

- flat, low lying reclaimed estuary occupied by extensive large scale industrial complexes;
- non-industrial areas are dissected by above ground pipelines, major road and rail corridors including associated embankments and structures, lending an urban character overall;
- occasional pockets of regenerating grassland and scrub are present amongst infrastructure;
- distant views are possible from elevated areas, including to the Eston Hills in the south, but are always dominated by the presence of large scale industrial development; and
- perceptual landscape character is overwhelmingly industrial with a continuous presence of significant visual detractors and industrial noise and smells.

Stockton on Tees

20.5.15 To the north and west of the River Tees the landscape is identified as the East Billingham to Teesmouth Character Area in the Stockton on Tees Borough Council LCA. Relevant key characteristics for the parts of this character area within the LVIA study area include:

- industrial landscape fringing Billingham integrated with large areas of open space including wetlands and reclaimed semi improved pasture;
- industry dominates the area to the east along the River Tees; and,
- open space within industrial areas contains significant wildlife value with a number of ecological designations present including SSSIs, Site of Nature Conservation Importance (SNCI), SPA, Ramsar site and Teesmouth NNR.

20.5.16 The part of the East Billingham to Teesmouth Character Area closest to - and intervisible with - the proposed scheme lies at Seal Sands. This area is entirely dominated by large scale industrial complexes including refineries and chemical works. Public access is not permitted into this area. More distant views towards the site are possible from areas of open estuarine farmland along the A178 road corridor (see view 20).

Hartlepool

20.5.17 To the north of the River Tees and north of the Seaton on Tees Channel the landscape lies within the borough of Hartlepool and has been identified as Coastal Fringe Landscape Type within the borough LCA. The landscape type is not broken down into landscape character areas and key characteristics are not provided. For the part of the Coastal Fringe Landscape Type where intervisibility occurs with the proposed scheme, key characteristics may be summarised as:

- exposed, low lying coastal zone with beaches, dune systems and open pastoral farmland;

VIEW 20. Looking east from A178 near Greatham Creek (and near Teesmouth National Nature Reserve visitor car park

VIEW 19. Looking north from Eston Nab (southern rock outcrop)

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Estell Warren

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2316-LVIA-11

- presence of international value wildlife sites including Teesmouth NNR;
- visually dominating large scale industrial works lie within the character area at North Gare Sands with associated aural and olfactory effects on perceptual landscape character;
- expansive seascape views across the mouth of the Tees estuary and to the North Sea, with occasional shipping movements and with offshore wind turbines forming prominent detractors;
- expansive views south and eastwards across the Teesmouth industrial complex to the Eston Hills beyond: large scale port infrastructure, steelworks, refineries, flare stacks, cooling towers and chemical plants dominate the lower horizon; and,
- night time character is dominated by extensive bright lighting and flare stacks across the Teesmouth industrial complex.

20.5.18 Open views are possible from the south eastern edge of the Coastal Fringe Landscape Type across the River Tees to the proposed quay site at Bran Sands (view 1).

General views towards the site

20.5.19 The photographs (reference view 1 to 20) on **Figures 2316-LVIA-05 to Figures 2316-LVIA-11** illustrate the nature of existing views towards the site. Photographic view locations are shown on **Figure 2316-LVIA-01**.

20.5.20 In general, local views toward the proposed port facility are limited by surrounding large scale industrial development including very large scale buildings, artificial landforms, perimeter fencing and external storage areas.

20.5.21 To the north and east of the Wilton MHF site, views towards the conveyor routes from PRoW, public open space and residential properties at Dormanstown are heavily screened or blocked by intervening tree and shrub belts located along the eastern edge of the Wilton International complex (views 7, 8, 9 and 10). Upper sections of taller industrial structures are visible from areas set back from screen planting and are seen against the rising backdrop of the Eston Hills in the south or against the skyline to the west. Views from the western edge of the Redcar built up area, along Kirkleatham Lane, are mainly screened by foreground tree and shrub planting although views of tall structures at the Wilton International site are possible against the far horizon at breaks in cover.

20.5.22 The A1085 highway corridor is mostly contained by maturing screen planting along both sides of the road (views 6, 11 and 12). Locally, close range views of the conveyor corridor are possible from the A1085 road on embankment at Lord McGowan Bridge, including views from cycle lanes and footpaths to both sides of the highway (views 13, 14 and 15). The Teesdale Way recreational route follows the northern side of the A1085 northwards from Lord McGowan Bridge. Within all available views, character is dominated by industrial and urban development.

20.5.23 At the north western outskirts of Redcar distant views towards the conveyor corridor are possible from Warrenby, including an elevated section of Tod Point Road but views of ground level activity are blocked by intervening raised man-made landforms (view 5). Potential views towards the quay site

Local scale landscape character

20.5.8 At a local scale LCA has been undertaken by RCBC, Stockton on Tees Borough Council and Hartlepool Borough Council.

Redcar and Cleveland

20.5.9 The Redcar and Cleveland LCA study does not include the footprint of the proposed scheme or its immediate surroundings within the identification and appraisal of landscape character areas. The Redcar Flats Landscape Tract lies to the north of the site with Character Areas R4 (Coastal Marsh – Coatham Marsh) and R5 (Sandy Shoreline – Coatham Sands), lying some 300m (R4) from the conveyor route and 1.5km (R5) from the proposed quay respectively. The coastal zone of the Redcar Flats Landscape Tract is classified in the Redcar LCA as a Sensitive Landscape due largely to maritime exposure and potential openness to views of development.

20.5.10 Generally, intervisibility between Character Area R4 and the proposed site is limited by intervening high ground and large scale industrial buildings (see view 5).

20.5.11 Distant views from Character Area R5, near South Gare Breakwater, to the proposed quay are possible, therefore effects on the character area are considered in this assessment (see views 2 and 3 from the extreme north western edge of the character area). Key characteristics for character area R5 include:

- an essentially flat landform with coastal dune system, areas of standing water, pockets of coastal marshy pasture and occasional interruption by man-made landforms;
- coastal location with expansive open views across the mouth of the Tees and to the North Sea;
- close range views of the adjoining steelworks complex including very large scale structures, flare stacks and plumes of steam; and,
- presence of extensive intertidal nature conservation areas of international importance.

20.5.12 To the south of the Wilton MHF site, Character Area R3 comprises historic parkland, a cluster of heritage features and tourist attractions at Kirkleatham. This area lies approximately 1.7km south west of the most easterly point of the proposed conveyor routes and is not intervisible with the port development. This character area is therefore not considered further within this assessment.

20.5.13 Very distant views towards the site are possible from steeply rising ground along the Eston Hills, which rise from the Tees Lowlands and form foothills to the Cleveland Hills further to the south (see views 18 and 19). This area is identified as the Eston Hills Landscape Tract with Character Area E2 (Escarpment) being open to views over the Teesside Lowlands and industrial complex at Lazenby Bank and Eston Nab (6.7km to quay site). The escarpment area is identified as being a Sensitive Landscape primarily in terms of its ability to accommodate new development rather than the availability of or effects within open views over the Tees Lowlands. The proposed conveyor structures would not be discernible within views from the character area and proposed quay structures would be in keeping with and contained within a setting of existing large scale industrial and port infrastructure. Given the context of

storage yards associated with the SSI Steel Works form dominant foreground and midground features. The heavily industrialised core of the Teesmouth port complex dominates background and skyline views beyond.

20.5.38 At North Gare Sands and Teesmouth NNR, on the northern bank of the Tees approximately 2km north-west of the proposed port terminal, public access is possible to beaches and sand dunes. Panoramic open views are possible to the south east across the River Tees to the SSI Steel Works and the proposed quay site at Bran Sands, with the Teesport and Wilton International complexes lying beyond. The Eston Hills escarpment forms a rising green backdrop punctuated by tall industrial stacks and structures. Wider view context includes open views northwards to Tees Mouth, with an offshore windfarm occupying the horizon, and open views south across the Seal Sands and Teesport complexes in the south and south east.

20.5.39 Views towards the site from cultural heritage features and tourist attractions at Kirkleatham, approximately 1.8km south east of the conveyor routes, are blocked by mature woodland cover which encloses the Kirkleatham site as a whole, and intervening buildings at Kirkleatham Business Park.

Recreational users

20.5.40 Views towards the Wilton MHF site are possible from public open space at Dormanstown to the east of the conveyor route. Ground level activity is screened by dense foreground planting, with views to taller industrial structures remaining.

20.5.41 Open, distant views south towards the proposed quay are available from the marina at Paddy's Hole on the South Gare Breakwater, approximately 2km north of the quay site. View character is dominated by the marina itself with industrial buildings and stacks breaking the skyline beyond. Large white plumes from the SSI Steel Works form a prominent feature against the sky.

Eston Nab panoramic viewpoint

20.5.42 The publicly accessible panoramic viewpoint at Eston Nab, on Lackenby Bank, approximately 6.7km south of the proposed scheme footprint offers a vista across the whole Tees estuary, with the Wilton International and Teesport sites in the midground and SSI Steel Works, Seal Sands complex and Hartlepool nuclear power station in the background. The footprint of the proposed scheme is distantly visible amongst a setting of large scale industrial infrastructure, including associated buildings, storage areas, flare stacks and vapour plumes.

Users of public roads

20.5.43 The A1085 trunk road (dual carriageway) would be crossed by the proposed conveyor structure to the north of Lord McGowan Bridge. In addition to direct views of the conveyor at the road crossing point open views east and west along the conveyor routes would be possible from the elevated section of road at Lord McGowan Bridge. Maturing tree and shrub planting on roadside embankments contains other potential views out from the road corridor. Available views from cars are foreshortened due to the

from this location are blocked by large scale industrial buildings associated with the Redcar (SSI) Steel Works.

20.5.24 Distant views southwards to the proposed harbour facility site inland along the River Tees and into the heart of the Teesmouth industrial complex are possible from beaches, sand dunes, marina and the pier along South Gare Breakwater (views 2, 3 and 4). Although the Brand Sands frontage is not directly in the view, any taller structures would be visible.

20.5.25 Similar distant views south westwards, across the River Tees to the proposed harbour facility frontage are possible from open beaches and dunes at North Gare Sands and Teesmouth NNR, on the north bank of the river to the north west of the quay site (view 1).

20.5.26 Very distant views towards the site area possible from flat, open areas along the A178 road corridor to the west of Seal Sands (view 20) and from the elevated panoramic viewpoint at Eston Nab (242m AOD) located on rising ground within the Eston Hills escarpment approximately 6.7km south of the quay site (views 18 and 19).

Visual receptors

20.5.27 Visual receptors that are located within the study area and which potentially could be affected by the proposed scheme are described below. The photographs on **Figures 2316-LVIA-05** to **2316-LVIA-11** illustrate the nature of existing views towards the site from visual receptors. Photographic view locations are shown on **Figure 2316-LVIA-01**.

Residents

20.5.28 Residential areas at Dormanstown lie within approximately 100m to 200m of the conveyor route envelope. Ground level views from properties towards the conveyor route envelope are blocked or heavily filtered by intervening palisade fencing and tree and shrub belts. Where views towards the site are possible taller industrial structures associated with the Wilton International site are visible but ground level activity typically remains hidden.

20.5.29 More distant views towards the conveyor route envelope from built up areas along Kirkleatham Lane, approximately 1.4km east of the Wilton MHF site are blocked by intervening vegetation cover and built up areas at Dormanstown. Views of the conveyor route envelope from outlying properties at Foxrush Farm (800m east) and Manor Farm (1.3km south) are similarly blocked.

20.5.30 Potential distant views from residential areas at Warrenby and Coatham, approximately 1.4km to the north east of the conveyor route and 3km east of the quay site are blocked by a combination of intervening higher ground and large scale industrial buildings.

width of the road embankment and are partially contained by bridge parapets. Industrial infrastructure including pipelines and large scale buildings forms significant detractors within these views.

20.5.44 Glimpsed ground level views towards the northern section of the conveyor route envelope are possible from West Coatham Lane between breaks in midground and foreground vegetation cover.

20.5.45 More distant open views towards the proposed scheme footprint are possible from Tod Point Road near Warrenby. Intervening high ground blocks views to ground levels along the conveyor route and large scale buildings at SSI Steel Works block views of the port terminal site.

20.5.46 Very distant open views are possible towards the port terminal site from the A178 Seaton Carew Road in the vicinity of Greatham Creek Bridge, approximately 4km west of the proposed scheme footprint. Open foreground views of grazed marsh and winding creeks are backed by tall industrial structures breaking the skyline across the whole eastern horizon.

Rail passengers

20.5.47 The Redcar to Middlesbrough passenger rail line runs through the study area on embankment with open elevated views east and west across the conveyor route and north west to the port terminal site. Large scale industrial infrastructure and activity forms the dominant component in all available views. The rail line would be crossed by the proposed conveyor at the south-east corner of the NWL sewage treatment works.

Workers

20.5.48 The majority of potential visual receptors immediately around the proposed scheme footprint are users associated with the heavy industrial complexes that surround the scheme footprint. These users are not considered to be susceptible to changes in view character.

20.5.49 Views to the conveyor corridor would be possible from the upper storeys of the Tata Steel office complex to the north-west of the conveyor route, beyond the A1085. Ground level views are typically screened by mounds and well established planting.

20.5.50 Views towards the proposed scheme footprint from industrial units and offices at Kirkleatham Business Park, approximately 1.2km south of the conveyor routes, are blocked or heavily filtered by intervening hedgerows and are not susceptible to change from the proposed port development.

20.6 Assessment of potential impacts during construction

Landscape effects

20.6.1 Given the nature of the proposed scheme and its setting, a significant difference is predicted between the construction and operational stages of the proposed scheme for landscape receptors.

Users of PRoW

20.5.32 Several public rights of way lie close to the conveyor route envelope, including footpaths 116/31/1, 116/31/2 and bridleways 116/9/1 and 116/9/2 (Teesdale Way). Close range views would be possible from footpaths 116/31/1 and 116/31/2 to the conveyor corridor and proposed construction access road. Filtered views, through intervening fencing, pipelines and scrub vegetation towards the pipeline corridor are possible from bridleways 116/9/1 and 116/9/2.

20.5.33 Bridleway 116/10/1 and 116/10/2 runs along the eastern edge of the Wilton International complex before entering built up areas at Dormanstown. Potential views towards the conveyor routes are blocked by foreground screen planting.

20.5.34 The Teesdale Way recreational route follows the line of bridleways 116/9/1 and 116/9/2 before rising onto the A1085 on embankment and following the road corridor north eastwards. The section of the Teesdale Way located north of Lord McGowan Bridge would be crossed by the proposed conveyor. Filtered and open views of the conveyor corridor are possible at various locations but are always seen in the context of existing highway and industrial infrastructure including multiple pipeline corridors, security fences, man-made embankments and backdrop of large scale industrial buildings. The Teesdale Way continues north eastwards to Warrenby before running north westwards along a private road, north of the SSI Steel Works and following the South Gare Breakwater to Buzzer House. Between Lord McGowan Bridge on the A1085 and Bran Sands views towards the port terminal site are blocked by higher intervening ground or the SSI Steel Works. North of Bran Sands, and beyond intervening sand dunes, distant views southwards towards the port terminal site are possible across the River Tees and Saltholme Nature Reserve. Large scale industrial structures form a prominent detractor across the view.

20.5.35 Combined footpath and cycleways run along both sides of the A1085 and would be crossed by the proposed conveyor to the north of Lord McGowan Bridge. Elevated views are possible along the conveyor route to the east and west from Lord McGowan Bridge. Industrial infrastructure dominates foreground and background view character with multiple pipelines passing under the road and large scale buildings in the midground and background.

20.5.36 Potential distant views of the port terminal site from byway S1B (Seaton Carew) near North Gare Sands are blocked by a combination of intervening industrial buildings or sand dunes. More distant sections of S1B, to the north near Seaton Snook, obtain panoramic open views across the Teesmouth complex, with taller structures, including parts of the SSI Steel Works and shiploaders visible against the horizon.

Visitors to natural and cultural heritage sites and features

20.5.37 Open views southwards, inland along the River Tees are possible from the foreshore and sand dunes along South Gare Breakwater and at Saltholme Nature Reserve (Bran Sands), between approximately 800m to 2km north of the proposed port terminal. The beach and sand dunes are used by the public and are easily accessed from the Teesdale Way. Within available views the large scale structures and

20.7 Assessment of potential impacts during operation

Landscape effects

20.7.1 Operational phase effects of the proposed scheme on landscape receptors are described in **Appendix 20.2** and have been summarised within **Table 20-4.**

Table 20-4 Summary of anticipated operational phase impacts to landscape receptors

Receptor	Significance of change
Industrialised Estuary (including the proposed scheme footprint)	Minor adverse
Redcar LCA R4 (Coastal Marsh – Coatham Marsh)	No change/ negligible adverse
Redcar LCA R5 (Sandy Shoreline – Coatham Sands)	Minor adverse
Redcar LCA E2 (Escarpment)	Negligible adverse
Stockton on Tees LCA – East Billingham to Teesmouth	Minor adverse
Hartlepool – Coastal Fringe Landscape Type	Minor adverse

20.7.2 In summary, no significant effects are predicted to arise for landscape receptors during operation of the scheme

Visual effects

20.7.3 Operational phase effects of the proposed scheme on landscape receptors are described in **Appendix 20.3** and have been summarised within **Table 20-5.** Note that effects associated with the two proposed conveyor routes are the same unless identified separately in the table

Table 20-5 Summary of anticipated operational phase impacts to visual receptors

Receptor	Significance of change
Residents	
Residents at Broadway West, Dormanstown	Minor moderate adverse
Residents at Armitage Road, Dormanstown	Moderate adverse
Users of public rights of way	
Users of bridleways 116/10/1 and 116/10/2	Moderate adverse
Users of bridleways 116/9/1 and 116/9/2 (both Teesdale Way)	Negligible/ minor adverse
Users of footpaths 116/31/1 and 116/31/2	Moderate adverse (southern section of the conveyor route envelope) Minor moderate adverse (northern section of the conveyor route envelope)
Users of footpaths 116/31/3 and 102/2A/2	Minor moderate adverse
Users of footpaths 102/2/2 and 102/2/3 (Teesdale Way) and 102/2A/1	Negligible adverse
Users of the A1085 combined cycle/ footways and Teesdale Way at Lord McGowan Bridge	Moderate major adverse
Users of the Teesdale Way at South Gare Breakwater	Minor moderate adverse
Users of byways S1A and S1B (Seaton Carew)	Negligible/ minor adverse
Visitors to natural and cultural heritage sites and features	
Visitors to Saltholme Nature Reserve (Bran Sands)	Minor moderate adverse
Visitors to Teesmouth National Nature Reserve (North Gare Sands)	Minor moderate adverse
Active sports and recreational users	
Users of marina at Paddy's Hole, South Gare Breakwater	Minor adverse
Passive recreational users	
Visitors to beaches at North Gare Sands	Minor moderate adverse
Visitors to named/ panoramic viewpoints	
Visitors to Eston Nab	Negligible adverse
Users of public roads	
Drivers on the A1085	Moderate adverse
Drivers on West Coatham Lane	Minor adverse
Rail passengers	
Passengers on the Middlesbrough to Redcar line	Moderate adverse
Office and industrial workers	
Workers in surrounding industrial complexes	Minor adverse

20.6.2 Construction phase effects of the proposed scheme on landscape receptors are described in **Appendix 20.2** and have been summarised in **Table 20.2.**

Table 20-2 Summary of anticipated construction phase impacts to landscape receptors

Receptor	Significance of change
Industrialised Estuary (including the development site area)	Minor adverse
Redcar LCA R4 (Coastal Marsh – Coatham Marsh)	No change/ negligible adverse
Redcar LCA R5 (Sandy Shoreline – Coatham Sands)	Minor adverse
Redcar LCA E2 (Escarpment)	Negligible adverse
Stockton on Tees LCA – East Billingham to Teesmouth	Minor adverse
Hartlepool – Coastal Fringe Landscape Type	Minor adverse

20.6.3 In summary, no significant effects are predicted to arise for landscape receptors during the construction period

Visual effects

20.6.4 Construction phase effects of the proposed scheme on visual receptors are described in **Appendix 20.3** and are summarised in **Table 20-3**. Note that effects associated with the two proposed conveyor routes are the same unless identified separately in the table

Table 20-3 Summary of anticipated construction phase impacts to visual receptors

Receptor	Significance of change
Residents	
Residents at Broadway West, Dormanstown	Minor moderate adverse
Residents at Armitage Road, Dormanstown	Moderate adverse
Users of public rights of way	
Users of bridleways 116/10/1 and 116/10/2	Moderate adverse
Users of bridleways 116/9/1 and 116/9/2 (both Teesdale Way)	Moderate major adverse
Users of footpaths 116/31/1 and 116/31/2	Moderate major adverse (southern section of the conveyor route envelope) Minor moderate adverse (northern section of the conveyor route envelope)
Users of footpaths 116/31/3 and 102/2A/2	Minor moderate adverse
Users of footpaths 102/2/2 and 102/2/3 (Teesdale Way) and 102/2A/1	Negligible adverse
Users of the A1085 combined cycle/ footways and Teesdale Way at Lord McGowan Bridge	Moderate major adverse
Users of the Teesdale Way at South Gare Breakwater	Minor moderate adverse
Users of byways S1A and S1B (Seaton Carew)	Negligible/ minor adverse
Visitors to natural and cultural heritage sites and features	
Visitors to Saltholme Nature Reserve (Bran Sands)	Minor moderate adverse
Visitors to Teesmouth National Nature Reserve (North Gare Sands)	Minor moderate adverse
Active sports and recreational users	
Users of marina at Paddy's Hole, South Gare Breakwater	Minor adverse
Passive recreational users	
Visitors to beaches at North Gare Sands	Minor moderate adverse
Visitors to named/ panoramic viewpoints	
Visitors to Eston Nab	Negligible adverse
Users of public roads	
Drivers on the A1085 at Lord McGowan Bridge	Moderate adverse
Drivers on West Coatham Lane	Minor adverse
Rail passengers	
Passengers on the Middlesbrough to Redcar line	Moderate adverse
Office and industrial workers	
Workers in surrounding industrial complexes	Minor adverse

20.6.5 In summary, significant effects are predicted to arise to visual receptors including residential, public rights of way users, roads users and rail users along the lone of the conveyor route during the construction period. The most significant effects would occur at the points where the conveyor crosses the A1085 road corridor and where the conveyor route passes close to public rights of way between the A1085 and Bran Sands site

20.7.4 In summary, significant visual effects are predicted to arise for residential public rights of way users, road users and rail users along the line of the conveyor route during the operational phase of the proposed scheme. The most significant effects would occur at the point where the conveyor crosses the A1085 road corridor and where the conveyor route passes close to public rights of way between the A1085 and Bran Sands.

Potential mitigation measures

20.7.5 All proposed structures which form part of the proposed scheme are inherently in keeping with the scale and form of existing industrial infrastructure surrounding the proposed scheme footprint. The following mitigation measures would assist with integrating structures associated with the proposed scheme into their landscape and visual setting:

- use of grey cladding to the conveyor structure enclosure to match existing pipeline infrastructure colouring,
- use of lighter and recessive colours for taller structures, to reduce prominence in wider views and against the skyline, and,
- foreground planting measures including use of offsite planting to mitigate close range effects in views from public rights of way between the A1085 and Bran Sands site.

20.7.6 At the A1085 crossing point, a bridge / conveyor structure would be designed which is less industrial in character and which responds to the function of the road as a gateway to Redcar. The detail of this proposal is to be developed and agreed with RCBC.

20.8 Summary

20.8.1 The proposed scheme footprint is entirely located within the heavily industrialised setting of the Teesside industrial and port complex which is characterised by very large scale steelworks, port, petroleum and chemical production sites. The landscape is further fragmented by road and rail links passing through the centre of the south bank industrial complex between Middlesbrough and Redcar.

20.8.2 Remainders of the earlier estuarine landscape are present across the mouth of the River Tees at North Gare Sands and Bran Sands and are noted for their international wildlife value in addition to providing local opportunities for recreation. Fragmented pockets of green space remain within the industrial complex although these are typically heavily altered and form part of separation zones or connecting pipeline and access corridors.

20.8.3 The landscape and visual character within the study area is dominated by industrial activity with large buildings, cooling towers, chimney stacks, distillation towers and flare stacks, with their associated plumes and emissions being visible in foreground, midground background and skyline views in most directions.

20.8.4 Views to the proposed scheme footprint are relatively limited, being contained by surrounding industrial structures, raised landforms and screen planting. Local views to the conveyor corridor are possible

from nearby residential areas at Dormanstown, the A1085, the Redcar to Middlesbrough Railway and from public rights of way. Distant views to the footprint of the proposed port terminal are possible from beaches and dunes, including areas of wildlife value, across the mouth of the Tees estuary.

20.8.5 An assessment of potential effects on landscape character has been undertaken and reached the conclusion that the proposed scheme is in keeping with existing industrial character and would not give rise to any significant adverse or beneficial effects on the existing character.

20.8.6 An assessment of potential effects on visual receptors has been undertaken and reached the conclusion that the proposed scheme would give rise to a number of significant adverse effects within existing views from nearby residential areas, the A1085 road crossing and in views from public rights of way between the A1085 and Bran Sands site. Mitigation measures would be employed to minimise adverse effects but the presence of the raised conveyor structure as a new element within available views would remain. At the A1085 crossing point the conveyor/ bridge structure would be designed to reflect the role that the road corridor plays in providing a gateway to Redcar.

20.8.7 In summary, the proposed scheme is located within an existing heavily industrialised area and would be in keeping with existing landscape character. The proposed scheme would, however give rise to a number of localised significant adverse effects on visual receptors during both the construction and operational phase.

21 RECREATION AND ACCESS

21.1 Introduction

21.1.1 This section of the PER describes the existing environment in relation to recreation and access, prior to discussing the potential impacts of the construction and operational phases of the proposed scheme. Mitigation measures are detailed where it has been possible to undertake a full impact assessment based on the information available to date, and a discussion of the residual impacts presented where significant impacts have been identified.

21.1.2 Potential mitigation measures have been identified where it has not been possible to undertake a full impact assessment based on the existing environmental information available to date. The requirement for the implementation of the potential mitigation measures identified within this PER will be determined once all baseline information is available and significance ratings have been determined for all identified impacts.

21.1.3 This section of the PER does not consider impacts to water based recreational activities within the Tees estuary given that such activities generally do not take place within the proposed construction area. PINS confirmed that this approach was acceptable within the Scoping Opinion received during January 2014.

21.2 Policy and consultation

Policy

National Policy Statement

21.2.1 The NPS for Ports (Department for Transport, 2012) is of direct relevance to the proposed scheme, however, the NPS does not provide any guidance or policy with regard to assessment of impacts to recreational and access.

National Planning Policy Framework

21.2.2 Relevant policies contained in the NPPF for this section of the PER include:

- Core planning principles: promote mixed use developments, and encourage multiple benefits from the use of land in urban and rural areas, recognising that some open land can perform many functions (such as wildlife, recreation, flood risk mitigation, carbon storage and food production).
- Promoting healthy communities: access to high quality open spaces and opportunities for sport and recreation can make an important contribution to health and well-being of communities. Planning policies should be based on robust and up-to-date assessment of the needs for open space, sports and recreational facilities and opportunities for new provision.

- Promoting healthy communities: existing open space, sports and recreational buildings and land should not be built on unless:
  - an assessment has been made which clearly shows the open space, buildings or land to be surplus to requirements;
  - the loss resulting from the proposed development would be replaced by equivalent or better provision in terms of quality and quantity in a suitable way;
  - the development is for alternative sports and recreational provision, the needs for which clearly outweigh the loss.
- Promoting healthy communities: planning policies should protect and enhance public rights of way and access. Local authorities should seek opportunities to provide better facilities for users.

Redcar and Cleveland Borough Council Local Plan

21.2.3 RCBC Development Plan Document policies of relevance when considering the proposed scheme in relation to recreation and access include:

- Policy CS1: development proposals will be assessed against their contribution to delivering sustainability objectives, including a thriving economy, easy access to jobs, and a healthy, safe attractive and well maintained environment.
- Policy CS28: the development of pedestrian, cycling and equestrian networks, including routes between urban and rural areas, will be supported that:
  - open disused railway lines for recreational use;
  - provide new cycle routes as part of the national or local cycle network;
  - improve the greenways network;
  - improve public rights of way and links to long distance footpaths.

21.2.4 Policy TS16 is a saved Local Plan policy of relevance to the proposed scheme. This policy states that the line of the proposed cycle routes along the Black Path (also known as Teesdale Way), and between Guisborough and Nunthorpe together with associated areas to provide secure parking will be protected from development which may prejudice their use as cycle ways. However, consultation with the Public Rights of Way Advisor at RCBC during April 2014 identified that RCBC are not currently pursuing an upgrade of the Teesdale Way to a cycle track.

21.2.5 Saved Local Plan policy T05 is also of relevance to the proposed scheme. This policy states that the routes of the Cleveland Way and the Teesdale Way will be safeguarded from any development which may prejudice their use as long distance footpaths.

Consultation

21.2.6 A summary of the comments received from PINS, as part of the Scoping Opinion, with specific regard to recreation and access is presented in **Table 21-1**.

Table 21-1 Summary of scoping comments received from PINS with regard to recreation and access

Comment	Section of PER in which comment has been addressed
The SoS agrees to scope out direct impacts on recreation and access routes via land from Option 1 and 2. The EIA should still consider indirect effects of users of the public rights of way in terms of air quality, noise and vibration and visual impacts (these assessments can be presented in the relevant topic chapters).	Section 21.5 (Paragraphs 21.5.7 to 21.5.10).
The SoS agrees to scope recreation and access via water out of the EIA for all options.	Section 21.1 (Paragraph 21.1.3).
If Option 3 is chosen, the ES should clearly explain how access across these public rights of way would be sought, including the need for any diversion or stopping up and mitigation measures.	Section 21.5 (Paragraphs 21.5.1 to 21.5.6). Section 21.6 (Paragraphs 21.6.1 to 21.6.2). This issue will be addressed fully within the EIA once the design of the conveyor has been fixed.

21.2.7 Royal HaskoningDHV carried out consultation with the Public Rights of Way Advisor at RCBC during April 2014, specifically in relation to saved Local Plan Policy TS16. The consultation identified that RCBC is not currently pursuing an upgrade of the Teesdale Way (also known at the Black Path) to a cycle track. However, it was determined that the Teesdale Way is proposed to form part of the new England Coast Path under the provisions of the Marine and Coastal Access Act, 2009. RCBC anticipates that some minor upgrades to the Teesdale Way footpath would be undertaken during late 2014 or spring 2015.

21.3 Methodology

Study area

21.3.1 The study area for this section of the PER comprises the area which has the potential to be directly and indirectly impacted by the proposed scheme. This includes the footprint of the landside elements of the proposed scheme only.

21.3.2 As water based recreational activity generally does not take place within the proposed construction area (due to the heavily industrialised nature of the development along the banks of the Tees estuary and use of the approach channel by large ships), the Tees estuary is excluded from the study area for this section of the PER.

Existing environment

21.3.3 This section of the PER has been informed by desk based assessment. The following documents have been consulted with respect to access and recreational activities within the study area:

- Redcar and Cleveland PRoW map (available online).
- QEII berth ES (Royal Haskoning, 2009).
- NGCT ES (Royal Haskoning, 2006).

21.3.4 A review of Ordnance Survey mapping and aerial photography publicly available online (Google Earth) has also been undertaken to inform the existing environment.

Methodology for assessment of potential impacts

21.3.5 The assessment methodology used to determine the potential environmental impacts on recreation and access associated with the proposed scheme is provided within **Section 4**.

21.4 Existing environment

Recreation

21.4.1 The Tees estuary supports a range of land based recreational activities, many of which are highly seasonal and the majority of which are outside the areas of Main River and port operations. The main recreational activity undertaken within the study area comprises walking along the public rights of way, as discussed within the section below.

21.4.2 Some of the important sites for nature conservation within the Tees estuary are also used for education, research and recreational purposes, particularly at the Teesmouth Field Centre.

21.4.3 As discussed in **Section 12.4**, there are a number of cycle routes in the vicinity of the proposed scheme footprint. There is an existing National Cycle Route which runs alongside the A174, south of the proposed scheme footprint. However, given the location of the National Cycle Route in relation to the footprint of the proposed scheme, impacts to users of this cycle route are not anticipated.

Access

21.4.4 In terms of access, much of the land bordering the estuary is owned privately by PD Teesport and, therefore, there are few public rights of way within the immediate footprint of the proposed port terminal. There are, however, footpaths in the immediate vicinity of the proposed conveyor routes, including:

- PRoW (footpath) located to the immediate north of the Steel Works at Wilton (route codes 102/2A/2, 102/2/3, 116/31/3, 116/31/1, 116/31/2), which heads in a north-easterly direction.
- PRoW (bridleway) (route code 116/9/1 and 116/9/2) located directly adjacent to the PRoW (footpath) identified above.

- The Teesdale Way National Trail is located in the immediate vicinity of these public rights of way

21.4.5 Footpaths 116/31/1 and 116/9/2 terminate adjacent to the Dabholm Gut and A1085 respectively. The Teesdale Way is an approximately 145km national trail, which largely follows the banks of the River Tees as it passes from the moorlands of Cumbria and Durham to the industrial landscapes of Teesside towards the coast. The location of these footpaths in relation to the footprint of the proposed scheme is illustrated on **Figure 21-1**.

21.4.6 Additional footpaths were discussed within the **Section 20.4** (landscape and visual character) however only the footpaths identified above have been considered in this section of the PER as the study area for the landscape section was wider than that considered for this section.

21.4.7 Formal non-statutory access arrangements exist between organisations or individuals and landowners. For example, access permits are issued by some landowners for bird watching. These agreements and permits stipulate strict conditions, and permission can be withdrawn at any time.

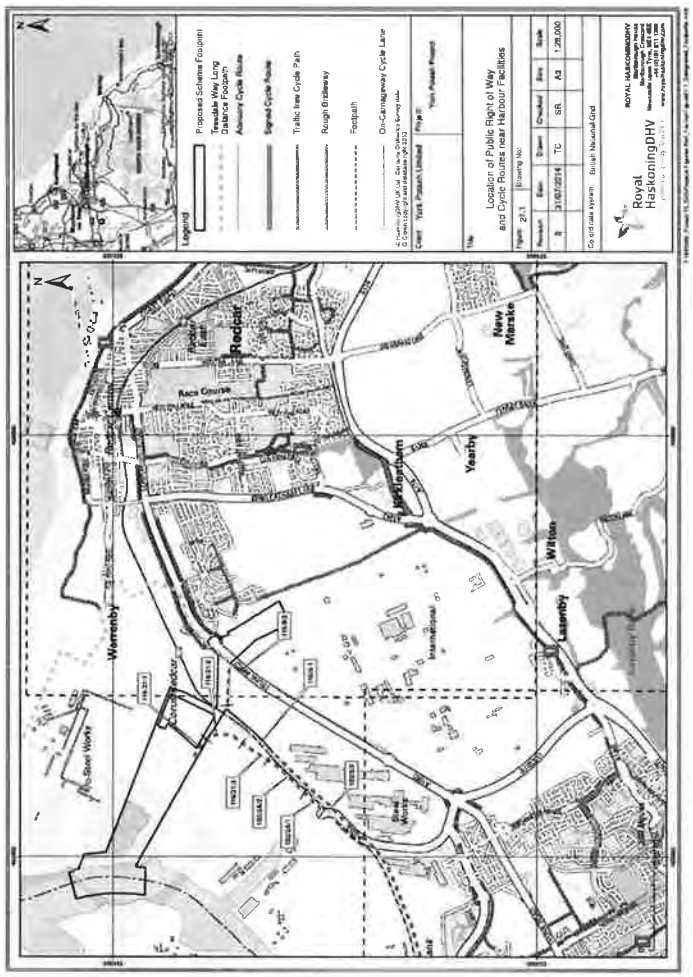
21.5 Assessment of potential impacts during construction

Disturbance to users of public rights of way

21.5.1 As discussed in **Section 3**, YPL is proposing to construct a conveyor system between the MHF and the port terminal within an overall conveyor route envelope located on either side of Bran Sands lagoon (illustrated on **Drawing PB1586-SK58**). The proposed conveyor envelope intercepts footpaths 116/31/1, 116/31/2, 116/9/2 and the Teesdale Way National Trail.

21.5.2 The installation of the proposed conveyor routes, therefore, has potential to cause direct disturbance to users of the aforementioned footpaths. Disturbance is most likely to arise in the form of injury to human health due to movements of construction vehicles required to install the conveyor systems within the immediate vicinity of footpaths and the cycle route. In order to prevent the risk of physical injury to recreational users using the public rights of way, temporary closures and diversions of the public rights of way would be undertaken as part of the proposed scheme.

The Teesdale Way National Trail is of national importance, and is therefore considered to be a highly sensitive receptor, the public rights of way in the area are considered to be of medium sensitivity. Given the anticipated reversible and temporary nature of the impact upon these sensitive receptors, the magnitude of the impact is considered to be low. On this basis, an impact of minor adverse significance is predicted with respect to recreational users within the study area during construction.



Potential mitigation measures and residual impact

21.5.3 To reduce the disturbance impact to existing users, members of the public (including local residents and walking groups) should be informed well in advance of the proposed works and diversion routes. Information provided to footpath users should include a timetable of works, a schedule of working hours and the extent of works. A contact name, address and telephone number should be provided in case of complaint or problem.

21.5.4 Public information signs would be utilised along the route of the walks to raise awareness of the temporary closure and diversion. Signs would also be used to clearly identify the route of the diversion.

21.5.5 With the implementation of the above mitigation measures, a residual impact of negligible significance is anticipated.

Noise, air quality and visual disturbance to recreation and access

21.5.6 The proposed scheme has the potential to result in noise, air quality and visual disturbance to recreational users of the study area. Such disturbance would arise due to the temporary presence of construction vehicles, construction personnel, equipment and lighting.

21.5.7 The full noise impact assessment has not been undertaken to date and, as such, noise disturbance to recreational users of the footpaths has not been assessed within this PER. However, given the temporary nature of the disturbance to users of footpaths as they pass by the construction area, the likely geographic separation between the footpath users and the construction area (due to the likely implementation of footpath diversions) and the existing ambient noise levels within the area, significant adverse impacts to users of the footpaths from noise disturbance are not anticipated. This will, however, be confirmed during the noise assessment and presented within the ES.

21.5.8 As the results of the air quality assessment were not available at the time of writing this PER, it has similarly not been possible to fully assess the significance of reduced air quality on recreational users. However, this impact will be fully assessed once the air quality assessment has been undertaken, and the results presented in the ES.

21.5.9 As discussed within **Section 20.4**, the proposed scheme footprint is located within an existing heavily industrialised area and would not give rise to any significant adverse or beneficial effects on landscapereceptors during either the construction or operational stages of the project. Significant visual effects are predicted to arise however to public rights of way users where the conveyor route passes close to public rights of way between the A1085 and Bran Sands site.

Potential mitigation measures

21.5.10 The best practice mitigation measures outlined within **Sections 13.5**, **14.5** and **20.6** are of relevance to this impact.

21.6 Assessment of potential impacts during operation

Disturbance to users of footpaths

21.6.1 As discussed within **Section 21.5**, the proposed route of the conveyor system intercepts one dead-end footpath and runs adjacent to one bridleway. There is therefore potential for the conveyor system to cause disturbance to users of the footpath/bridleway in the form of noise, visual, and air quality disturbance during the operational phase.

21.6.2 The design and alignment of the conveyor system was evolving at the time of writing this PER. The working assumption for the PER has been that the installation of the conveyor system would not result in unacceptable disturbance or disruption to the users of the existing footpaths during the operational phase. If necessary, consultation will be undertaken with local authorities and local walking groups to agree appropriate diversions and / or implement stopping up orders as part of the scheme design in order to significantly reduce the potential for disturbance to users of footpaths during operation.

Potential mitigation measures

21.6.3 The mitigation measures outlined in **Section 20.5** are also of relevance to this impact.

21.7 Summary

21.7.1 The Tees estuary supports a range of land based recreational activities, many of which are highly seasonal and the majority of which are outside the areas of main river and port operations. The main recreational activity undertaken within the study area comprises walking along the public rights of way and the Teesdale Way National Trail. However, the site where development is proposed only supports one footpath and one bridleway. Impacts to water based recreational activity were scoped out of the assessment and, therefore, have not been considered as part of the assessment.

21.7.2 There is potential for direct disturbance impacts to recreational users of footpaths due to the installation and presence of the proposed conveyor system, however, such impacts would be avoided through the implementation of footpath diversions as part of the proposed scheme.

21.7.3 There is also potential for indirect disturbance to recreational users of the footpaths due to noise, visual and air quality disturbance. The full noise and air quality impact assessments have not been undertaken yet and, as such, noise and air quality disturbance to recreational users of the footpaths has not been assessed within this PER. This impact is to be fully assessed within the EIA and the results presented in the ES.

21.7.4 The design and alignment of the conveyor system was evolving at the time of writing this PER. The working assumption for the PER has been that the installation of the conveyor system would not result in unacceptable disturbance or disruption to the users of the existing footpaths during the operational phase.

22 CUMULATIVE IMPACT ASSESSMENT

22.1 Background to Cumulative Impact Assessment

22.1.1 There is no legislation that specifically applies to Cumulative Impact Assessment (CIA) or that outlines how such assessment should be undertaken. However, the EIA Directive (85/337/EEC) and associated EIA Regulations require consideration of direct impacts and any indirect, secondary and cumulative effects of a project. Government guidance states that:

> *"cumulative effects could refer to the combined effects of different development activities within the vicinity"* (Department of Environment, 1999).

22.1.2 CIA assesses the potential impacts of a proposed development with other past, present (current) and reasonably foreseeable (proposed) plans and projects.

22.1.3 With respect to 'past' projects, a useful ground rule in CIA is that the environmental impacts of schemes that have been completed should be included within the environmental baseline; as such, these impacts are already taken into account in the EIA process for a development. Consequently, generally completed projects can be excluded from the scope of CIA. However, the environmental impacts of recently completed projects may not be fully manifested and, therefore, the potential impacts of such projects should be taken into account.

22.1.4 Projects that are currently being constructed or that are in the planning process (where sufficient information is publically available), as well as on-going activities that have the potential to influence the same environmental parameters as the proposed development, are the focus of CIA.

22.1.5 Future plans or projects for which sufficient information is not available on which to base a reliable assessment, which are unlikely to be submitted or receive consent until after the proposed development has been completed, cannot reasonably be assessed as part of a CIA. However, in some cases it is possible to make judgements regarding potential impacts on the basis of the characteristics of the other projects being considered (where these are known) and whether there is the potential for the effects of the various projects to interact spatially and temporally.

22.2 Potential for cumulative impacts

22.2.1 Of particular importance in defining likely cumulative impacts are the following aspects, all of which are important in deriving the overall cumulative impact significance:

- the temporal and geographic (spatial) boundaries of the effects of each project;
- the interactions between relevant activities of each project and the overall environment/ecosystem; and,
- the thresholds of sensitivity of the existing environment.

22.2.2 Generally, measures to avoid or minimise significant adverse impacts at the project level will also tend to reduce or avoid the potential for any accumulation of impact with other plans or projects.

22.2.3 In the first instance, the EIA will identify whether there is the potential for cumulative impacts (impact interactions) with respect to each environmental topic. The CIA will then adopt a tiered approach, based upon the following definitions:

- **Project-wide in-combination impacts** which arise from the combined effects (additive or interactive) of the whole YPP; that is, the combined impacts of any part of the YPP with all other element(s) and associated development(s).
- **Wider cumulative impacts** which are the combined impacts (additive or interactive) that may occur between any component(s) of the YPP and any other 'non YPP' development(s)/plans and projects.

22.2.4 Given the interconnected nature of the different elements of the YPP, it has been determined that one CIA is to be produced for the project as a whole (i.e. for the mine, MTS, MHF, harbour facility and any other ancillary development linked to the YPP). This CIA will consider the effects of all of the projects elements in-combination with each other and will accompany each of the applications.

22.3 Identification of potential projects and plans relevant to the YPP CIA

22.3.1 To inform the CIA, the maximum geographical area around the YPP as a whole, where there is the potential for impacts to occur, has been identified. This is termed the Impact Zone of Influence (ZOI).

22.3.2 A long list of potential projects has been identified through consultation and an independent search of the planning register within the area defined by the ZOI. A high level scoping exercise has been undertaken on the long list to 'scope out' those projects that are not considered to have the potential to result in significant cumulative impacts with the YPP due to their size and nature. The output of this initial scoping exercise was a master list of projects to be included in the YPP CIA (see Appendix 22.1).

22.3.3 To date, consultation has been undertaken with the following authorities:

- NYMNPA.
- RCBC.
- MMO.
- North Yorkshire County Council.
- Hambleton District Council.
- Ryedale District Council.
- Middlesbrough Council.
- Stockton-on-Tees Borough Council.
- Scarborough Borough Council.
- East Riding of Yorkshire Council.
- Hartlepool Borough Council.

- The Highways Authority.
- PD Teesport (as Harbour Authority).

22.3.4 The proposed approach to the scoping exercise and CIA more generally, and the master list of projects was issued to the above organisations for agreement in early April 2014. Following the receipt of comments, further information gathering with respect to each of the short listed plans and projects will be undertaken in order to inform detailed technical scoping. That is, definition of whether a temporal overlap exists, what the types of impacts likely to arise are and whether the projects' have the potential to impact the same receptors, and on the quality of information (based on expert judgement). This information will be used to further refine the short list of other plans and projects and, for those remaining (i.e. where a spatial, temporal and receptor overlap has been identified), detail cumulative assessment will be undertaken on a topic by topic basis.

22.3.5 The YPP CIA will be presented as a supporting document to the Harbour Facilities ES.

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23 WATER FRAMEWORK DIRECTIVE

23.1 Background to the Water Framework Directive

23.1.1 The WFD (2000/60/EC) establishes a legal framework to protect and restore clean water across Europe to ensure its long-term, sustainable use. It applies to waters out to one nautical mile from the baseline from which territorial waters are drawn. One of the aims of the WFD is to ensure that all European water bodies are of Good Ecological Status/Potential by 2015. It aims to achieve this through the setting of Environmental Quality Objectives (EQO) for water chemistry and ecological and hydromorphological quality parameters.

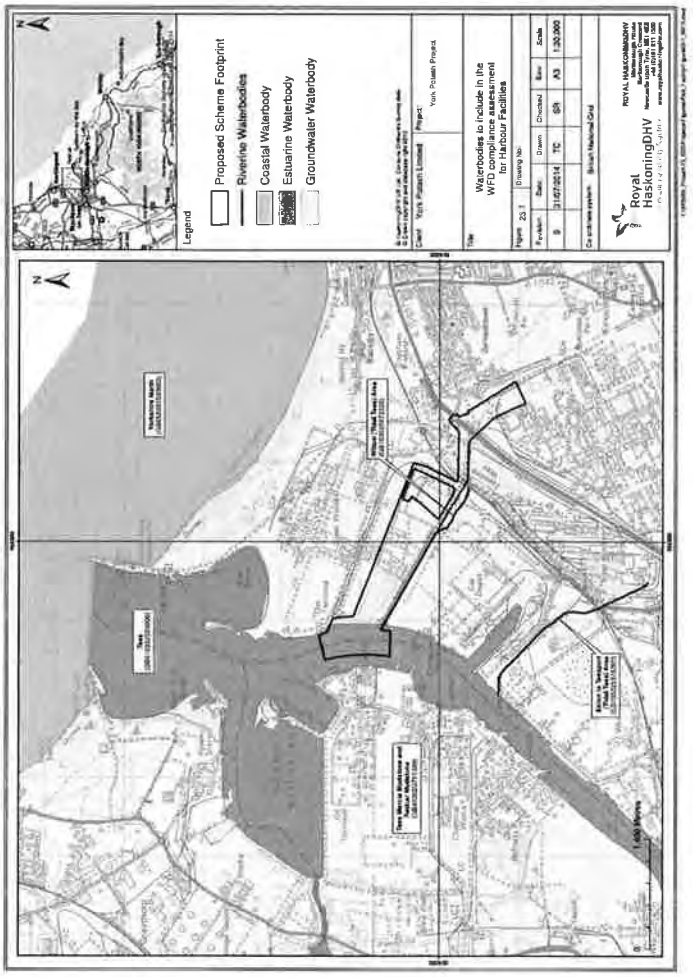
23.1.2 The consideration of the proposed scheme under the WFD will apply to all water bodies that have the potential to be impacted by the proposed scheme.

23.1.3 Classification schemes for surface waters out to one nautical mile have been developed in response to the WFD. The schemes classify the status of surface waters using information on the ecological, chemical and hydromorphological quality of a body of water. For surface waters there are two separate classifications for water bodies; ecological and chemical. For a water body to be in overall 'good' status, both ecological and chemical status must be at least 'good'. Groundwater bodies are classified in terms of their chemical quality and quantity.

23.1.4 For water bodies that have been designated as heavily modified water bodies (HMWB), the Environment Agency classifies according to their ecological potential rather than status. UKTAG (the WFD technical advisory group) has adopted the 'mitigation measures approach' for classifying HMWBs (UKTAG, 2008). This approach first assesses whether actions to mitigate the impact of physical modification are in place to the extent that could reasonably be expected. If this mitigation is in place, then the water body may be classified as achieving 'good' or 'better' ecological potential. If this level of mitigation is not in place, then the water body will be classed as 'moderate' or 'worse' ecological potential. This assessment is then cross-checked with data from biological and physico-chemical assessments.

23.1.5 Some areas require special protection under European legislation. The WFD therefore brings together the planning processes of a range of other European Directives, such as the revised Bathing Waters Directive and the Habitats Directive. These Directives establish protected areas to manage water, nutrients, chemicals, economically significant species and wildlife – and, where possible, have been brought in line with the planning timescales of WFD.

23.1.6 In terms of WFD water bodies within the study area, **Figure 23-1** shows the location of the water bodies scoped into the assessment in the context of the proposed scheme footprint. It is necessary to undertake an assessment of the implications of the proposed scheme on the current and future potential status of water bodies classified under the WFD. This is termed a WFD compliance assessment. The proposed approach to the WFD assessment to be undertaken during the EIA process is presented in **Section 23.2**.



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23.2 Proposed approach to the WFD compliance assessment

23.2.1 In order to assist in the assessment of the potential impacts of the proposed scheme on the ecological status/potential of water bodies screened into the WFD assessment, it is proposed that the Environment Agency's *Clearing the Waters* guidance (Environment Agency, 2012) is used. *Clearing the Waters* is aimed at assessing the potential impacts of dredging and disposal and recommends a four stage process, as follows:

- Screening Stage (Stage 1): This stage only applies to pre-existing activities. In this context, this means activities which started or were on-going during the period 2006 to 2008. New projects, that is, those commencing after 1 January 2009 should go straight to the scoping stage (i.e. Stage 2). However, initial screening information is necessary as part of the scoping stage and, therefore, this stage is still often completed to inform Stage 2.
- Scoping Process (Stage 2): The scoping stage enables regulators and operators to determine the scope of the assessment required to establish whether an activity will have a non-temporary effect on water body status. Scoping therefore assists in defining which WFD parameters could be affected and in agreeing an appropriate level of assessment to meet WFD requirements.
- Assessment (Stage 3): This stage of the assessment aims to assess whether the activity will have a significant non-temporary effect on the status of one or more WFD parameters at water body level. The test is therefore to determine whether the activity is likely to affect a parameter sufficiently to lower its existing class status (refer to **Section 7.4** for information on existing waterbody status). For priority substances, the process requires the assessment to consider whether the activity is likely to prevent the parameter to achieve good chemical status.
- Identification and Evaluation of Measures (Stage 4): If it is established that an activity is likely to affect water status at water body level (that is, by causing deterioration or by preventing achievement of the WFD objective), or that an opportunity may exist to contribute to improving status at a water body level, potential measures to achieve either of these must be investigated. This stage considers these measures and, where necessary, evaluates the measures in terms of cost and whether it is disproportionate.

23.2.2 The WFD compliance assessment will be undertaken during the EIA process, and the results presented in the ES. The WFD assessment will be informed by the findings of various other sections of the EIA, including water quality, marine ecology, sediment quality and hydrodynamic and sedimentary regime.

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24 IDENTIFICATION OF POTENTIAL IMPACTS OF DECOMMISSIONING

24.1 Introduction

24.1.1 The decommissioning phase would comprise the removal of the conveyor system from the MHF to the port terminal with complete removal of site infrastructure and remedial works to blend the site into the surrounding environment. An outline description of the works that are envisaged during decommissioning is provided in **Section 3.3**.

24.1.2 This section identifies the potential environmental impacts associated with the decommissioning phase insofar as they can be predicted based on current understanding of the works likely to be required and for those environmental parameters that have the potential to be impacted. The nature of the works required during decommissioning and, therefore, the significance of the potential impacts will be dependant on the detail of the final scheme that is constructed. A full assessment of the potential impact of decommissioning works will be undertaken through the EIA process and reported in the ES.

24.2 Marine and coastal ornithology

24.2.1 The decommissioning works are unlikely to have any direct impact on habitats that support waterbird populations given that the works would be undertaken within the corridor of the conveyor routes between the MHF and the port. The works described in **Section 3.3** would, however, involve the use of plant and lorries, with the greatest potential effect on waterbirds being noise and visual disturbance when working in the vicinity of Bran Sands lagoon and Dabholm Gut.

24.2.2 The significance of the potential impact would be dependant on timing of the works, with the overwintering period being of greatest sensitivity. It is assumed that the decommissioning works could be timed to avoid the overwintering period, thereby minimising any disturbance effect and it is considered that any disturbance would be localised, short term and of low significance.

24.3 Terrestrial ecology

24.3.1 Based on current understanding of the terrestrial ecology of the project footprint, it is considered unlikely that the proposed works would result in a significant adverse impact on habitats or species within the vicinity of the decommissioning works. Ecological survey would be required prior to the start of decommissioning works to verify that no protected species could be impacted by the works and to identify the requirement for mitigation to be implemented in connection with the proposed works.

24.4 Transport

24.4.1 Decommissioning would involve plant and lorries which would access and leave the site via the public highway and it is assumed that the same access point to the site would be used as that described for the construction of the proposed scheme. The decommissioning works would involve a lower overall number of movements on the highway network than described for the construction works given the smaller scale of the works required and the shorter programme for decommisioing compared with

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construction. Mitigation measures (e.g. implementation of a Traffic Management Plan) are likely to be required to minimise potential impact on the highway network.

24.5 Air quality

24.5.1 The decommissioning works would involve breaking out foundations of the conveyors, breaking and crushing of concrete superstructures and earthworks to fill voids left by removal of the conveyor platform foundations. These activities are likely to generate dust, although any effect is likely to be localised and of a lower magnitude than for the construction phase due to the relatively minor nature of the proposed works. Mitigation measures for dust suppression are described for the construction phase in **Section 13.5** and, although the potential impact of decommissioning is unlikely to be significant, the dust suppression mitigation relevant to earthworks and demolition could be applied to decommissioning as appropriate.

24.6 Noise and vibration

24.6.1 The removal of the conveyor structures and foundations and earthworks would generate noise from plant used in the decommissioning works and transport of materials from site. For human receptors, noise during decommissioning is not expected to represent a significant environmental impact (and would be expected to be lower than for the construction phase) and controls can be implemented to mitigate the effect of works that are in closest proximity to residential areas (i.e. Dormanstown).

24.6.2 The most significant potential noise impact is likely to be on waterbird populations (as described in **Section 24.2**).

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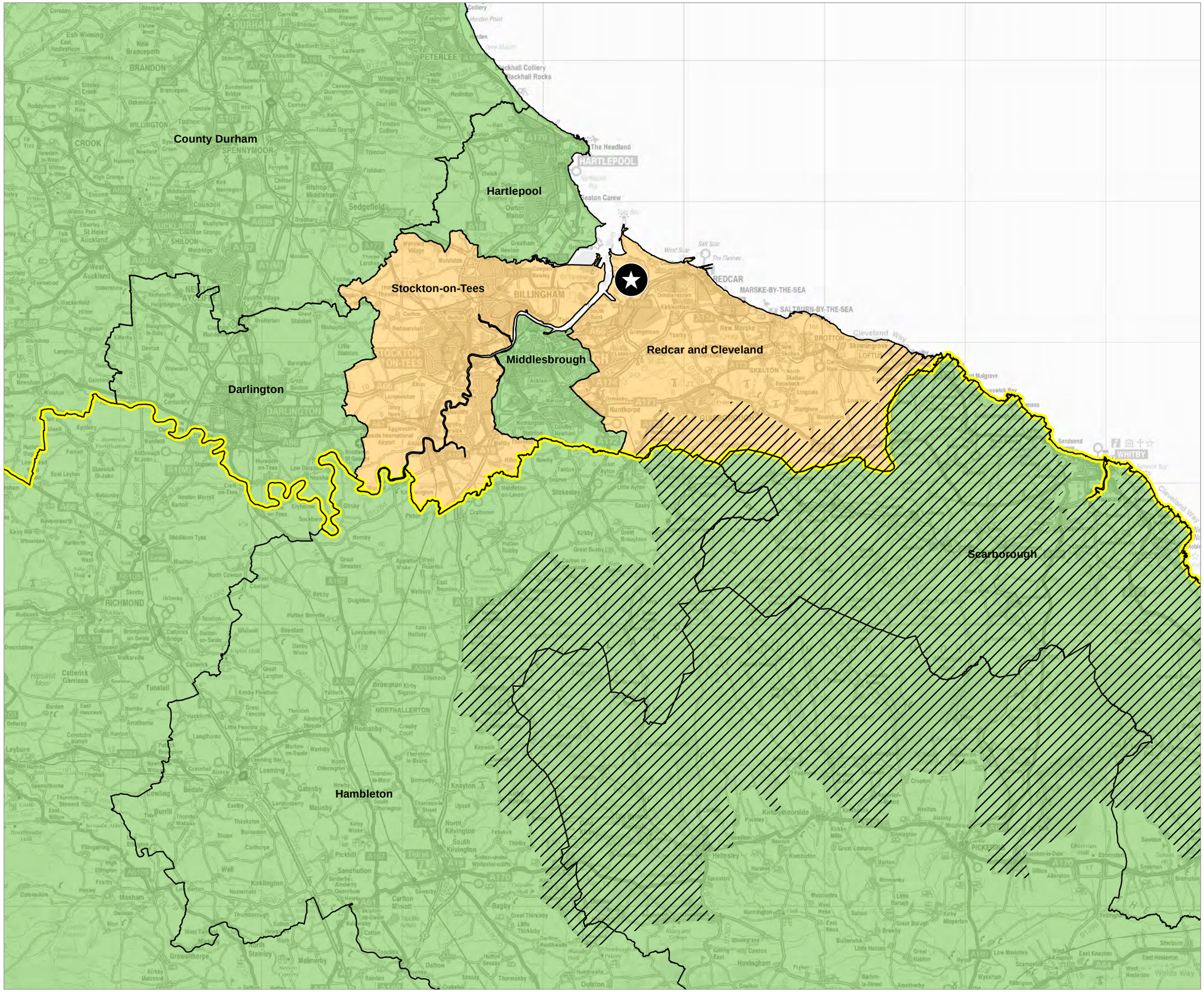
Appendix 15

Plan of Authorities Consulted under Section 43



Key

Location of proposed harbour facilities

Authority Boundary

North Yorkshire County Council

North York Moors National Park Authority

Category "A" Authorities (i.e. authorities that share an administrative boundary with those authorities where the application is located)

- Hartlepool Borough Council;
- Middlesbrough Council;
- Darlington Borough Council;
- Scarborough Borough Council;
- Hambleton District Council;
- North York Moors National Park Authority;
- North Yorkshire County Council; and
- Durham County Council

Category "B" Authorities (i.e. authorities within which the application land is located)

- Redcar & Cleveland Borough Council; and
- Stockton on Tees Borough Council

Nathaniel Lichfield & Partners
Planning. Design. Economics.

Project	Harbour Facilities DCO Application
Title	Section 42 Consultation Authorities
Client	York Potash Limited
Date	21.11.2014
Scale	-
Drawn by	MAR
Drg. No	GIS50303/01-01

N

GIS Reference: S:\LE50274 - York Potash Minehead\LE50303-01 - Port DCO Application - Local Authorities - 21.11.2014.mxd

Appendix 16

Section 46 letter sent to the Planning Inspectorate

MARRONS SHAKESPEARES

This matter is being dealt with by
Morag Thomson

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Tom Carpen
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The Planning Inspectorate
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Our ref: 902046.2 MT.lbh

Your ref: TR030002

11 September 2014

BY GUARANTEED NEXT DAY 9AM DELIVERY AND EMAIL

Dear Sirs

NOTIFICATION OF PROPOSED APPLICATION PURSUANT TO S46 PLANNING ACT 2008 (AS AMENDED)

PROPOSED HARBOUR FACILITIES AT BRAN SANDS, TEESSIDE

We act on behalf of York Potash Limited ("the Applicant") who are the promoters of the above project which comprises a nationally significant infrastructure project as defined in the Planning Act 2008 (as amended) (the 'Act') being new harbour facilities.

Pursuant to section 46 of the Act, we write to notify you, on behalf of the Secretary of State, of our proposed application for an Order granting Development Consent for the construction, operation and maintenance of new harbour facilities at the above location. Please find enclosed a copy of the letter being sent to all bodies/parties to be consulted under section 42 of the Act. We also enclose a copy of the section 48 press notice and the Summary of Proposals document which are to be enclosed with the aforementioned letter.

The letter is being sent on 11 September 2014 and explains that the Applicant is now undertaking consultation on the proposals and details the documents in respect of which comments are sought and which are available to view on the web page www.yorkpotash.co.uk.

The deadline given for a response to the consultation is 16 October 2014. We also enclose for your information a list of bodies/people who will receive the consultation letter.

We trust that the information enclosed is sufficient, however, please do not hesitate to contact Morag Thomson or Laura-Beth Hutton of this office should you require any further information.

We would be grateful if you could please acknowledge safe receipt. An e-mail will suffice.

Yours faithfully

Marrons Shakespeares

Marrons Shakespeares

E: morag.thomson@shakespeares.co.uk

Encs.

Appendix 17

Final Statement of Community Consultation

THE YORK POTASH HARBOUR FACILITIES ORDER 201X

Consultation Documentation

YORKPOTASH
A Sirius Minerals Project

Nathaniel Lichfield & Partners
Planning. Design. Economics.

York Potash Ltd

Harbour Facilities Order

Statement of Community Consultation (SoCC)

September 2014

50303/13/HS/NM

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Contents

Figures

Appendices

1.0 Introduction

1.1 This Statement of Community Consultation ("SoCC") sets out how York Potash Ltd ("YPL") intends to consult local people about its proposal to develop harbour facilities ("the harbour facilities" or "the York Potash Harbour Facilities") at Bran Sands on Teesside.

1.2 The harbour is being developed to support the export of polyhalite which will be extracted from a proposed mine south of Whitby and transported to Teesside via a proposed 36.5km underground Mineral Transport System ("MTS"). Upon arrival at Teesside the polyhalite will be transferred from a Materials Handling Facility ("MHF") by conveyor to the harbour for onward export. For the purposes of this SoCC, the term "the Project" has been used to define the mine, MTS, MHF and the harbour in its entirety.

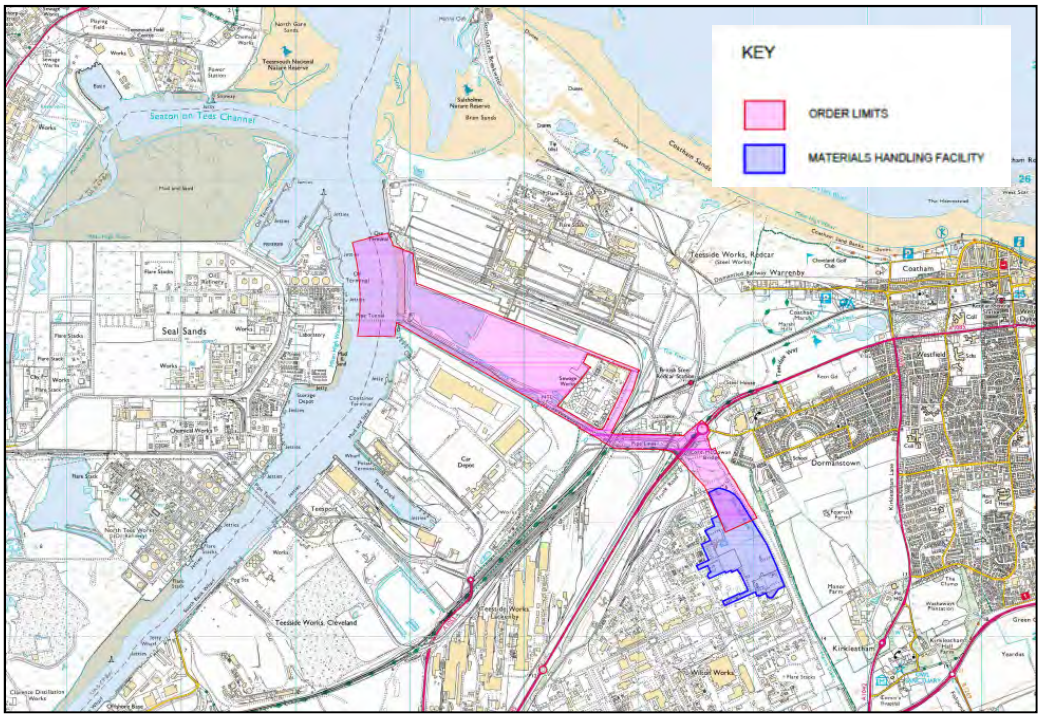
1.3 The proposed harbour is classified as a Nationally Significant Infrastructure Project ("NSIP") under the Planning Act 2008. An application for a Development Consent Order ("DCO") for the harbour will therefore be submitted to the Planning Inspectorate ("PINS") for examination with the final decision to grant a DCO being taken by the relevant Secretary of State.

1.4 The proposals for the mine, MTS and MHF (which are not NSIPs) and other associated works will be the subject of applications to be submitted and determined by the relevant Local Planning Authorities and Minerals and Waste Planning Authorities. Section 3 contains a table detailing the main consent regime. A license for offshore mineral extraction (also associated with the Project) was granted in January 2013.

1.5 This document has been prepared in accordance with Section 47 of the Planning Act 2008 and PINS Advice Note 16 which set out YPL's duty to consult the local community and explain that the pre-application process and responses are an important part of the determination of NSIPs.

1.6 YPL recognises that the harbour facilities forms a component of the wider project and that, to avoid any scope for confusion, it is important to set the proposed development within this context. This document therefore sets out the broader anticipated pre-application consultation process that has been and will be undertaken in association with the other elements of the Project (see Section 6) and how the consultation obligations specified by Section 47 of the Planning Act 2008 will be satisfied in relation to the harbour development.

Figure 1.1 Harbour Facilities Likely Order Limits including relationship to Materials Handling Facility



Please refer to the website – www.yorkpotash.co.uk – for other plans, maps and information

1.7 This SoCC provides the following information:-

- A summary description of the harbour, its relationship to the wider project and the key issues intended to assist in explaining the background to the consultation process;
- What YPL will be consulting on and the methods applied to encourage participation in the process;
- A brief explanation of the consenting process and the role of PINS [Section 3];
- An explanation as to how the key consultation targets and stakeholders will be identified [Section 4];
- An explanation as to how local people will be consulted, the information provided as part of that process and how this will be reported [Section 5];
- A description of next steps and the broad programme of activities [Section 6]; and
- How to contact the YPL consultation team [Section 7].

1.8 The SoCC takes account of the following documents which establish the means by which local people can get involved in the planning process for this NSIP:-

- Sections 4 and 5 of the Redcar and Cleveland Borough Council Statement of Community Involvement (“SCI”) (June 2010); and

- Section 3 of the Stockton Council SCI (March 2006, as updated in September 2013).

2.0 The York Potash Project

Background

2.1 In January 2011, YPL announced plans to explore the potential for a new state-of-the-art potash mine in the North Yorkshire coastal area, between Whitby and Scarborough.

2.2 Potash is a vital source of potassium and is used by farmers to maintain good crop yields and strong harvests. Polyhalite is a form of potash that, in addition to potassium, is also a source of sulphur, magnesium and calcium, which means it can provide four of the six macro-nutrients necessary for plant growth. The mine would be the first new potash mine in the UK for 40 years and would safeguard UK supplies of high-value potash products that are essential for the future efficiency of UK farming and food production. YPL aims to become a significant global supplier and as result help the UK to contribute towards the global challenge of feeding a rapidly expanding population.

2.3 It represents a major investment in the region and would provide significant benefits to the local and regional economy. The Project proposals will create over 1,000 direct jobs. These would typically be skilled or semi-skilled roles, with a strong requirement for people with technical or engineering qualifications. In addition to direct jobs, there would be thousands more created in the wider economy as a result.

2.4 From spring 2011, YPL applied for a series of planning permissions from the North York Moors National Park Authority to carry out test drilling at selected locations in the area to help determine the extent and quality of the potash and underground geological conditions. The outcome of the tests has verified the presence of the world's largest and highest grade polyhalite resource with a JORC (the Australasian 'Joint Ore Reserves Committee Code') compliant Probable Mineral Reserve of 250 million tonnes of 87.8% polyhalite within an area representing just 1% of the YPL Area of Interest. Mining operations are expected to have a lifespan of over 50 years.

2.5 In February 2013, YPL submitted an application to North York Moors National Park Authority for a mine and underground mining. The application followed a period of extensive pre-application consultation, as well as further consultation following submission. The application was withdrawn in January 2014 due to changes to the scheme and following discussions with the local planning authority, necessitating a fresh submission.

The Harbour Facilities

2.6 The harbour facilities will be located on approximately 25 hectares of land at Bran Sands on the Wilton Estate at Teesside. The Tees Estuary is a well-established deep water port with a number of industrial uses – the site is adjacent to the Redcar steel works and is part of the former ICI estate.

2.7 In summary, the proposed harbour facilities will comprise the following main elements:-

- **Quay structure** – this structure will facilitate the mooring of vessels in the estuary directly adjacent to the onshore harbour facilities, allowing shiploader access.
- **Berthing area** – a berthing area for vessels will be dredged alongside the Quay and will be capable of accommodating mid-sized bulk carriers.
- **Shiploaders** – two shiploaders will be erected on the Quay structure and will load the mineral product onto the ships for onward transportation. These will be fed by a conveyor from Wilton International.
- **Port Surge Facility** – this facility will provide polyhalite surge capacity for hatch changes prior to its transfer by conveyor to the shiploaders on the Quay structure.
- **Conveyor System** – a conveyor is required to transport polyhalite from an off-site MHF at Wilton International to the harbour facilities. The conveyor will be covered to mitigate against dust emissions.

2.8 Construction and operational vehicle access to the harbour facilities will be via the existing roundabout on the A1085 trunk road which is within the proposed Order Limits. With the exception of internal road access, no new road infrastructure is proposed. There is potential for some construction materials to be brought to the site on barges using the River Tees.

2.9 The National Policy Statement for Ports provides the framework for decisions on proposals for new port development and was designated on 26 January 2012.

What we are consulting on

2.10 York Potash will be asking for views on the form of the harbour development and associated infrastructure; its construction and the ongoing operation of the facilities and its overall impact. Information on the harbour facilities will be kept up-to-date on the Project website. Hard copies of the information will also be made available at four public locations (the offices of Redcar and Cleveland Borough Council, the offices of York Potash, Redcar Library on Kirkleatham Street and Tuned In! on Majuba Road).

2.11 The harbour development is classed as ‘EIA development’ as defined in the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009. This means that the application for the DCO will be accompanied by an Environmental Statement which will provide a wide range of information about the current environmental conditions and characteristics of the site and surrounding area, and assess the likely impacts of the proposed development. Preliminary Environmental Information (pursuant to Regulation 10 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009) will be made available as part of the consultation process and will include,

amongst other documents, information on assessments on the following environmental matters:

- Hydrodynamic and Sedimentary Regime
- Coastal Protection and Flood Risk
- Marine Sediment and Water Quality
- Land Quality
- Terrestrial and Marine Ecology and Ornithology
- Traffic and Transport
- Commercial Navigation
- Landscape and Visual
- Noise and Vibration
- Air Quality
- Fisheries Resource
- Infrastructure and Land Drainage
- Archaeology and Heritage
- Recreation and Access

3.0 The Consenting Process

3.1 The proposed project is currently divided into three main components associated with the consenting regimes that will be used to secure the necessary consents for the Project. These are summarised below:

Table 3.1 Main Applications for the York Potash Project

Project element	Consenting authority
The mine located south of Whitby with a minehead at Doves Nest Farm and the underground MTS consisting of a mining tunnel at depths of between 120-360m that will contain a series of linked conveyors to transport the mined ore approximately 36.5 km to Teesside	North York Moors National Park Authority and Redcar and Cleveland Borough Council
The MHF at Wilton, Teesside.	Redcar and Cleveland Borough Council
The harbour facilities at Teesside for onward transportation of the mineral	The relevant Secretary of State (via PINS). Further information about the planning process can be found at http://infrastructure.planningportal.gov.uk

4.0 Engaging the Key Consultation Targets & Stakeholders

4.1 YPL is committed to engaging with its statutory stakeholders and this process has already been on-going for some time. This will be formalised through the section 42 process and the results will be detailed in the Consultation Report.

4.2 The landowners directly affected by the proposed harbour facilities have been made aware of the plans through YPL's commercial and land acquisition activities. This engagement will continue throughout the formal consultation period and landowners and other parties with an interest in the land will be identified and formally consulted through the section 42 consultation process.

4.3 YPL has already provided a number of updates to members of Redcar and Cleveland Borough Council. Elected members are key stakeholders in the area and YPL will ensure that they are consulted on the proposed harbour facilities.

4.4 The proposed location for the harbour is remote from immediate inhabitants which make it difficult to identify an obvious consultation area for people living within the vicinity of the land. Dormanstown is the nearest settlement and is approximately 2 miles from the harbour, but within hundreds of metres of the end of the conveyor belt linking the harbour to the MHF.

4.5 To ensure that as many potentially affected parties as possible are captured in terms of the distribution of information on the scheme, three broad geographical zones have been established. For each consultation zone, different methods of engagement will be employed to reflect their location in relation to the site.

4.6 For the first and largest zone (targeted at the wider Teesside area), information and invitations to attend consultation events will be distributed via advertising and editorial coverage in local and regional newspapers. The coverage for the Northern Echo and Evening Gazette covers the wider Teesside area and surroundings.

4.7 The second zone (identified as 'Zone A' on the plan provided at Annex 1 to this SOCC) largely covers Redcar Town. In addition to their coverage by the above local and regional newspapers, local information will be posted in public locations and meeting places in and around the town.

4.8 The final zone (identified as 'Zone B' on the plan provided at Annex 1 to this SOCC) is an area in which the postal addresses of all properties will be sought so that information on the Project can be sent directly to all addresses. This zone broadly equates to the immediate locality around the site. As shown on the plan at Appendix 1, this covers a wide area around the harbour facilities and its associated conveyor belt, encompassing business properties and the

nearest areas of residential properties at Dormanstown. Zone B will also be covered by the coverage provided in local and regional newspapers.

5.0 How we will consult local people

5.1 The table below outlines the activities that will be carried out in relation to the consultation process in relation to the harbour DCO.

Table 5.1 The Consultation Activities

Consultation activity	What's involved	Inputs & Deliverables
Public Exhibitions Local exhibitions for people to view the proposals, talk to members of the Project team and provide written feedback will be delivered as a series of exhibitions. People will be informed of the dates and venues through a range of communication channels including advertisements in local newspapers, direct invites, local posters, the Project website and local media coverage. Advertisements for the exhibitions will appear in the Evening Gazette and the Northern Echo, and notifications of the SoCC will appear in the same newspapers (possibly in the same advert). Editorial coverage will be sought in all of these papers. Posters about the public exhibitions will be widely distributed.	Public exhibitions will be held in suitable, accessible locations in the vicinity of the harbour development. Materials will include display panels and plans to clearly explain the proposals. There will be four exhibitions which will be held on both week days and at the weekend. The exhibitions will take place at the following venues:- 1. Wednesday 17 Sept – Dormanstown (Westfield Farm Community Centre) – 10am-5pm 2. Thursday 18 Sept – Tuned In, Redcar – 12-6.30pm 3. Friday 26 September – Tuned In, Redcar – 10am-5pm 4. Saturday 27 September – Dormanstown (Westfield Farm Community Centre) – 10am-2pm	Input: The Summary Document (see below) will be available, together with copies of project plans and the preliminary environmental information. Deliverables: Feedback forms will be available to capture comments.
Summary Document This is a non-technical summary of the harbour, which will show the location, construction techniques and detail any other required infrastructure as well as some of the potential impacts as detailed in section 2.10. It will contain reference to where more detailed technical and preliminary environmental information can be obtained.	A link to the Summary Document will be sent electronically to registered contacts, key local councillors and will be made available via the Project website. All addresses that can be identified within Zone B (see Appendix A to this SOCC) will be notified of where the Summary Document can be viewed through letters and posters posted directly to them. Posters and information disseminated via the local press will also identify the Project website.	Input: The 'Summary Document'. Deliverables: methods of feedback will be identified in the Summary Document. The form will be accessible via the Project website.

Consultation activity	What's involved	Inputs & Deliverables
Online The Project website will provide information about the harbour facilities proposal, downloadable copies of all documents, consultation materials and enable online feedback.	This will be built into the existing project website: www.yorkpotash.co.uk The website will be regularly updated throughout the pre-application process as required.	Input: Harbour information and news (including Summary Document and preliminary environmental information). Deliverables: Online Port feedback forms.
Post, email and telephone A dedicated project postal address, email address and telephone number will enable people to contact the Project team with enquiries and/or to supply feedback. This will be publicised as part of the publicity activity outlined above.	The postal address will be: York Potash Consultation Team, Nathaniel Litchfield & Partners, 14 Regent's Wharf, All Saints Street, London N1 9RL The email address will be: yorkpotash@nlpplanning.com The community helpline number will be: 0845 543 8964 It is staffed Monday to Friday, 9am to 5pm, with a manned system or an answer phone system for out of hours calls.	Input: Communi-cation team. Deliverables: Collation of other harbour feedback received.
Hard to reach groups There are no immediately obvious 'hard to reach groups' associated with the harbour facilities. The consultation will be widely advertised throughout the area and the website and social media channels will be utilised to reach a wider audience.	Utilise website and social media channels. As part of the consultation strategy process the Project team will engage other hard to reach groups as advised by the local authority	Collation of harbour feedback received.
Inspection copies of key documents Inspection copies of key harbour project documents and materials will be made available at specific public venues. All of these documents will also be made available on the	Locations will be:- • Redcar and Cleveland Borough Council's offices. • York Potash offices, Scarborough. • Redcar Library on Kirkleatham	Input: Summary Document and preliminary environmental information.

Consultation activity	What's involved	Inputs & Deliverables
Project website.	Street. • Tuned In! on Majuba Road Information will also be available on the Project website.	Deliverables: information on how to provide feedback will be provided in the Summary Document.
Local authority presentations Presentations will be offered to the local authorities with jurisdiction covering the proposed development area.	These will be offered to councillors and officers at relevant local authorities. Details of the harbour will be explained, questions taken and feedback recorded.	Input: Presentations offered to Redcar and Cleveland Borough Council and Stockton Council. Deliverables: Note of meeting and discussion.
Business Networks Presentations will be offered to key business networks such as the Board of Tees Valley Unlimited, the North East of England Process Industry Cluster ("NEPIC"), relevant Local Enterprise Partnership ("LEP" or LEPs"), the Chamber of Commerce ("CoC") and the Federation of Small Businesses ("FSB")	A presentation will be offered to the members of the aforesaid business networks. Details of the harbour will be explained - questions can be asked and feedback provided.	Input: Presentation offered. Deliverables: Note of meetings and discussion.
Other political stakeholder meetings Presentations will be offered to the local MP whose constituency covers the area of the development.	An invite to the local MP will offer briefings, if desired. Details of the project will be explained, questions can be asked and feedback can be passed to the team.	Input: Presentation to Ian Swales MP (Redcar), James Wharton MP (Stockton South) and Alex Cunningham MP (Stockton North). Deliverables: Note of meeting and discussion.

Consultation activity	What's involved	Inputs & Deliverables
Other stakeholder meetings Where appropriate, the Project team will attend meetings of other stakeholder groups, when invited to do so. This may include groups not identified in this document, such as local business groups, community interest groups, environmental groups, amenity/area focused groups and resident/neighbourhood groups. These will be opportunities for questions to be asked and comments to be fed back into the consultation process.	This will depend on the level of interest from such groups and the appropriateness of attending meetings, but our attendance will not be refused unreasonably. The Summary Document and an offer of a meeting will also be sent to relevant stakeholders. Details of the harbour will be explained, questions can be asked and feedback can be passed to the team.	Input: Meeting offered. Deliverables: Note of meeting(s) and discussion(s).
Media Proactive media engagement to raise awareness of the Project and public consultation in the local area.	Since inception in January 2011, YPL has engaged with local media to help the flow of information about the Project. Building on this work, information and briefings will be provided to local media to facilitate editorial coverage and to raise awareness of the proposals and consultation process.	Input: Information and briefing to local media. Deliverable: Increased public awareness and involvement.
Advertising (SoCC) As per the requirements of the Planning Act 2008, notification of this Statement of Community Consultation (SoCC) will be published in local newspapers.	A notice of this SoCC will be published in the following local and regional papers: • Northern Echo. • Evening Gazette. Editorial coverage will also be sought in all of these newspapers regarding the consultation process. Other newspapers across the region will also be targeted for editorial coverage.	Input: SoCC notice Deliverable: Increased public awareness and involvement.

5.2 It will be a key objective for all stages to ensure that the consultation is transparent, inclusive and accessible and will provide the maximum opportunity for feedback on the proposals.

5.3 Documents can be provided in other formats and languages on receipt of reasonable requests.

6.0 Next Steps

6.1 This SoCC will be issued to Redcar & Cleveland Borough Council and Stockton Council for comment in accordance with the requirements of section 47 of the Planning Act 2008.

6.2 A formal stage of consultation with local people is timetabled to take place in September/October 2014. Although reference will be made to the wider York Potash Project for context, the Harbour Facilities (DCO) consultation is a distinct and separate consultation process and explained as such in the consultation materials. Information on the harbour facilities was also included as part of the separate consultation for the mine, MTS and MHF which took place in July/August 2014.

6.3 The consultation activities, any responses received and how these have been addressed will be fully reported and submitted as key documents that will be submitted with the application for the harbour DCO.

7.0 How to contact the York Potash Consultation Team

7.1 There are a number of ways you can find out more about the harbour and register your views:

- Online: www.yorkpotash.co.uk
- Email: yorkpotash@nlpplanning.com
- Write to: York Potash Consultation Team, York Potash Ltd, 7-10 Manor Court, Manor Garth, Scarborough YO11 3TU; or

  York Potash Consultation Team, Nathaniel Lichfield & Partners, 14 Regent's Wharf, All Saints Street, London N1 9RL
- Call the York Potash Consultation Team: 0845 543 8964

For further information in relation to this SOCC contact:

Email: yorkpotash@nlpplanning.com

Tel: 020 7837 4477

Post: York Potash Consultation Team, Nathaniel Lichfield & Partners, 14 Regent's Wharf, All Saints Street, London N1 9RL

Appendix 1 Plan showing extent of Consultation Zones


York Potash Harbour Facility
Zone A
Zone B
Local Authority Boundaries
MIDDLESBROUGH
REDCAR
BILLINGHAM
HARTLEPOOL
Seal Sands
Tees Bay
MARSKE-BY-THE-SEA
SALTBURN-BY-THE-SEA
ESTON
GUISBOROUGH
SKELTON
REDCAR AND CLEVELAND

Nathaniel Lichfield
& Partners
Planning. Design. Economics.

- Applications & Appeals
- Climate Change & Sustainability
- Community Engagement
- Daylight & Sunlight
- Economics & Regeneration
- Environmental Assessment
- Expert Evidence
- GIS & Graphics
- Heritage
- Property Economics
- Site Finding & Land Assembly
- Strategy & Appraisal
- Urban Design

Cardiff
029 2043 5880

Leeds
0113 397 1397

London
020 7837 4477

Manchester
0161 837 6130

Newcastle
0191 261 5685

nlpplanning.com

Appendix 18

Notice and emails from RCBC and STBC confirming agreement to the Statement of Community Consultation

[redacted]

From: [redacted] <[redacted]@redcar-cleveland.gov.uk>
Sent: 03 June 2014 11:10
To: [redacted]
Subject: Application R/2014/0305/NID
Attachments: Officer Letter_R20140305NID.doc

_____

Redcar & Cleveland Borough Council
Regeneration Services Directorate
Development Management
Redcar and Cleveland House
Kirkleatham Street
Redcar
TS10 1RT

Email: planning_admin@redcar-cleveland.gov.uk
www.redcar-cleveland.gov.uk/Planning
Direct line:01287 612340

NATHANIEL LICHFIELD & PARTNERS
14 REGENTS WHARF
ALL SAINTS STREET
LONDON
N1 9RL

Our Ref: R/2014/0305/NID
Your Ref:
Contact: [redacted]
Date: 3 June 2014

Dear Sir/Madam

PROPOSAL: **SECTION 47 (2) OF PLANNING ACT 2008: CONSULTATION ON STATEMENT OF COMMUNITY CONSULTATION FOR YORK POTASH HARBOUR FACILITY**
LOCATION: **LAND AT BRAN SANDS OFF TEESDOCK ROAD GRANGETOWN**
APPLICANT: **YORK POTASH LIMITED**

Thank you for sending a copy of the consultation document. I am happy with the approach to consultation my only comment would be that consideration be given to the stating the number of notices to be posted and their approximate location and duration of display.

Yours faithfully

[redacted]
Principal Planning Officer

[redacted]

From: [redacted] <[redacted]@stockton.gov.uk>
Sent: 10 June 2014 15:36
To: [redacted]
Subject: York Potash harbour Facility
Attachments: XSSTH-MPS-05_PS 5030 GNM88109_1982_001.pdf

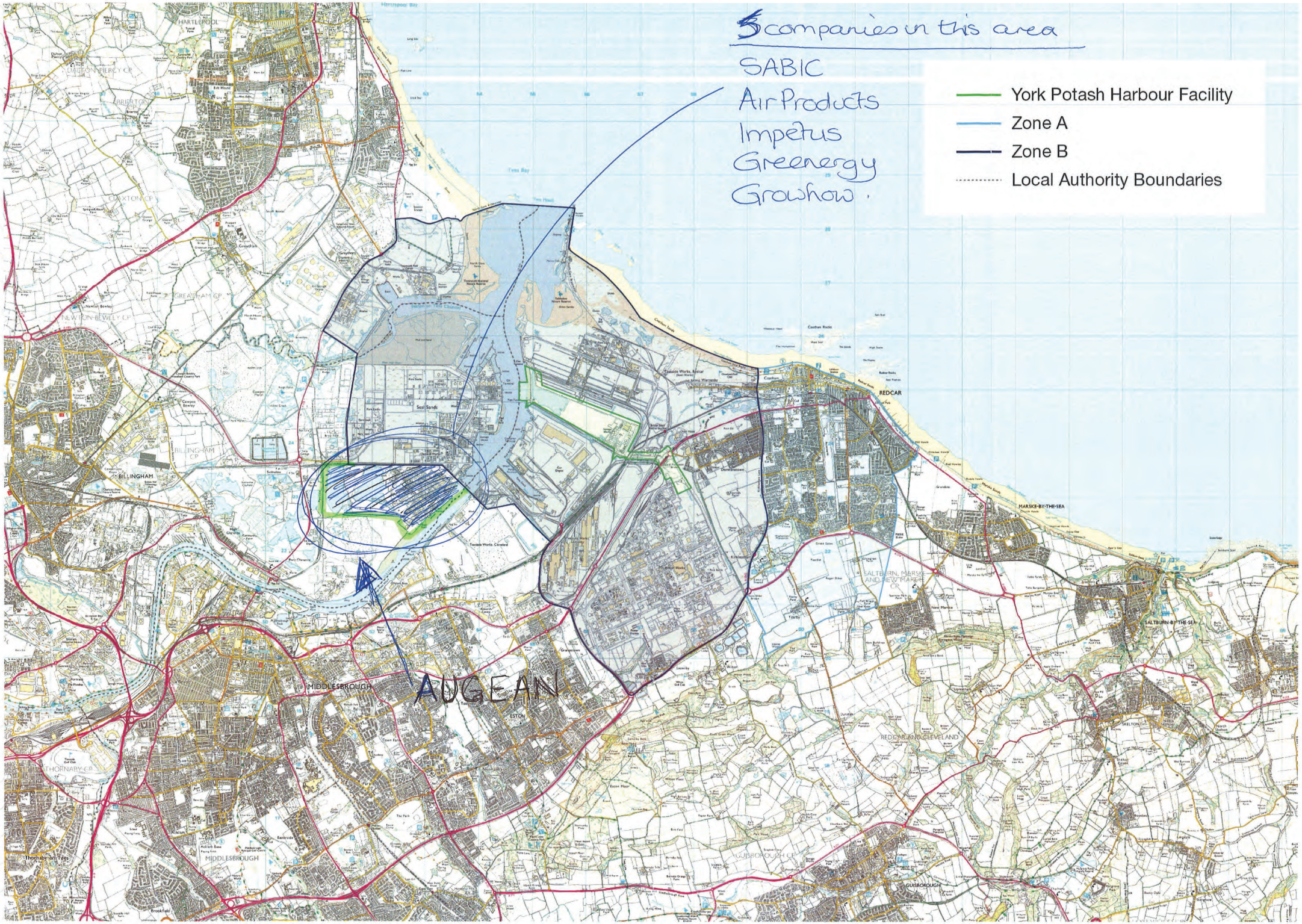
[redacted]

Please find attached a plan showing suggested additional parties.

As per our telephone conversation I can confirm that the proposed SOCC appears to be acceptable.

Kind Regards

[redacted]
Senior Planning Officer
Development and Neighbourhood Services
Stockton on Tees Borough Council
Municipal Buildings
Church Road
Stockton on Tees TS18
Direct Line 01642 526062
Planning applications can be viewed online at the web-link below.
http://www.developmentmanagement.stockton.gov.uk/online-applications/


5 companies in this area
SABIC
Air Products
Impetus
Greenergy
Growhow
York Potash Harbour Facility
Zone A
Zone B
Local Authority Boundaries
AUGEAN
HARTLEPOOL
BILLINGHAM
MIDDLESBROUGH
REDCAR
MARSKE-BY-THE-SEA
SALTBURN-BY-THE-SEA
GUISBOROUGH
REDCAR AND CLEVELAND

[redacted]

From: [redacted] <[redacted]@stockton.gov.uk>
Sent: 03 September 2014 17:19
To: [redacted]
Cc: [redacted]
Subject: RE: York Potash Harbour Facilities - SOCC [NLP-DMS.FID275544]

[redacted]

I refer to our recent conversation.

With regards to the section relating to "Presentations will be offered to the local MP whose constituency covers the area of the development".- As discussed I would Also invite Alex Cunningham MP (Stockton North) – as he is responsible for the area opposite the proposed development site

Other than that this all appears fine

[redacted]

From: [redacted] [mailto:[redacted]@nlpplanning.com]
Sent: 02 September 2014 16:34
To: [redacted]
Cc: [redacted]
Subject: York Potash Harbour Facilities - SOCC [NLP-DMS.FID275544]

[redacted]

Just following on from my earlier voicemail message, I would be very grateful if you could ring me to discuss the Statement of Community Consultation ('SOCC') in relation to the proposed York Potash Harbour Facilities.

You will recall that we formally consulted with you in May/June under Section 47(2) of the Planning Act 2008 in relation to this document and you very helpfully provided your thoughts and comments at that time. You may well be aware that it is our intention to now proceed to carry out a period of formal consultation from mid-September to mid-October in respect of the proposals. To reflect this, and ongoing work on the Project, we have updated the SOCC and we were keen to pass a copy to you for your information and record (see attached). For your ease of reference, the changes are marked as track changes and can be summarised as follows:-

- We have replaced the previous site plan with one which more accurately reflects the proposed Order Limits (see Figure 1.1 and Appendix 1);
- Tweaks to the text to reflect changes to the proposals for the harbour facilities and the wider Project since we last spoke (e.g. to refer to the current proposals for access to the Bran Sands site at para 2.8 and to refer to changes in the packaging up of the applications for the wider Project at Table 3.1);
- The addition of two additional venues (Redcar Library and Tuned In!) where it is our intention to hold hard copies of information on the proposals during the consultation period – this increases the number of venues from two to four;
- The inclusion of the proposed dates and venues for the public exhibitions (Table 5.1 and updated reference to the timescales at para 6.2); and
- Clarification on how we will notify interested parties on the dates/venues for the public exhibitions (Table 5.1).

We believe that the above changes are helpful and assist in presenting an accurate and up to date record of where we are ahead of the formal consultation. We hope to move to publish the formal notices in respect of the SOCC in the next few days but if there are any points above that you would like to discuss with us further please do give me a call (my details are below).

Thank you in advance for your help.

Kind Regards

[redacted]

[redacted]
Nathaniel Lichfield & Partners, 14 Regent's Wharf, All Saints Street, London N1 9RL
T 020 7837 4477 / M 07961 579203 / E nmableson@nlpplanning.com

nlpplanning.com

[redacted]

From: [redacted] <[redacted]@redcar-cleveland.gov.uk>
Sent: 10 September 2014 13:23
To: [redacted]
Subject: RE: York Potash Harbour Facilities - SOCC [NLP-DMS.FID275544]

Good Afternoon

With regard to our telephone conversation today I can confirm that I am comfortable with the consultation strategy outlined. {lease send a final version of the document as soon as you are able.

Regards

[redacted]

From: [redacted] [mailto:[redacted]@nlpplanning.com]
Sent: 02 September 2014 16:28
To: [redacted]
Cc: [redacted]
Subject: York Potash Harbour Facilities - SOCC [NLP-DMS.FID275544]

[redacted]

Just following on from my earlier message left with one of your colleagues, I would be very grateful if you could ring me to discuss the Statement of Community Consultation ('SOCC') in relation to the proposed York Potash Harbour Facilities.

You will recall that we formally consulted with you in May/June under Section 47(2) of the Planning Act 2008 in relation to this document and you very helpfully provided your thoughts and comments at that time. You may well be aware that it is our intention to now proceed to carry out a period of formal consultation from mid-September to mid-October in respect of the proposals. To reflect this, and ongoing work on the Project, we have updated the SOCC and we were keen to pass a copy to you for your information and record (see attached). For your ease of reference, the changes are marked as track changes and can be summarised as follows:-

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- Tweaks to the text to reflect changes to the proposals for the harbour facilities and the wider Project since we last spoke (e.g. to refer to the current proposals for access to the Bran Sands site at para 2.8 and to refer to changes in the packaging up of the applications for the wider Project at Table 3.1);

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Thank you in advance for your help.

Kind Regards

[redacted]

[redacted]
Nathaniel Lichfield & Partners, 14 Regent's Wharf, All Saints Street, London N1 9RL T 020 7837 4477 / M 07961 579203 / E nmableson@nlpplanning.com

nlpplanning.com <http://www.nlpplanning.com/> <http://twitter.com/#!/nlpplanning> <http://www.linkedin.com/company/nathaniel-lichfield-and-partners>

<http://nlpplanning.com/blog/an-nlp-hat-trick-the-rtpi-planning-consultancy-of-the-year-2011-2014/>

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Redcar & Cleveland Borough Council, Redcar & Cleveland House, Kirkleatham Street, Redcar, TS10 1RT, Tel: 01642 774 774, Website: www.redcar-cleveland.gov.uk

Business

Legal Notices

Section 47 of the Planning Act 2008

The York Potash Harbour Facilities Order 201X

NOTICE PUBLICISING A STATEMENT OF COMMUNITY CONSULTATION

Notice is hereby given that York Potash Limited of 3rd Floor, Greener House, 66-68 Haymarket, London, SW1Y 4RF ("the Applicant") proposes to apply to the Planning Inspectorate under section 37 of The Planning Act 2008 for a development consent order ("DCO") to authorise the construction and operation of Harbour Facilities at Bran Sands, Teesside for the export of polyhalite bulk fertilizer which will be linked by conveyor to a materials handling facility located within the Wilton International Complex ("the Application").

- The Application relates to land at Bran Sands, Teesside and land at Wilton International Complex and is part of a wider project being promoted by the Applicant ("the Project"). The Project comprises the development of a new polyhalite mine south of Whitby; transportation of the polyhalite from the mine to Teesside via a proposed 36.5km underground Mineral Transport System ("MTS"); and the transferral of the polyhalite via a Materials Handling Facility ("MHF") to the Harbour Facilities.
- As part of the process of preparing to make the Application, the Applicant has a duty to consult the local community pursuant to section 47 of The Planning Act 2008. The Applicant has produced a Statement of Community Consultation ('SOCC') for this purpose. The SOCC sets out details of how the Applicant proposes to consult people living in the vicinity of the land subject to the DCO application.
- The purpose of this notice is to inform interested persons and members of the local community that the SOCC can be inspected free of charge from 11 September 2014 to 16 October 2014 at the following locations and during the hours set out below:-
- Redcar and Cleveland Borough Council offices, Kirkleatham Street, Redcar, TS10 1RT Mon - Fri 09:00 to 17:00;
- York Potash Limited, 7 - 10 Manor Court, Manor Garth, Scarborough, YO11 3TU Mon - Fri 09:00 to 17:00;
- Redcar Library, Kirkleatham St, Redcar, Cleveland TS10 1RT Mondays to Wednesdays and Fridays 09:00 to 18:00, Thursdays 09:00 to 17:00 and Saturdays 09:30 to 12:30; and
- Tuned In, Majuba Road, Redcar, TS10 5BJ Mondays to Fridays 08:30 to 20:00, Saturdays 08:30 to 18:00 and Sundays 08:30 to 16:00.

A copy of the SOCC is also available to view on the Applicant's website at www.yorkpotash.co.uk The website also provides further details in relation to the Application and the wider York Potash Project.

GAZETTE MEDIA COMPANY

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The publishes reserve the right to decline any copy or artwork of which they may not approve whether an order has been accepted or not. Guarantee of insertion cannot be given and no responsibility is accepted.
(a) for damage to or loss of artwork
(b) for shrinkage
(c) for any loss or damage caused by an error or inaccuracy in the printing
(d) for the omission of any advertisement
(e) for any loss or damage in forwarding replies to Box Numbers, however caused.

Should the rate of advertisements be altered, the price for the remaining insertions shall be revised accordingly, or the publishers have the option of cancelling the unexpired portion of the order.
Once an advertisement has been accepted for publication and has been processed, a charge will be made for the first insertion, regardless of its appearance in the newspaper.
The publisher regrets it cannot accept responsibility for more than ONE INCORRECT insertion, and all quoted prices can only be approximate.
Box Numbers may be used only for personal and recruitment advertisements. Any advertisement not booked by a monthly account customer will be subject to a surcharge of 10% on the cost of the advertisement if the invoice is not paid within 14 days of invoice date. In the event of payment not being received within the agreed period allowed for credit the publisher reserves the right to charge and the advertiser will pay interest at the rate of 2% above the base rate of Barclays Bank PLC for each month that payment is overdue.
The unabbreviated conditions of acceptance are available on request from the advertisement manager. Copies are also available at all our Branch Offices.
Your calls may be monitored or recorded for training purposes.
Gazette Media Company Ltd will use this information, and any other details from future advertising, for administration and analysis. We may share your information with other Trinity Mirror group companies or carefully selected third parties. We, or they, may send you details of other goods and services which may be of interest to you. The information may be provided by letter, telephone or other reasonable means of communication.

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- Return overnight DFDS Seaways' crossings between Newcastle and Amsterdam, with accommodation in two berth inside cabins with private facilities
- Three nights full-board accommodation in a Standard

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www.newmarket.travel/nec17650

These holidays are organised & operated by Newmarket Promotions Ltd ABTA

Appendix 19

Newspaper advert confirming consultation timings and dates

THE YORK POTASH PROJECT

NATIONAL NEED LOCAL BENEFITS

CONSULTATION ON PROPOSED HARBOUR FACILITIES, TEESSIDE

York Potash is consulting on its plans for the development of new harbour facilities at Bran Sands, Teesside for the export of polyhalite. The harbour facilities will be linked by conveyor to a materials handling facility located within the Wilton International complex.

The development is part of the wider York Potash Project which will deliver a major investment to the region, creating over 1,000 direct jobs at full production and many more in the supply chain and support economies. The Project includes the development of a new polyhalite mine south of Whitby, transportation of the mineral to Teesside via a proposed 36.5km underground mineral transport system and transferral of the polyhalite via a materials handling facility at Wilton to the harbour.

CONSULTATION

York Potash has produced a Statement of Community Consultation (SOCC) setting out how it will consult on its proposed harbour facilities. This is available at **www.yorkpotash.co.uk**, together with much more information. The consultation period for the harbour facilities is open from 11 September 2014 to 16 October 2014

You can also download or request a copy of the **Summary of Proposals Document** to find out more.

ATTEND ONE OF OUR PUBLIC EXHIBITIONS TO FIND OUT MORE

DATE/TIME	VENUE
Fri 26 Sept 10am–5pm	**Redcar** Tuned In, Majuba Road, Redcar TS10 5BJ
Sat 27 Sept 10am–2pm	**Dormanstown** Westfield Farm Community Centre, The Green, Redcar, Dormanstown TS10 5NA

OTHER WAYS TO HAVE YOUR SAY:

Visit **www.yorkpotash.co.uk**
Call **0845 543 8964**
Email **info@yorkpotash.co.uk**
Write to **York Potash Consultation Team, Nathaniel Lichfield & Partners, 14 Regent's Wharf, All Saints Street, London N1 9RL**

YORKPOTASH
A Sirius Minerals Project

THE YORK POTASH PROJECT

NATIONAL NEED LOCAL BENEFITS

CONSULTATION ON PROPOSED HARBOUR FACILITIES, TEESSIDE

York Potash is consulting on its plans for the development of new harbour facilities at Bran Sands, Teesside for the export of polyhalite. The harbour facilities will be linked by conveyor to a materials handling facility located within the Wilton International complex.

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You can also download or request a copy of the **Summary of Proposals Document** to find out more.

ATTEND ONE OF OUR PUBLIC EXHIBITIONS TO FIND OUT MORE

DATE/TIME	VENUE
Thurs 18 Sept 12–6.30pm	**Redcar** Tuned In, Majuba Road, Redcar TS10 5BJ
Fri 26 Sept 10am–5pm	**Redcar** Tuned In, Majuba Road, Redcar TS10 5BJ
Sat 27 Sept 10am–2pm	**Dormanstown** Westfield Farm Community Centre, The Green, Redcar, Dormanstown TS10 5NA

OTHER WAYS TO HAVE YOUR SAY:

Visit **www.yorkpotash.co.uk**
Call **0845 543 8964**
Email **info@yorkpotash.co.uk**
Write to **York Potash Consultation Team, Nathaniel Lichfield & Partners, 14 Regent's Wharf, All Saints Street, London N1 9RL**

YORKPOTASH
A Sirius Minerals Project

Appendix 20

Public consultation notice and locations in local areas where this was displayed

THE YORK POTASH PROJECT

NATIONAL NEED LOCAL BENEFITS

CONSULTATION ON PROPOSED HARBOUR FACILITIES, TEESSIDE

York Potash is consulting on its plans for the development of new harbour facilities at Bran Sands, Teesside for the export of polyhalite. The harbour facilities will be linked by conveyor to a materials handling facility located within the Wilton International complex.

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You can also download or request a copy of the **Summary of Proposals Document** to find out more.

ATTEND ONE OF OUR PUBLIC EXHIBITIONS TO FIND OUT MORE

DATE/TIME	VENUE
Wed 17 Sept 10am–5pm	**Dormanstown** Westfield Farm Community Centre, The Green, Redcar, Dormanstown TS10 5NA
Thurs 18 Sept 12–6.30pm	**Redcar** Tuned In, Majuba Road, Redcar TS10 5BJ
Fri 26 Sept 10am–5pm	**Redcar** Tuned In, Majuba Road, Redcar TS10 5BJ
Sat 27 Sept 10am–2pm	**Dormanstown** Westfield Farm Community Centre, The Green, Redcar, Dormanstown TS10 5NA

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Call **0845 543 8964**
Email **info@yorkpotash.co.uk**
Write to **York Potash Consultation Team, Nathaniel Lichfield & Partners, 14 Regent's Wharf, All Saints Street, London N1 9RL**

YORKPOTASH
A Sirius Minerals Project

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY: The following presentation is a imagery record of the placement of Public Consultation Notices in relation with the proposed application to The York Potash Harbour and processing facilities on Tesside at the Wilton International Complex. Notices where placed at locations that it was considered would give the maximum exposure to a cross section of the local community. The time and date of each notice placement is de-noted by the Date Time Group (DTG) attached to each notice image.

DTG:12-09:05-Sept-14

PUBLIC CONSULTATION NOTICES – The York Potash Harbour Facilities, Teesside

YORK POTASH - CONFIDENTIAL | Notice Location: Premier Dormans Town | 12 Sept 14

YORK POTASH
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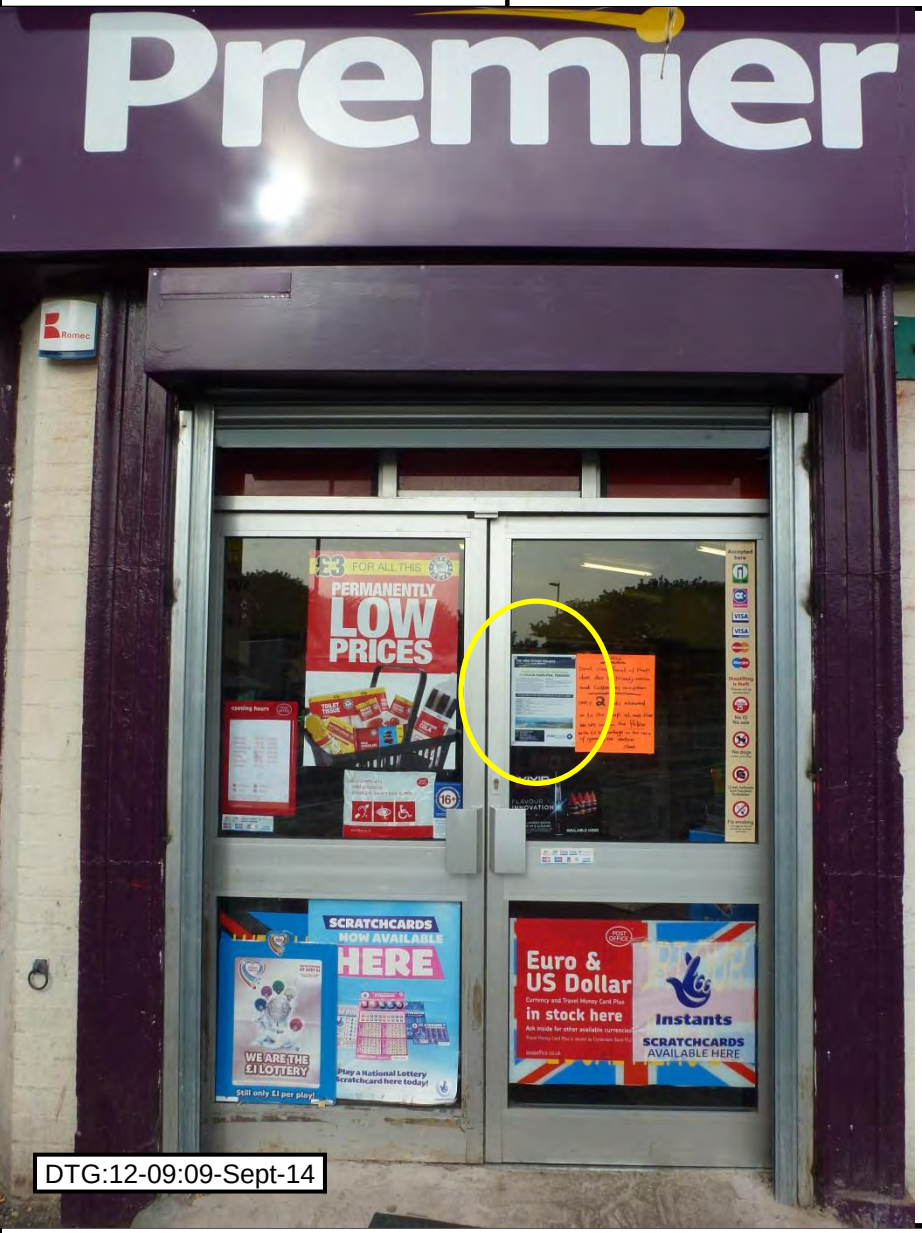

DTG:12-09:09-Sept-14

ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20

ALL MGRS AND MEASUREMENTS ARE IMAGERY DERIVED AND ARE THEREFORE APPROXIMATE. ALL TIMINGS ARE LOCAL AND APPROXIMATE.

This product is not to be released to the Media or General Public

IA:

PUBLIC CONSULTATION NOTICES – The York Potash Harbour Facilities, Teesside

YORK POTASH - CONFIDENTIAL | Notice Location: The Work - Dormans Town | 12 Sept 14

YORKPOTASH A Sirius Minerals Project

ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20

ALL MGRS AND MEASUREMENTS ARE IMAGERY DERIVED AND ARE THEREFORE APPROXIMATE. ALL TIMINGS ARE LOCAL AND APPROXIMATE.

This product is not to be released to the Media or General Public

IA:

PUBLIC CONSULTATION NOTICES – The York Potash Harbour Facilities, Teesside

YORK POTASH - CONFIDENTIAL | Notice Location: Lloyds Pharmacy Dormans Town | 12 Sept 14

YORKPOTASH A Sirius Minerals Project

ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20

ALL MGRS AND MEASUREMENTS ARE IMAGERY DERIVED AND ARE THEREFORE APPROXIMATE. ALL TIMINGS ARE LOCAL AND APPROXIMATE.

This product is not to be released to the Media or General Public

IA:

PUBLIC CONSULTATION NOTICES – The York Potash Harbour Facilities, Teesside

YORK POTASH - CONFIDENTIAL | Notice Location: Total Station Dormans Town | 12 Sept 14

YORKPOTASH A Sirius Minerals Project

Notice left with cashier who was going to ask for permission to place notice in store

DTG:12-09:33-Sept-14

ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20

ALL MGRS AND MEASUREMENTS ARE IMAGERY DERIVED AND ARE THEREFORE APPROXIMATE. ALL TIMINGS ARE LOCAL AND APPROXIMATE.

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IA:

PUBLIC CONSULTATION NOTICES – The York Potash Harbour Facilities, Teesside

YORK POTASH - CONFIDENTIAL

Notice Location: Coast & Country Housing
Dormans Town

12 Sept 14

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DTG:12-09:40-Sept-14

ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20

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IA:

PUBLIC CONSULTATION NOTICES – The York Potash Harbour Facilities, Teesside

YORK POTASH - CONFIDENTIAL | Notice Location: Lloyds Pharmacy Redcar | 12 Sept 14

YORKPOTASH A Sirius Minerals Project

DTG:12-09:54-Sept-14

ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20

ALL MGRS AND MEASUREMENTS ARE IMAGERY DERIVED AND ARE THEREFORE APPROXIMATE. ALL TIMINGS ARE LOCAL AND APPROXIMATE.

This product is not to be released to the Media or General Public

IA:

PUBLIC CONSULTATION NOTICES – The York Potash Harbour Facilities, Teesside

YORK POTASH - CONFIDENTIAL	Notice Location: Redcar Golf Club - Redcar	12 Sept 14

YORKPOTASH
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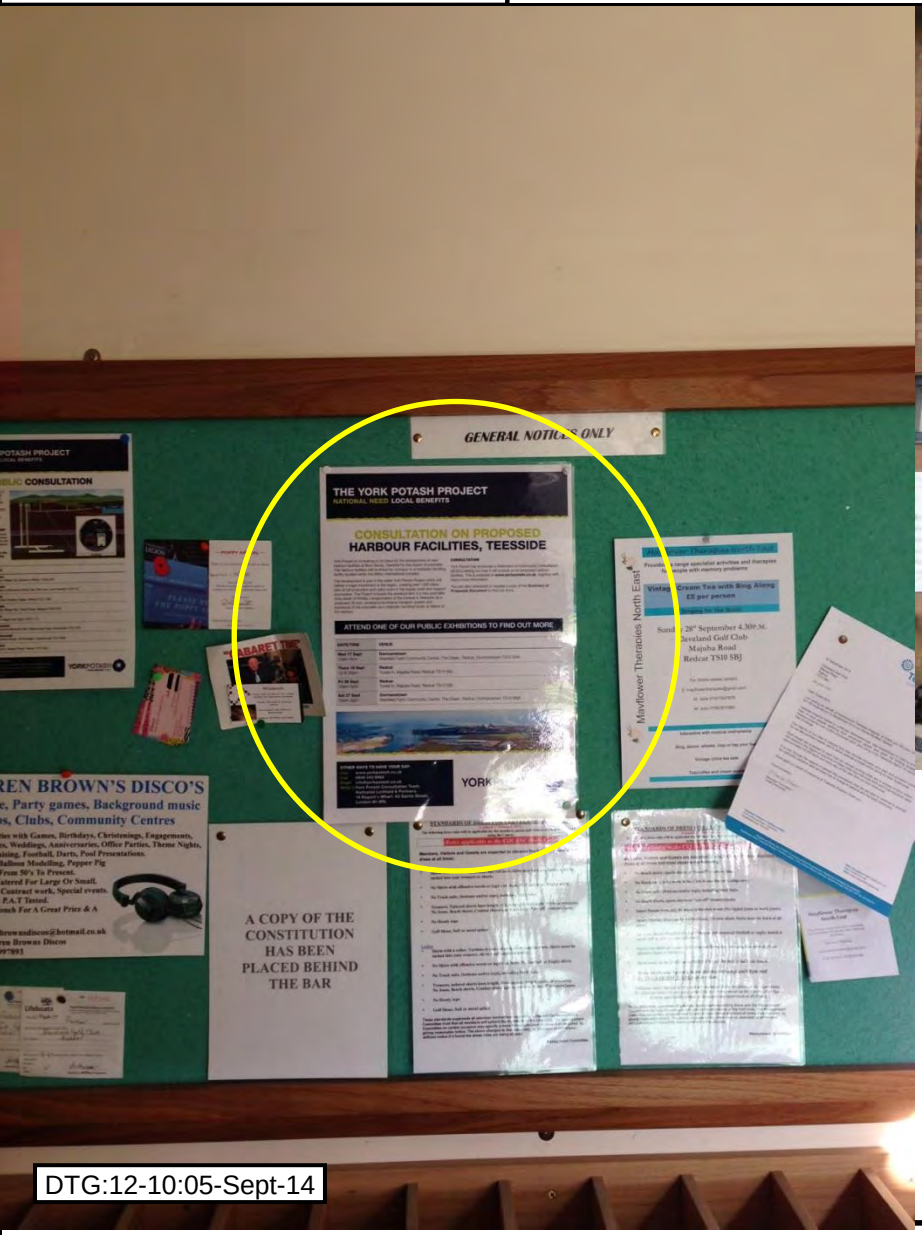

DTG:12-10:05-Sept-14

ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20

ALL MGRS AND MEASUREMENTS ARE IMAGERY DERIVED AND ARE THEREFORE APPROXIMATE. ALL TIMINGS ARE LOCAL AND APPROXIMATE.

This product is not to be released to the Media or General Public

IA:

PUBLIC CONSULTATION NOTICES – The York Potash Harbour Facilities, Teesside

YORK POTASH - CONFIDENTIAL | Notice Location: Council Offices/Library - Redcar | 12 Sept 14

YORKPOTASH
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DTG:11-12:47-Sept-14

ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20

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IA:

PUBLIC CONSULTATION NOTICES – The York Potash Harbour Facilities, Teesside

YORK POTASH - CONFIDENTIAL | Notice Location: Saltscar Surgery - Redcar | 12 Sept 14

YORKPOTASH A Sirius Minerals Project

DTG:10-10:08-Sept-14

ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20

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This product is not to be released to the Media or General Public

IA:

PUBLIC CONSULTATION NOTICES – The York Potash Harbour Facilities, Teesside

YORK POTASH - CONFIDENTIAL | **Notice Location: Seafield House - Redcar** | 12 Sept 14

YORKPOTASH
A Sirius Minerals Project

Notice left with receptionist who was going to ask for permission to place notice in reception

DTG:12-09:24-Sept-14

ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20

ALL MGRS AND MEASUREMENTS ARE IMAGERY DERIVED AND ARE THEREFORE APPROXIMATE. ALL TIMINGS ARE LOCAL AND APPROXIMATE.

This product is not to be released to the Media or General Public

IA:

PUBLIC CONSULTATION NOTICES – The York Potash Harbour Facilities, Teesside

YORK POTASH - CONFIDENTIAL | **Notice Location: Redcar & Cleveland Council Offices** | 12 Sept 14

YORKPOTASH
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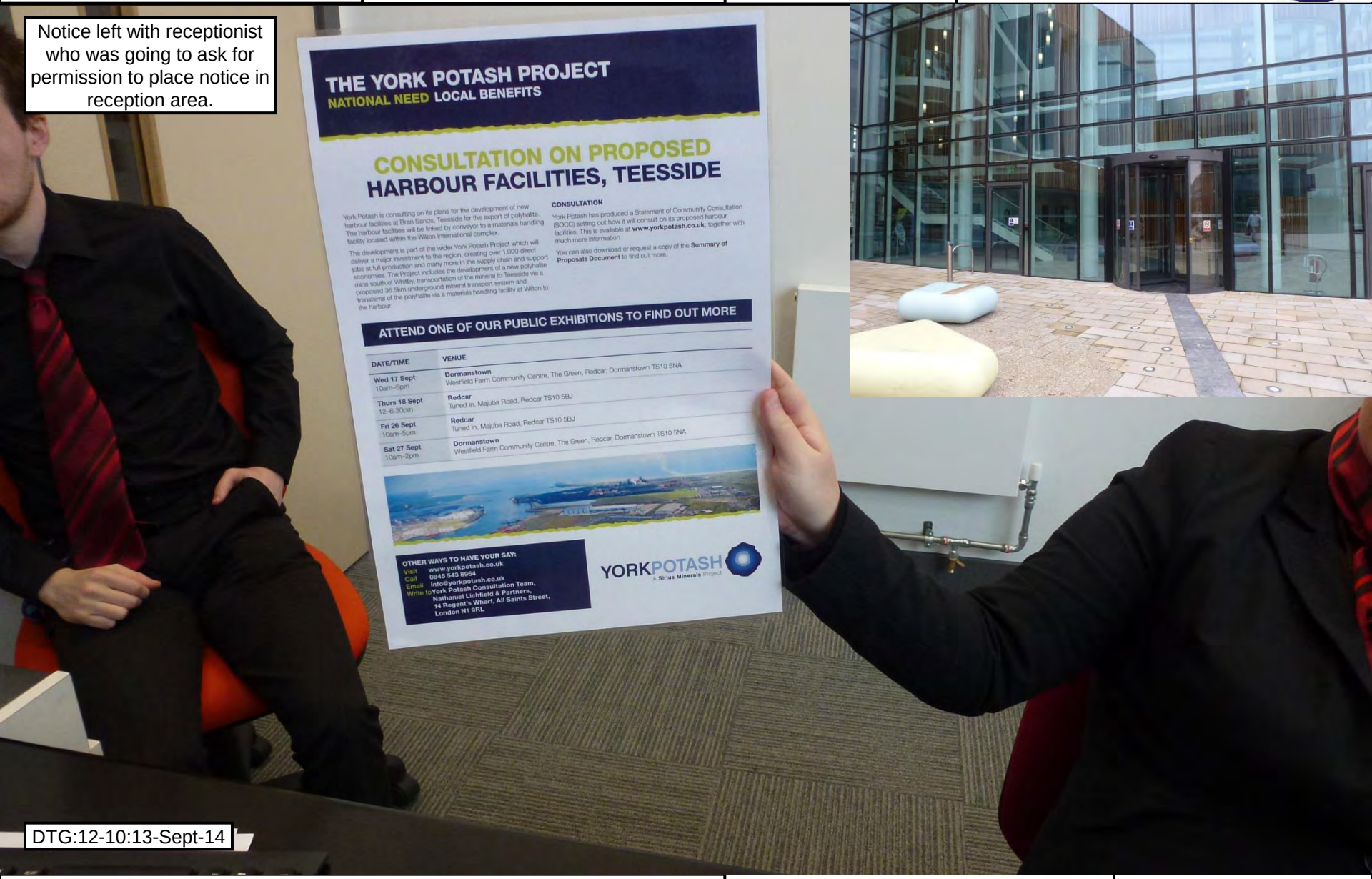
Notice left with receptionist who was going to ask for permission to place notice in reception area.



DTG:12-10:13-Sept-14

ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20
ALL MGRS AND MEASUREMENTS ARE IMAGERY DERIVED AND ARE THEREFORE APPROXIMATE. ALL TIMINGS ARE LOCAL AND APPROXIMATE.

This product is not to be released to the Media or General Public

IA:

PUBLIC CONSULTATION NOTICES – The York Potash Harbour Facilities, Teesside

YORK POTASH - CONFIDENTIAL | Notice Location: Redcar Sports Centre | 12 Sept 14

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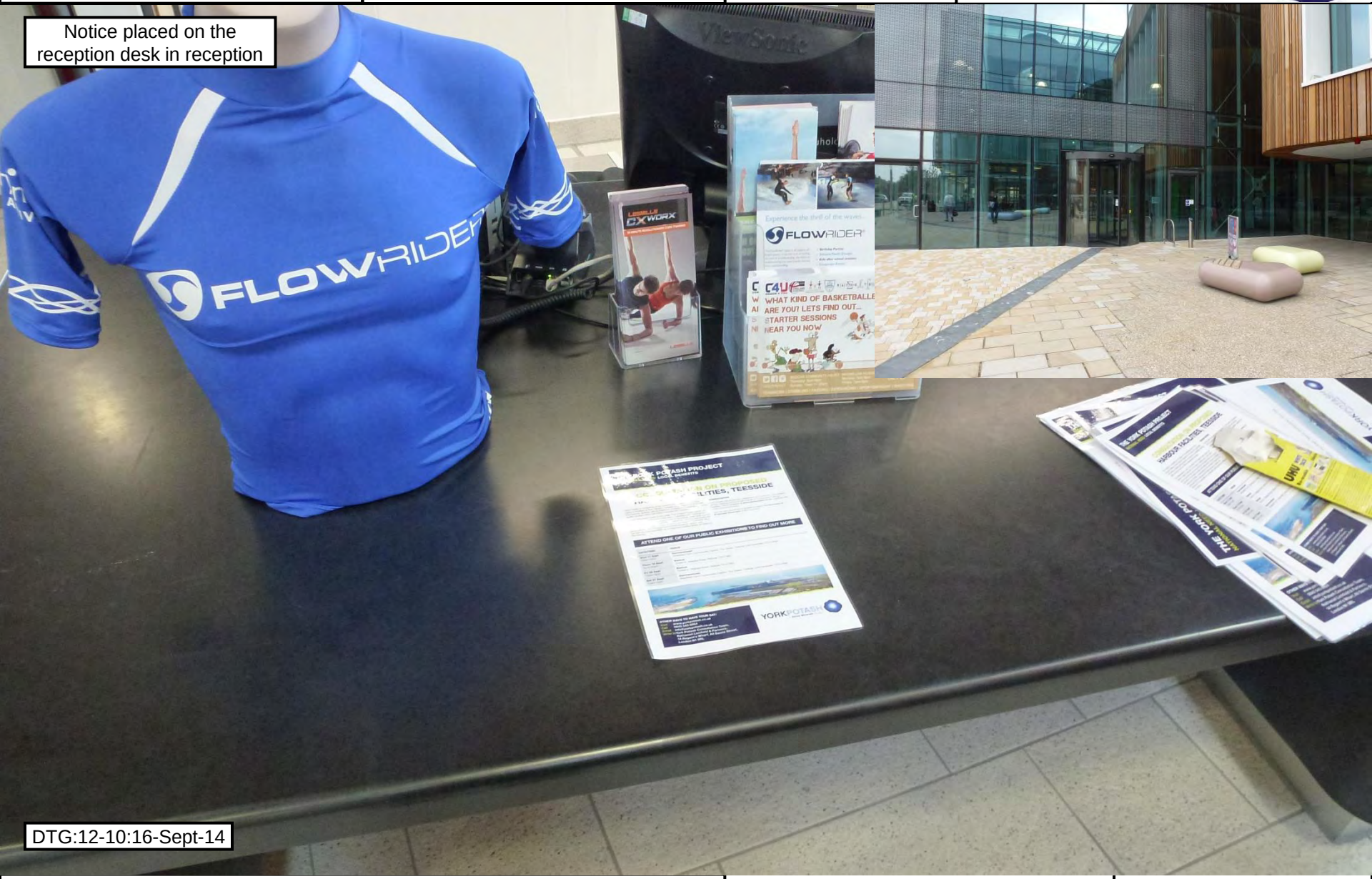
Notice placed on the reception desk in reception



DTG:12-10:16-Sept-14

ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20

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This product is not to be released to the Media or General Public

IA:

PUBLIC CONSULTATION NOTICES – The York Potash Harbour Facilities, Teesside

YORK POTASH - CONFIDENTIAL | Notice Location: Langbaurgh Med Centre - Redcar | 12 Sept 14

YORKPOTASH A Sirius Minerals Project

2x Notices left with the receptionist who was going to ask for permission to place notice in reception areas.

THE YORK POTASH PROJECT
NATIONAL NEED LOCAL BENEFITS

CONSULTATION ON PROPOSED HARBOUR FACILITIES, TEESSIDE

ATTEND ONE OF OUR PUBLIC EXHIBITIONS TO FIND OUT MORE

DATE/TIME	VENUE
Wed 17 Sept 10am–5pm	Dormanstown Westfield Farm Community Centre, The Green, Redcar, Dormanstown TS10 5NA
Thurs 18 Sept 12–8.30pm	Redcar Turned In, Majuba Road, Redcar TS10 5BJ
Fri 26 Sept 10am–5pm	Redcar Turned In, Majuba Road, Redcar TS10 5BJ
Sat 27 Sept 10am–2pm	Dormanstown Westfield Farm Community Centre, The Green, Redcar, Dormanstown TS10 5NA

OTHER WAYS TO HAVE YOUR SAY:
Visit www.yorkpotash.co.uk
Call 0845 543 8964
Email info@yorkpotash.co.uk
Write to York Potash Consultation Team, Nathaniel Lichfield & Partners, 14 Regent's Wharf, All Saints Street, London N1 9RL

YORKPOTASH A Sirius Minerals Project

Registered

If you would like more information managing your Appointment Repeat Medication online

Ask at reception for details

DTG:12-09:24-Sept-14

ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20
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This product is not to be released to the Media or General Public

IA:

PUBLIC CONSULTATION NOTICES – The York Potash Harbour Facilities, Teesside

YORK POTASH - CONFIDENTIAL | Notice Location: Silhouette Hair Dressers Redcar | 12 Sept 14

YORKPOTASH A Sirius Minerals Project

DTG:12-10:24-Sept-14

ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20

ALL MGRS AND MEASUREMENTS ARE IMAGERY DERIVED AND ARE THEREFORE APPROXIMATE. ALL TIMINGS ARE LOCAL AND APPROXIMATE.

This product is not to be released to the Media or General Public

IA:

PUBLIC CONSULTATION NOTICES – The York Potash Harbour Facilities, Teesside

YORK POTASH - CONFIDENTIAL	Notice Location: Clarendon Hotel - Redcar	12 Sept 14

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ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20
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IA:


EYE WEAR
Quality Eye Wear at Affordable Prices
01642 480540
18
EYE TEST APPOINTMENTS
AVAILABLE TODAY
No smoking
O'NEILL
Blink
OPEN
WARNING
PRS
CONVERSE
RADLEY
LONDON
Superdry.
Cadillac
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TODAY
DTG:12-09:24-Sept-14

PUBLIC CONSULTATION NOTICES – The York Potash Harbour Facilities, Teesside

YORK POTASH - CONFIDENTIAL | Notice Location: Go Mobile - Redcar | 12 Sept 14

YORKPOTASH A Sirius Minerals Project

DTG:12-10:42-Sept-14

ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20

ALL MGRS AND MEASUREMENTS ARE IMAGERY DERIVED AND ARE THEREFORE APPROXIMATE. ALL TIMINGS ARE LOCAL AND APPROXIMATE.

This product is not to be released to the Media or General Public

IA:

DTG:12-09:24-Sept-14

ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20

ALL MGRS AND MEASUREMENTS ARE IMAGERY DERIVED AND ARE THEREFORE APPROXIMATE. ALL TIMINGS ARE LOCAL AND APPROXIMATE.

This product is not to be released to the Media or General Public

IA:

PUBLIC CONSULTATION NOTICES – The York Potash Harbour Facilities, Teesside

YORK POTASH - CONFIDENTIAL | Notice Location: Pacitto Cafe - Redcar | 12 Sept 14

YORKPOTASH A Sirius Minerals Project

Notice left with the cashier who was going to ask for permission to place notice in the cafe.

DTG:12-11:00-Sept-14

ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20

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IA:

PUBLIC CONSULTATION NOTICES – The York Potash Harbour Facilities, Teesside

YORK POTASH - CONFIDENTIAL | Notice Location: P J Boville Gallery - Redcar | 12 Sept 14

YORKPOTASH A Sirius Minerals Project

DTG:12-01:08-Sept-14

ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20

ALL MGRS AND MEASUREMENTS ARE IMAGERY DERIVED AND ARE THEREFORE APPROXIMATE. ALL TIMINGS ARE LOCAL AND APPROXIMATE.

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IA:

PUBLIC CONSULTATION NOTICES – The York Potash Harbour Facilities, Teesside

YORK POTASH - CONFIDENTIAL | Notice Location: Oliver's Fish & Chips - Redcar | 12 Sept 14

YORKPOTASH
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DTG:12-11:12-Sept-14

ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20
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IA:

PUBLIC CONSULTATION NOTICES – The York Potash Harbour Facilities, Teesside		
YORK POTASH - CONFIDENTIAL	Notice Location: Jack Mannix Carpets- Redcar	12 Sept 14

YORKPOTASH
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DTG:12-11:24-Sept-14

ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20
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IA:

PUBLIC CONSULTATION NOTICES – The York Potash Harbour Facilities, Teesside

YORK POTASH - CONFIDENTIAL | Notice Location: Plimsoll Line - Redcar | 12 Sept 14

YORK POTASH
A Sirius Minerals Project

Notice left with the cashier who was going to ask for permission to place notice in the bar area.

DTG:12-11:28-Sept-14

ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20

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IA:

PUBLIC CONSULTATION NOTICES – The York Potash Harbour Facilities, Teesside

YORK POTASH - CONFIDENTIAL | Notice Location: Crown & Anchor - Redcar | 12 Sept 14

YORKPOTASH A Sirius Minerals Project

Dormans Sports field.
Oxford Road. Middlesbrough.
Sunday 21st September.
Show Open.10am-5pm.
Car's and Bike's
Bouncy Castle. Giant Slide.
Face Painting. Refreshments.
Live Bands. Trade/Craft stalls.
Public Entry. Adults £2
Under 15's Free (Accompanied)
Sorry No Pets Allowed

THE YORK POTASH PROJECT
NATIONAL NEED LOCAL BENEFITS

CONSULTATION ON PROPOSED HARBOUR FACILITIES, TEESSIDE

York Potash is consulting on its plans for the development of new harbour facilities at Brian Sands, Teesside for the export of polyhalite. The harbour facilities will be linked by conveyor to a materials handling facility located within the Wilton International complex.

The development is part of the wider York Potash Project which will deliver a major investment to the region, creating over 1,000 direct jobs at full production and many more in the supply chain and support economies. The Project includes the development of a new polyhalite mine south of Whitby, transportation of the mineral to Teesside via a proposed 36.5km underground mineral transport system and transfer of the polyhalite via a materials handling facility at Wilton to the harbour.

CONSULTATION

York Potash has produced a Statement of Community Consultation (SOCC) setting out how it will consult on its proposed harbour facilities. This is available at **www.yorkpotash.co.uk**, together with much more information.

You can also download or request a copy of the **Summary of Proposals Document** to find out more.

ATTEND ONE OF OUR PUBLIC EXHIBITIONS TO FIND OUT MORE

DATE/TIME	VENUE
Wed 17 Sept 10am–5pm	Dormanstown Westfield Farm Community Centre, The Green, Redcar, Dormanstown TS10 5NA
Thurs 18 Sept 12–6.30pm	Redcar Tuned In, Majuba Road, Redcar TS10 5BJ
Fri 26 Sept 10am–5pm	Redcar Tuned In, Majuba Road, Redcar TS10 5BJ
Sat 27 Sept 10am–2pm	Dormanstown Westfield Farm Community Centre, The Green, Redcar, Dormanstown TS10 5NA

OTHER WAYS TO HAVE YOUR SAY:
Visit www.yorkpotash.co.uk
Call 0845 543 8964
Email info@yorkpotash.co.uk
Write to York Potash Consultation Team, Nathaniel Lichfield & Partners, 14 Regent's Wharf, All Saints Street, London N1 9RL

YORKPOTASH A Sirius Minerals Project

DTG:12-11:31-Sept-14

ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20
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IA:

PUBLIC CONSULTATION NOTICES – The York Potash Harbour Facilities, Teesside

YORK POTASH - CONFIDENTIAL | Notice Location: Honeymans Butcher- Redcar | 12 Sept 14

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DTG:12-11:43-Sept-14

ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20

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IA:

PUBLIC CONSULTATION NOTICES – The York Potash Harbour Facilities, Teesside

YORK POTASH - CONFIDENTIAL | Notice Location: Blink Eye Wear - Redcar | 12 Sept 14

YORKPOTASH A Sirius Minerals Project

3x Notices left with the receptionist who was going to place notices in key areas.

DTG:12-12:04-Sept-14

ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20

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IA:

PUBLIC CONSULTATION NOTICES – The York Potash Harbour Facilities, Teesside

YORK POTASH - CONFIDENTIAL | Notice Location: Kirkleatham Museum - Redcar | 12 Sept 14

YORKPOTASH A Sirius Minerals Project

DTG:12-12:17-Sept-14

ELECTRO OPTICAL(EO) IMAGERY – Lumix TZ20

ALL MGRS AND MEASUREMENTS ARE IMAGERY DERIVED AND ARE THEREFORE APPROXIMATE. ALL TIMINGS ARE LOCAL AND APPROXIMATE.

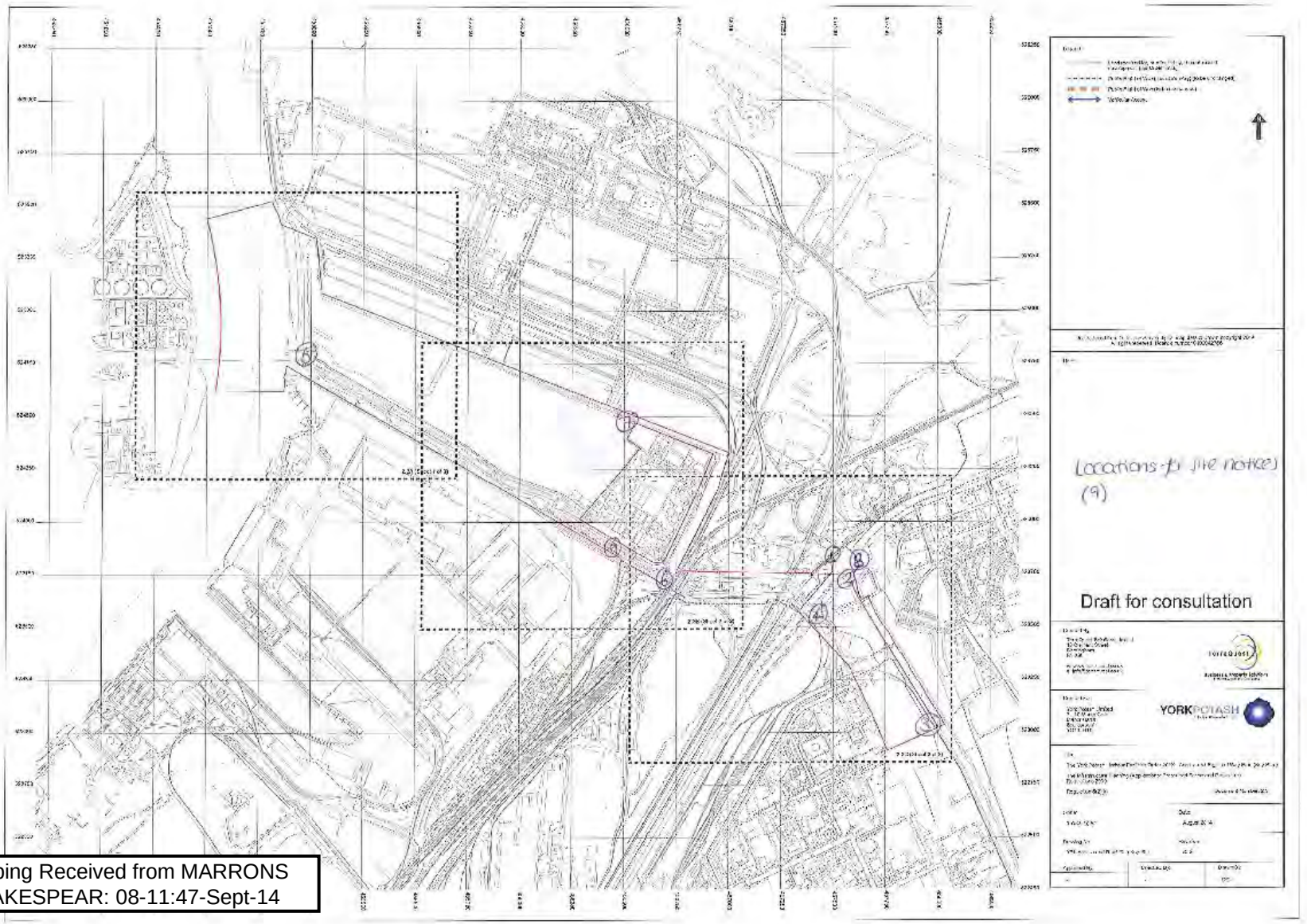
This product is not to be released to the Media or General Public

IA:

Last Slide

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY: The following presentation is a imagery record of the placement of Site Notices Publicising A Proposed Application For A Development Consent Order ("DCO") with regard to The York Potash Harbour Facilities Order 201X. All notices were placed within the immediate area of the Wilton International Complex on Teesside in accordance with the directions received from Marrons Shakespears. The time and date of each notice placement is de-noted by the Date Time Group (DTG) attached to each notice image. The location/notice number is a Marrons Shakespear/York Potash reference number and has no reference to the planning application process.



Mapping Received from MARRONS
SHAKESPEAR: 08-11:47-Sept-14

SITE DEVELOPMENT NOTICES – The York Potash Harbour Facilites Order 201X

YORK POTASH - CONFIDENTIAL	Notice Location: 01	12 Sept 14

YORKPOTASH
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ELECTRO OPTICAL(EO) IMAGERY – Google Maps & Lumix TZ20

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IA:

SITE DEVELOPMENT NOTICES – The York Potash Harbour Facilites Order 201X

YORK POTASH - CONFIDENTIAL	Notice Location: 02	12 Sept 14

YORKPOTASH
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ELECTRO OPTICAL(EO) IMAGERY – Google Maps & Lumix TZ20

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IA:

SITE DEVELOPMENT NOTICES – The York Potash Harbour Facilites Order 201X

YORK POTASH - CONFIDENTIAL	Notice Location: 03	12 Sept 14

YORKPOTASH
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ELECTRO OPTICAL(EO) IMAGERY – Google Maps & Lumix TZ20

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IA:

SITE DEVELOPMENT NOTICES – The York Potash Harbour Facilites Order 201X

YORK POTASH - CONFIDENTIAL | Notice Location: 04 | 12 Sept 14

YORKPOTASH
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ELECTRO OPTICAL(EO) IMAGERY – Google Maps & Lumix TZ20

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IA:

SITE DEVELOPMENT NOTICES – The York Potash Harbour Facilites Order 201X

YORK POTASH - CONFIDENTIAL	Notice Location: 05	12 Sept 14

YORKPOTASH
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ELECTRO OPTICAL(EO) IMAGERY – Google Maps & Lumix TZ20

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IA:

SITE DEVELOPMENT NOTICES – The York Potash Harbour Facilites Order 201X

YORK POTASH - CONFIDENTIAL	Notice Location: 06	12 Sept 14

YORKPOTASH
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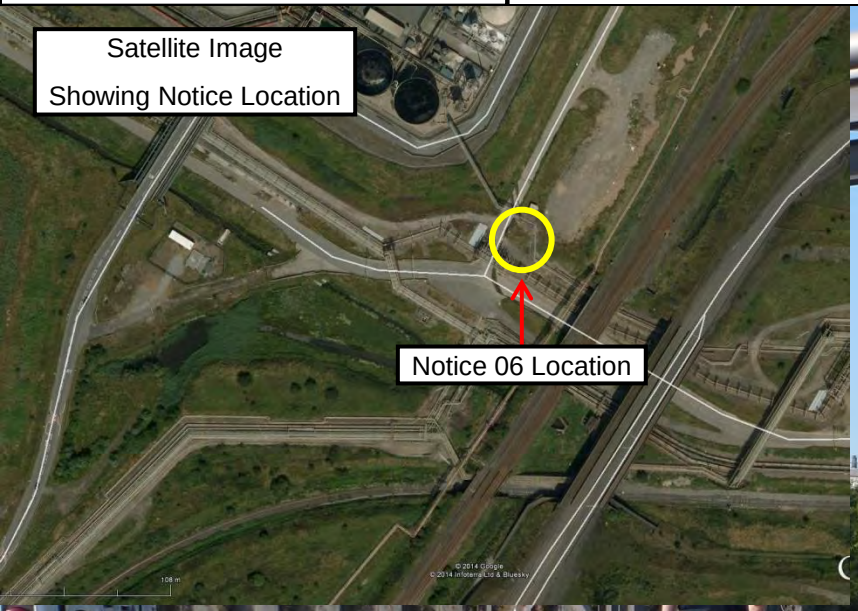


ELECTRO OPTICAL(EO) IMAGERY – Google Maps & Lumix TZ20
ALL MGRS AND MEASUREMENTS ARE IMAGERY DERIVED AND ARE THEREFORE APPROXIMATE. ALL TIMINGS ARE LOCAL AND APPROXIMATE.

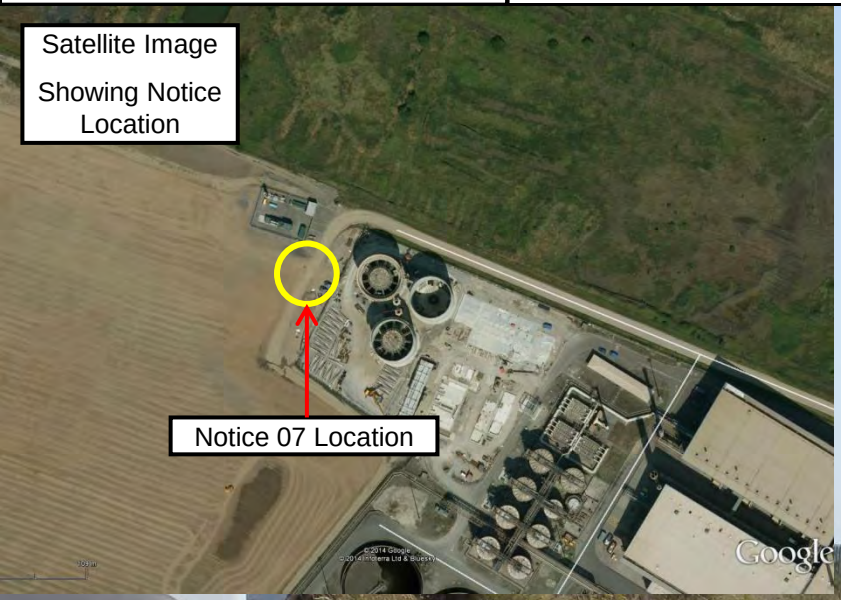
This product is not to be released to the Media or General Public

IA:

SITE DEVELOPMENT NOTICES – The York Potash Harbour Facilites Order 201X

YORK POTASH - CONFIDENTIAL	Notice Location: 07	12 Sept 14

YORKPOTASH
A Sirius Minerals Project



ELECTRO OPTICAL(EO) IMAGERY – Google Maps & Lumix TZ20

ALL MGRS AND MEASUREMENTS ARE IMAGERY DERIVED AND ARE THEREFORE APPROXIMATE. ALL TIMINGS ARE LOCAL AND APPROXIMATE.

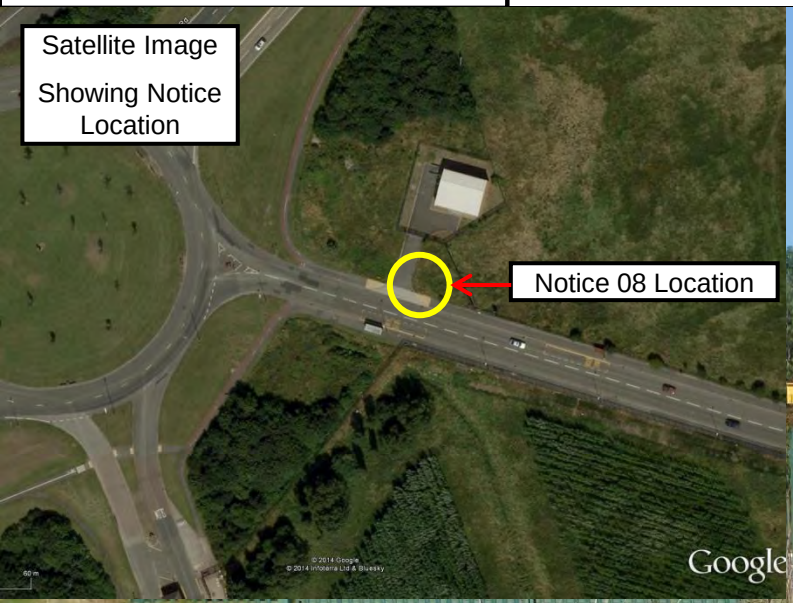
This product is not to be released to the Media or General Public

IA:

SITE DEVELOPMENT NOTICES – The York Potash Harbour Facilites Order 201X

YORK POTASH - CONFIDENTIAL | **Notice Location: 08** | 12 Sept 14

YORKPOTASH
A Sirius Minerals Project



Notice 08

DTG:11-13:09-Sept-14

ELECTRO OPTICAL(EO) IMAGERY – Google Maps & Lumix TZ20

ALL MGRS AND MEASUREMENTS ARE IMAGERY DERIVED AND ARE THEREFORE APPROXIMATE. ALL TIMINGS ARE LOCAL AND APPROXIMATE.

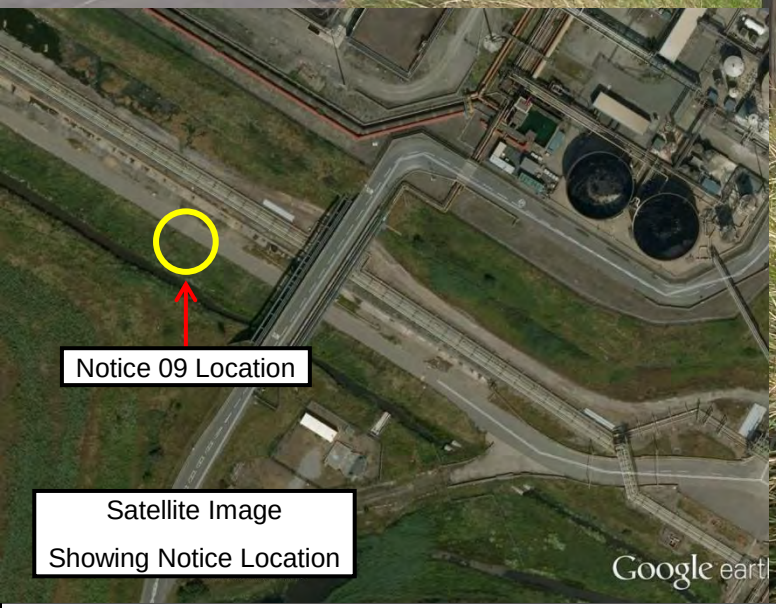
This product is not to be released to the Media or General Public

IA:

YORKPOTASH
A Sirius Minerals Project

Notice 09

DTG:11-14:40-Sept-14



Satellite Image

Showing Notice Location

ELECTRO OPTICAL(EO) IMAGERY – Google Maps & Lumix TZ20

ALL MGRS AND MEASUREMENTS ARE IMAGERY DERIVED AND ARE THEREFORE APPROXIMATE. ALL TIMINGS ARE LOCAL AND APPROXIMATE.

IA:

Last Slide

WEEKLY CHECKS OF YORK POTASH HARBOUR FACILITIES ORDER 201X

PLANNING NOTICES LOCATIONS

The information recorded below relates to the weekly check of public information notices relating to York Potash's planning application for the development of harbour facilities on Teesside. The notice numbers refer to the location of each notice which was assigned to York Potash by Marrons Shakespears its planning consultants. (Ref: TerraQuest – Draft for Consultation Doc No 2.3)

WEEKLY CHECK – 18/09/2014 – Checked by Philip Johnson & Gary Ward

NOTICE NUMBER	TIME CHECKED	CONDITION
One	11:56	Good – Still in Situ
Two	11:56	Good – Still in Situ
Three	13:16	Good – Still in Situ
Four	11:56	Good – Still in Situ
Five	13:27	Good – Still in Situ
Six	13:24	Good – Still in Situ
Seven	13:32	Good – Still in Situ
Eight	11:56	Good – Still in Situ
Nine	13:23	Good – Still in Situ

WEEKLY CHECK – 26/09/2014 – Checked by Gary Ward & Tristan Pottas

NOTICE NUMBER	TIME CHECKED	CONDITION
One	Start 10:30	Good – Still in Situ
Two		Good – Still in Situ
Three		Good – Still in Situ
Four		Good – Still in Situ
Five		Good – Still in Situ
Six		Good – Still in Situ
Seven		Good – Still in Situ
Eight		Good – Still in Situ
Nine	Finish 11:30	Good – Still in Situ

WEEKLY CHECK – 26/09/2014 – Checked by Philip Johnson & Joshua Kelly (aka – The Irish Tramp)

NOTICE NUMBER	TIME CHECKED	CONDITION
One	10:35	Good – Still in Situ
Two	10:35	Good – Still in Situ
Three	09:58	Good – Still in Situ
Four	10:02	Good – Still in Situ
Five	10:10	Good – Still in Situ
Six	10:15	Good – Still in Situ
Seven	10:17	Good – Still in Situ
Eight	10:35	Good – Still in Situ
Nine	10:06	Good – Still in Situ

Appendix 21

Photographs of public exhibitions


ENVIRONMENTAL IMPACTS AND MITIGATION
SOCIAL AND ECONOMIC BENEFITS
OVER 4200
£1.2
£48M
£233M IN TAX RECEIPTS
JOB OPPORTUNITIES FOR GENERATIONS TO COME
YORKPOTASH