Appendix 12.2 York Potash Project Harbour Facilities Transport Assessment

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1 INTRODUCTION

1.1 Background

1.1.1 This Transport Assessment (TA) has been produced in support of a Development Consent Order (DCO) application for Harbour facilities in Teesside. The Harbour facilities form part of the proposed York Potash Project (YPP) for the winning, working, transfer and processing of polyhalite in North Yorkshire and Redcar and Cleveland. The YPP consists of four principal developments:

- A Mine, with the minehead (the mine's surface development) located at Dove's Nest Farm / Haxby Plantation;
- A Mineral Transport System (MTS) to transport the polyhalite from the Mine to Wilton, Teesside;
- A Materials Handling Facility (MHF) at Wilton; and
- Harbour facilities at Teesside.

1.1.2 The proposed Harbour facilities, 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 quay and ship loaders).
- 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, other than in the cumulative impact assessment).
- Product storage facilities adjacent to the port terminal, in the form of storage surge bins.
- Staff welfare facilities.

1.1.3 The TA considers the impacts of the Harbour facilities in isolation and then considers the cumulative impact of all YPP principal developments within a defined study area for both the construction and operational phases of the project.

1.1.4 This TA is supported by a Framework Construction Traffic Management Plan (CTMP) which provides details of how HGV and workforce movements would be managed during the construction phase, including details of proposed monitoring, enforcement and control measures.

1.2 Planning history

1.2.1 Planning applications for the Mine and MTS and for the MHF were submitted on 30 September 2014. The application for the Mine and MTS is a 'straddling application' that was submitted to both the North York Moors National Park Authority (NYMNPA), reference NYM/2014/0679/MEIA, and Redcar and Cleveland Borough Council (RCBC), reference R/2014/0627/FFM. The application for the MHF has been submitted to RCBC as a 'County Matter, planning application, reference R/2014/0626/FFM.

Consultation

1.2.2 In preparing this TA a series of pre-application meetings have been undertaken with transport stakeholders. **Table 1** provides a summary of meetings held and technical notes produced.

Table 1 **Summary of Consultation Meetings and Technical Notes**

	Date	Summary of consultation	Issued to / meeting with
1.	27 February 2014	Technical note (ref: N008) issued detailing the proposed methodology for the derivation of assessment traffic flows, to inform the TA and EIA.	Highways Agency
2.	24 April 2014	Meeting with the Highways Agency to provide an outline of the project and understand the elements of the assessment that will be of particular interest.	Highways Agency
3.	24 April 2014	Meeting to provide preliminary information on the project and discuss the scope of the assessment.	RCBC
4.	7 August 2014	Meeting with the Highways Agency to provide an update on traffic demand and confirm the level of assessment required.	Highways Agency
5.	27 August 2014	Following a telephone conversion, traffic flow information was emailed to obtain comments/concerns regarding traffic impact in the Middlesbrough area	Middlesbrough Council

1.2.3 During consultation with stakeholders, a number of key issues with respect to the TA were identified. **Table 2** provides a broad summary of these issues and sets out how or where they have been addressed.

Table 2 **Summary of key consultation issues**

	Key Issues	Summary of issue	Where the issue is addressed
1	Study area	The extent of the local study area within the RCBC and Highways Agency administration areas.	**Figure 2** details.
2	Hours of assessment	The Highways Agency requested that an assessment of the traffic impact should be carried out for a traditional weekday peak hour.	Weekday evening peak hour has been assessed and the results summarised in **Section 6** and **Section 7**.
3	Socio economics	The Highways Agency requested details of the application of socio-economic work to derive the trip distribution of construction workers.	Details are provided in **Section 5**.
4	Mitigation measures	RCBC and the Highways Agency requested details of travel planning measures to mitigate the traffic impact.	A Construction Traffic Management Plan is submitted in support of the TA.
5	Dogger Bank Wind Farm	RCBC and the Highway Agency requested details of how the construction of the Dogger Bank Offshore Wind Farm would affect the YPP proposals.	Details are provided in **Section 4**.
6	Cumulative Impact	The Highway Agency asked to see details of the YPP cumulative traffic demand on their network	Details are provided in **Section 7**.

2 DEVELOPMENT PROPOSALS

2.1 Introduction

2.1.1 This section of the report provides an overview of the proposed Harbour facilities. In summary, they comprise of:

- A port terminal (i.e. quay) on the southern bank of the Tees estuary (with capital dredging 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) .
- 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, other than in the cumulative impact assessment).
- Product storage facilities (surge bins) adjacent to the quay and ship loaders on the quay.
- Staff welfare facilities.

2.1.2 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 over the time periods shown in **Table 3** below.

Table 3 Proposed throughputs of the port terminal during Phase 1 and Phase 2

Operational phase	Operation period following end of construction	Throughput
Phase 1	0 to 6 years	6.5mtpa
Phase 2	6 to 50 years	13mtpa

2.1.3 For the port terminal two options are being considered for the quay construction; an open quay structure and a solid quay structure.

2.1.4 The open quay structure would be comprised of a reinforced concrete deck supported by driven steel tubular piles. The piles would support the concrete deck structures onto which the ship loader rails and supports for the conveyor would be fixed.

2.1.5 The solid 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.

2.1.6 The Open quay structure would require more deliveries by road and therefore forms the basis for the scenarios presented in this TA.

2.1.7 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 proposed phased construction of the quay. Dredging would also be required to create a stable slope beneath the quay for the open suspended deck option.

2.1.8 A covered conveyor system is proposed (fully enclosed in parts). It would consist of two parallel belt conveyors running in an elevated single conveyor bridge.

2.1.9 Access to the Harbour for construction vehicles would be from the existing A1085 (Trunk Road) West Coatham Lane roundabout junction via the existing southern arm serving the Wilton site and a currently unused roundabout arm to the west. A layout of the proposed access is shown in **Annex 1.** Following security checks, construction vehicles would then proceed to the Harbour site via a series of internal roads.

2.1.10 Upon completion of the construction works, access to the Harbour facilities for the operational phase would be from the existing A1085 (Trunk Road) West Coatham Lane roundabout junction; via the southern arm of the roundabout which currently serves the Wilton site, this arm would also serve the MHF.

2.1.11 Within the Wilton site, traffic would first access the MHF site and then travel along an existing private service road that runs under the A1085 (Trunk Road) to the Harbour facilities.

2.1.12 The layout of the proposed Harbour facilities is shown in **Annex 2**.

2.2 Parking

2.2.1 **Table 4** sets out the proposed parking provision at the Harbour facilities during the construction and operational phases.

Table 4 Proposed Harbour facilities parking provision

Site	Maximum Parking Provision*	
	Construction	Operations
Harbour – Phase 1	70	10
Harbour – Phase 2	64	10
* Excludes provision for visitors and disable parking which will be provided in addition.		

2.3 Traffic generation

2.3.1 During the construction phase, the associated demand for personnel, plant and materials has the potential to generate large quantities of traffic on the highway network for the duration of the construction period.

2.3.2 It is feasible that quantities of materials could be delivered by sea and transferred by internal roads. Notwithstanding, in order to ensure that a robust assessment is undertaken, no allowance has been made for such deliveries and all demand is assumed to be transferred by public road herein. The traffic demand during the construction phase that has informed the TA has been derived by way of a 'first principles' approach. This has been based on traffic volumes from an understanding of material quantities and personnel numbers required. Full details of this derivation are contained in **Section 5** of this TA.

2.3.3 During the operational phase, the Harbour facilities would require 26 employees during Phase 1, increasing to 36 employees by Phase 2, of which 18 would be required on any one day. The 18 employees would then be further disaggregated into three shifts, resulting in a peak daily demand of 10 employees on site at any one time.

2.3.4 During the operational phase, it is not proposed that there would be any regular HGV movements from the Harbour facilities; save for incidental deliveries such as for maintenance and refuse collection. Therefore, the traffic impact associated with the operational phase would be inconsequential and is not considered further within this TA.

2.4 Construction programme

2.4.1 It is anticipated that construction of the Harbour facilities would commence in 2017; with construction activities programmed to take 17 months. **Annex 3** of this TA provides a detailed construction programme. The Phase 2 works are programmed to commence within six years of completion of Phase 1 and are also programmed to take 17 months.

2.5 Haul routes

2.5.1 A review of the potential supply chain within the study area indicates that Teesside is the most likely source for most construction materials. As such, the primary haul route has been developed assuming that all HGV trips would have an origin and destination in that region utilising the A66, and access the site from the A1085 Trunk Road.

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3 POLICY AND GUIDANCE

3.1 Introduction

3.1.1 This section sets out the framework which has guided and influenced the development of the transport strategy for the construction and operation of the YPP.

3.2 National planning policy

National Planning Policy Statements

3.2.1 The assessment of potential traffic and transport impacts has been made with specific reference to the Government's National Policy Statements (NPSs). NPSs set out policies or circumstances that Ministers consider should be taken into account in decisions on Nationally Significant Infrastructure Projects (NSIP).

3.2.2 The National Policy Statement for Ports (2012) considers the potential traffic and transport impacts relating to port developments and the specific requirements are set out in **Table 5**, together with a commentary of how the application has complied.

Table 5 NPS Traffic and Transport requirements

NPS requirement	TA compliance
If a project is likely to have significant transport implications, the applicant's ES (see section 4.7) should include a transport assessment, using the WebTAG methodology stipulated in Department for Transport guidance. The assessment should distinguish between the construction, operation and decommissioning project stages as appropriate.	This document constitutes a Web TAG compliant TA.
Applicants should consult the Highways Agency and/or the relevant highway authority, as appropriate, on the assessment and mitigation.	**Section 1** provides details of the pre-application consultation that has been undertaken.
Where appropriate, the applicant should prepare a travel plan, including demand management measures to mitigate transport impacts. The applicant should also provide details of proposed measures to improve access by public transport, walking and cycling, to reduce the need for parking associated with the proposal and to mitigate transport impacts.	The supporting CTMP provides details for the construction phase. **Section 2** provides details of low traffic demand for the operational phase and, therefore, the development of a travel plan is not necessary.

National Planning Policy Framework (NPPF)

3.2.3 Section four of the NPPF considers 'Promoting Sustainable Transport' and opens with the statement that "Transport Policies have an important role to play in facilitating sustainable development but also contributing to wider sustainability and health objectives". In respect of transport, paragraph 32 of the NPFF states 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; and*
> - *Improvements can be undertaken within the transport network that cost effectively limits the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe."*

3.2.4 The NPPF clearly sets out the need for a TA where significant vehicle movements are anticipated. The NPPF requirements for sustainable transport modes and improvements to the transport network are less applicable due to the nature of this application and its limited operational requirements, as set out in detail within this TA.

3.3 Local planning policy

Redcar and Cleveland, Local Development Framework

3.3.1 The RCBC Core Strategy was adopted on the 19 July 2007. This set the context for the subsequent development of the third Redcar and Cleveland Local Transport Plan, of particular relevance to this application and transport are the following 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, focuses on improving accessibility within and beyond the Borough, focusing 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 equestrians networks including routes between urban and rural areas.

3.3.2 In response to the NPPF's change of direction to a Local Plan approach, a Local Plan scoping document was published by RCBC in November 2012 which reviewed current LDF policies. The document concluded that the transport policies are consistent with the NPPF and therefore will be retained for the emerging Local Plan.

3.3.3 The Draft Local Plan was agreed by Cabinet on 21 September 2013, and consultation closed during December 2013.

Middlesbrough Council, Local Development Framework

3.3.4 The Middlesbrough Council (MC) Core Strategy was adopted in February 2008. This set the context for the subsequent development of the third Middlesbrough Local Transport Plan, of particular relevance to this application and transport are the following policies:

- Policy CS17Transport Strategy, focuses on delivering a sustainable transport network with partner organisations, including the improvement of reliability within the A19, A66, A172, and East Middlesbrough transport corridors through both highway and public transport projects.
- Policy CS18 Demand Management, notes that for development proposals it is necessary to include measures which look to improve mode share. The policy prioritises the use of a balanced car parking strategy, the promotion of car sharing, the exploration of Park and Ride feasibility, the promotion of cycling and walking , advancements in the accuracy of journey time prediction and the use of travel plans and transport assessments for all major developments.
- Policy CS19 Road Safety, seeks to improve road safety and environmental quality with partner organisations in both residential and commercial areas. This includes the use of work-place travel plans at new developments.
- Policy CS20 Green Infrastructure, aims to create a connected green infrastructure network within and beyond the council's jurisdiction.

Tees Valley Unlimited, Economic and Regeneration Statement of Ambitio

3.3.5 'Tees Valley Unlimited' is the local LEP with a mandate to deliver jobs and economic growth across the Tees Valley.

3.3.6 Their Statement of Ambition 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 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.
- Deliver quantified reductions in greenhouse gas emissions within cities and regional networks, taking account of cross-network policy measures.

3.4 Local Transport Plans

Redcar and Cleveland, Local Transport Plan

3.4.1 The Redcar and Cleveland third Local Transport Plan, 2011-2021 (LTP3) was adopted by RCBC 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.
- Improve quality of life and a healthy natural environment.

3.4.2 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.

3.4.3 The application has acknowledged these five key policies through the development of a YPP transport strategy to mitigate the project's traffic impact (further details are contained in **Section 4**).

Middlesbrough Council, Local Transport Plan

3.4.4 The Middlesbrough Council third Local Transport Plan, 2011-2016 builds upon the core strategy by identifying seven ambitions:

- Highways Maintenance – MC will prioritise road safety work over network improvements
- Network Management – MC will actively promote and improve the public transport system as well as improving the car users' experience.
- Active Travel – MC will reduce the obstructions to walking and cycling infrastructure
- Road Safety – MC will aim to reduce road casualties in line with government advice.
- Public Transport – MC will engage with franchise holders and the government to provide investment in infrastructure projects.
- Sustainable Living – MC will look to support employment premises located in areas of good public transport.
- New Development – MC will seek to add value to the town through development without detrimental traffic effects.

3.5 Other legislation, standards and guidance

3.5.1 The traffic impact assessment has been guided by the following documents.

The Strategic Road Network and the Delivery of Sustainable Development

3.5.2 The Department for Transport Circular 02/2013 entitled 'The Strategic Road Network and the Delivery of Sustainable Development' was published in September 2013, replacing circular 02/2007 'Planning and the Strategic Road Network', and sets out the ways in which the Highways Agency will engage with communities and developers to deliver sustainable development, and thus economic growth, whilst safeguarding the primary function and purpose of the strategic road network.

3.5.3 Under the heading of Environmental Impact, 02/2013 notes that:

> *"…developers must ensure all environmental implications associated with their proposals, are adequately assessed and reported so as to ensure that the mitigation of any impact is compliant with prevailing policies and standards. This requirement applies in respect of the environmental impacts arising from the temporary construction works and the permanent transport solution associated with the development, as well as the environmental impact of the existing trunk road upon the development itself."*

The Design Manual for Roads and Bridges

3.5.4 The Design Manual for Roads and Bridges (DMRB) was introduced in 1992. It provides a comprehensive manual system which accommodates current standards, advice notes and other published documents relating to the trunk road network. It is also considered applicable to other (non-trunk road) high speed roads.

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4 BASELINE CONDITIONS

4.1 Introduction

4.1.1 Teesside is the given name for a group of towns situated in the north-east of England. Teesside incorporates the towns of Redcar, Middlesbrough, Stockton-On-Tees, Thornaby-on-Tees, Billingham, Cleveland, and other smaller settlements near the River Tees.

4.1.2 Access to the wider strategic highway network is predominantly via the A66 and A19 dual carriageways, which link to the A1(M). The A1(M) provides access to the key north south corridor passing close to Newcastle upon Tyne and Leeds. The A1(M) also provides access to the east west transport corridor of the M62.

4.1.3 In the vicinity of the Harbour facilities, the A1085 Trunk Road begins at the junction with the A66 and A1053, to the southwest of the site, and leads to Redcar to the east. From the roundabout junction with the A66 and A1053, the A1085 is a two lane dual carriageway road through the roundabout junctions serving SSI and the Wilton site, and reduces to a four lane single carriageway road approximately 500m to the northeast of the roundabout junction serving the Wilton site. The A1085 continues east as a four lane single carriageway before narrowing to a two lane single carriageway road on entering Redcar.

4.1.4 At this point the character of the road changes when entering Redcar, with the site frontage on both sides passing a typical built up urban area including residential houses, shops and Redcar and Cleveland College. Beyond Redcar, the road continues south along the coast as the A1085 Coast Road routing through Marske-by-the-Sea where it terminates at the roundabout with the A174.

4.2 Study Area

4.2.1 Definition of the study area for the Harbour facilities TA has been informed by the most probable routes for traffic, for both the movement of materials and employees, during both the construction and operational phases of the project. In the first instance, a wider study area has been developed to enable all traffic generated by all elements of the YPP to be assigned to the highway network and the in combination traffic effects assessed at a local level.

4.2.2 In consultation with stakeholders two local study areas have also been defined to enable reviewers to concentrate on assessments specific to their administration areas. The local study areas and stakeholder interests are detailed in **Table 6**. **Figures 1**and **2** provide details of the wider study area and the local study areas adopted.

4.2.3 For the purpose of the Harbour facilities Traffic and Transport Cumulative Impact Assessment (CIA) the relevant local study area is Redcar and Cleveland. This TA, therefore, considers the Harbour facilities traffic and cumulative traffic generated by all elements of the YPP, and assesses the resultant effects that are evidenced within the Redcar and Cleveland local study area.

Table 6 **CIA local study area/stakeholders**

Study Area	Stakeholder interest
Redcar and Cleveland	• Redcar and Cleveland Borough Council (RCBC) • Middlesbrough Council (MC) • Highways Agency (HA) • North York Moors National Park Authority (NYMNPA)
North Yorkshire	• North Yorkshire County Council • NYMNPA

4.2.4 The cumulative impact of YPP traffic on the North Yorkshire local study area was considered in the application for the Mine and MTS (references NYM/2014/0679/MEIA and R/2014/0627/FFM). For consistency and ease of cross reference between applications, link, junction and accident cluster notation for the wider study area has been adopted in all submission documents and is, therefore, referenced herein.

4.2.5 The links considered in this TA (Links 1 to 12, 14, 15 and 44) are described below (in numerical order for ease of reference). **Figure 3** depicts the wider highway network surrounding the study area providing a graphical overview of the existing highway network.

Link 1

4.2.6 The A19 connects York to the south with Newcastle upon Tyne to the north passing the North York Moors to the east. The A19 is a high speed modern dual carriageway with two lanes in each direction widening to three and four lanes within the Middlesbrough region. The road is subject to the national speed limit and forms part of the strategic road network.

Link 2

4.2.7 The A66 is the main west to east traffic route connecting Teesside to Workington on the west coast. To the west the A66 passes through Darlington and providing wider links to the A1(M) and M6 and to the east the A66 terminates at A1053/A1085 roundabout. Within the study area the A66 is a high speed dual carriageway with two lanes in each direction.

Link 3

4.2.8 The A1053 links the A66 to the north with the A174 to the south. The road is a dual carriageway and subject to the national speed limit. The A1053 forms part of the strategic road network.

Link 4

4.2.9 The A174 from its junction with the A1053 heading west is a high speed dual carriageway. The road narrows to a single carriageway after the roundabout for Grewgrass Lane, which is crossed by a PRoW.

Link 5

4.2.10 The A174 from its junction with the A1053 heading east is a modern dual carriageway and connects to the A19 to the west, where it connects to the wider highway network. The road is subject to the national speed limit and forms part of the strategic road network.

Link 6

4.2.11 The A171 south of the A174 travels through a residential area where properties front on to the road. The road is single carriageway with continuous footways on both sides and includes on-road cycle routes in parts. This section of the road is subject to a 30mph a speed limit.

Link 7

4.2.12 From its junction with the A174, the A172 extends south east through a built up urban environment passing sensitive receptors such as a school and residential properties to the junction with the A1043. This section of road is single carriageway and subject to 30 and 40mph speed limits with an on-road cycle lane in parts.

Link 8

4.2.13 From its junction with the A1043 the A172 changes in character to a modern ‘A’ road with no frontage development and continues south towards Stokesley. This section of the A172 is subject to the national speed limit reducing to 40mph upon the approach to Nunthorpe, the road is also crossed by numerous PRoW.

Link 9

4.2.14 The A1043 connects the A172 to the A171 and is a modern single carriageway road subject to the national speed limit and is crossed by an existing PRoW.

Link 10

4.2.15 This section of the A171 is a modern dual carriageway to its junction with Guisborough where the road becomes a modern single carriageway; both sections are subject to the national speed limit. The road is crossed by a number of PRoW including ‘Tees Link’ a Long Distance Walking Route.

Link 11

4.2.16 The A173 is a single carriageway road subject to the national speed limit linking Guisborough with Skelton in Cleveland to the north. From its junction with the B1268 the route comprises a series of tight bends before entering Skelton in Cleveland.

Link 12

4.2.17 The A171 heads east towards Whitby and is the main east to west link through the NYMNP and is typically subject to the national speed limit apart from where the route passes by small sporadic settlements where the speed limit drops to 50mph. The road is mostly single carriageway however a crawler lane is provided in both directions where the road negotiates a series of tight bends and a 10%

gradient hill at Birk Brow Bank. Two PRoW cross this section of road, one of which is the 'Cleveland Way' a National Trail.

Link 14

4.2.18 This section of the A174 is a single carriageway road passing some sensitive receptors in Skelton-in-Cleveland, such as residential frontage and a community centre. There are some sharp bends on the road as it passes through Spring Wood. The road is subject to national speed limit before reducing to 30mph within Skelton-in Cleveland.

Link 15

4.2.19 This section of the A174 is modern single carriageway road which bypasses Skelton-in-Cleveland and Brotton, as the road approaches Brotton a crawler lane is provided for slow moving vehicles up a steep section of road. The road is subject to the national speed limit and crossed by numerous PRoW.

Link 44

4.2.20 The A1085 begins at the junction with the A66 and A1053 and bounds Redcar to the north. The road is a dual carriageway subject to the national speed limit, with segregated cycle routes provided along both sides of the road.

4.3 Traffic flow data

4.3.1 Existing traffic flow data for all the key roads within the study area has been captured from a number of primary and secondary sources. The datasets used in the assessment are summarised in **Table 7** below and shown graphically in **Figure 4**.

Table 7 Traffic count data sources

Source / Commissioned by	Type	Available Date	Date / Period
Department for Transport	Calculated Annual Average Daily Flows (AADF)	Classified AADF	An average day in 2012
RHDHV	Temporary Automatic Traffic Counts (ATC)	7-day ATCs on selected links	22 November 2013 – 26 November 2013 8 May 2014 – 15 May 2014

RHDHV	Manual Classified Counts	Classified turning counts at selected junctions within RCBC area	12 March 2014 (07:30 – 09:30, 13:00 – 15:00 and 16:30 – 18:30)
Middlesbrough Council	Permanent ATC	Hourly traffic flows	Continuous

4.3.25 The resultant baseline traffic flow data for the strategic road network and local highway network is summarised in **Table 8**.

4.3.26 It should be noted that the technology employed at the permanent ATC sites classifies vehicle type by length, and it is not possible to differentiate HGVs from buses and coaches. Therefore, this assessment uses the term HGV as a proxy for a collective of those vehicle types for both baseline data, development generated traffic and (recognising the similar environment characteristics of the vehicle types) the impact assessment. All classified counts have been adjusted to provide the same input data as the ATCs.

Table 8 Existing daily traffic flows on relevant links

Link	Description	Background 2012/2013/2014 flows (24hr AADT*)	
		Total Vehicles	Total HGVs
1	A19 (west of Middlesbrough)	91,852	6,407
2	A66 (north of Middlesbrough)	26,136	2,208
3	A1053 (east of Middlesbrough)	12,179	1,057
4	A174 (south of Redcar)	30,855	1,286
5	A174 (south of Middlesbrough)	25,520	1,513
6	A171 (Ormesby Bank)	14,836	394
7	A172 (Dixons Bank)	19,732	719
8	A172 (towards Stokesley)	11,196	454
9	A1043 (south of Middlesbrough)	13,044	553
10	A171 (Middlesbrough Road)	20,015	793
11	A173 (Skelton Ellers)	5,344	296

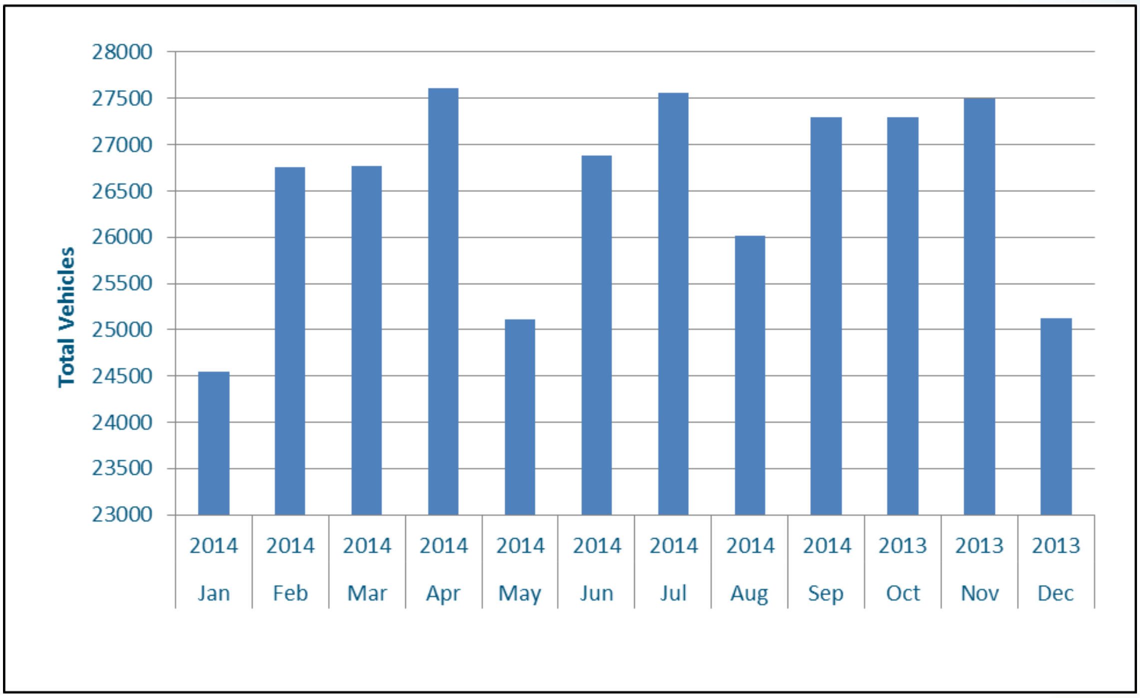
Link	Description	Background 2012/2013/2014 flows (24hr AADT*)	
		Total Vehicles	Total HGVs
12	A171 (between the A173 and Scaling Dam)	9,683	525
14	A174 (Apple Orchard Bank)	11,601	393
15	A174 (Skelton-in-Cleveland)	10,646	537
44	A1085 – Trunk Road	17,406	839
Key			
*	AADT – Annual Average Daily Traffic		
	2012 traffic flows, sourced from the Department for Transport		
	2013 / 2014 traffic flows, from commissioned traffic counts		
	2013/2014 traffic flows, sourced from Middlesbrough Council		

4.4 Daily and seasonal variations in background traffic flows

4.4.1 In order to determine the correct assessment period it is necessary to build up a comprehensive understanding of annual and daily fluctuations in traffic.

4.4.2 To understand annual fluctuations in traffic within the local study area, data from a permanent ATC on the A66 has been extracted for a one year period between October 2013 and September 2014. **Chart 1** demonstrates that monthly traffic profiles are changeable throughout the year with the peak of April being 3,065 vehicles per day (11.1%) greater than January traffic flows. To counter these fluctuations, 'neutral' periods have been agreed with RCBC for the purpose of this TA.

Chart 1 **Traffic survey annual traffic profile**



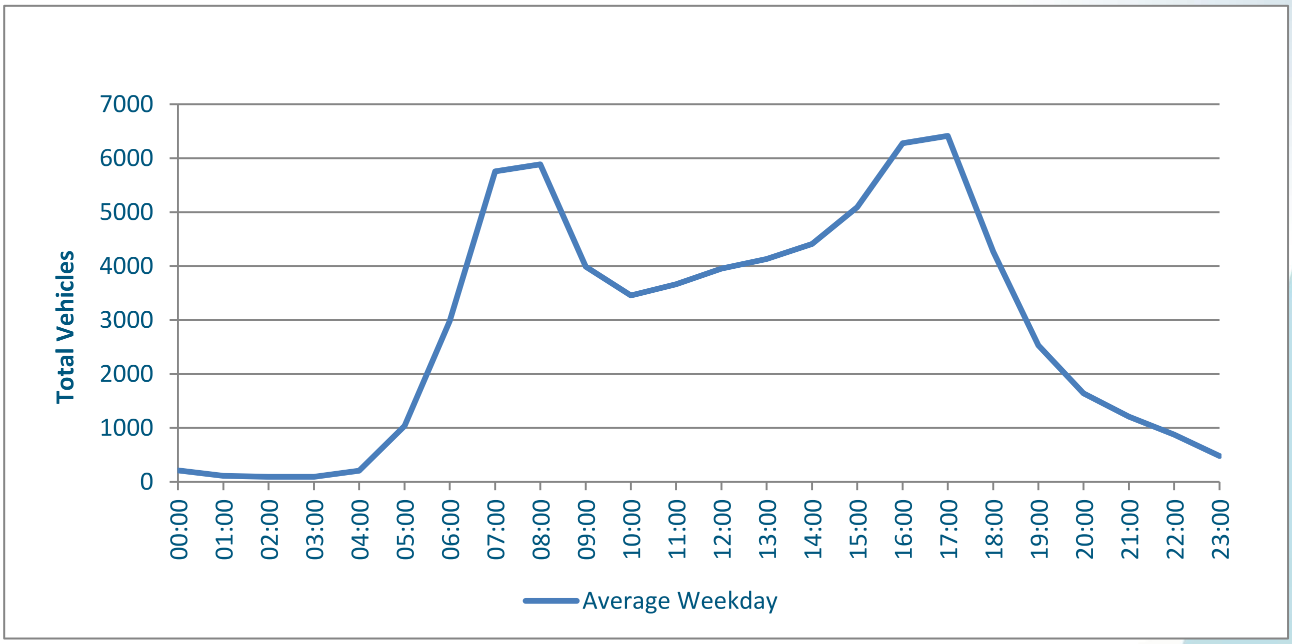
4.4.3 **Chart 2** provides a daily profile from an average of three temporary ATCs commissioned in the RCBC area. It can be observed from **Chart 2** that daily traffic profiles are typical of much of the UK whereby there are two distinct peaks. The first peak (morning peak) occurs between 7am and 9am and the second peak (evening peak) between 4pm and 6pm. The evening peak is however, greater than the morning peak and has been utilised for the junction assessments contained in **Sections 6 and 7**.

4.5 Background traffic growth

4.5.1 To derive the future year baseline traffic demand, the observed 2012, 2013 and 2014 traffic flows have been factored up to 2017 (peak construction activity).

4.5.2 To take account of sub-regional growth in housing and employment, light vehicle traffic flows were factored up using the Department for Transport Trip End Model Presentation Programme (TEMPro) Version 6.2, with data set 6.2 for Redcar and Cleveland. HGVs have been factored up with National Trip End Model (NTEM) factors. This has accounted for emerging Local Plan allocations.

Chart 2 **Traffic survey data daily profile**



Committed development traffic

4.5.3 In addition to TEMPro growth, it is necessary to quantify and assign traffic demand from identified significant committed developments within the study area. To identify potential cumulative projects a consultation exercise was undertaken with all planning authorities within or adjoining the YPP study area. This exercise identified in excess of a 1,000 projects from which a high level sift to scope out small scale projects was undertaken, resulting in 365 projects for consideration. **Annex 4** of this TA provides details of these 365 projects.

4.5.4 To refine the list of 365 projects an initial screening review was then undertaken to identify only the projects of a 'material consideration' (from a transport perspective) defined as those developments that are supported by a TA. Following this initial screening review, 72 projects were identified as 'material' projects in that they were supported by a TA, or Environmental Statement with a traffic chapter with an equivalent level of assessment as contained within a TA.

4.5.5 Following the initial screening review a more detailed review was then undertaken to further filter these 72 projects to exclude any that:

- are considered remote from the study area;
- have already been constructed/opened;
- the application has been withdrawn or refused; and
- the TA demonstrates that the net traffic generation is below Guidance for Transport Assessment thresholds (effectively a Transport Statement by another name).

4.5.6 The application of these further filters reduced the list of 72 projects to 15, which it is considered could have a cumulative impact with the YPP. **Annex 5** of this TA provides detail of those projects included and those that have been excluded, including the rationale for their exclusion.

4.5.7 From the 15 projects identified, five are within the boundary of Middlesbrough Council, seven within the boundary of Redcar and Cleveland Borough Council, two within the boundary of Scarborough Borough Council and one within the boundary of Ryedale District Council.

4.5.8 Following this initial review, consultation with RCBC identified that a 1,000 home development on land at Marske Estate (Planning application ref: R/2013/0669/OOM) and the Dogger Bank Teesside A & B offshore wind farm should be considered in more detail within this TA.

4.5.9 The Land at the Marske Estate comprises primarily of a residential development of up to 1,000 dwellings with the potential for complementary amenities including a convenience store, primary school, community hall and doctors/pharmacy being explored. In addition to the residential element the application also proposes a rail/public car park and leisure uses including a hotel, pub/restaurant and petrol filling station.

4.5.10 It has been agreed with RCBC (for the purposes of this TA) that the development should be included and that a build rate of 60 dwellings per year, commencing at 60 dwellings occupied in 2015, with 300 dwellings occupied by end of 2020, should be assumed.

4.5.11 The Dogger Bank Teesside A & B offshore windfarm application (at the time of drafting this report) has not been determined. Notwithstanding, a review of the respective TA indicates that there would be a short term peak construction impact which could conceivably occur at any point between 2015 and 2022, after which, operational impacts would not be significant. The respective TA also identified a potential cumulative impact with YPP and noted that:

"… it is reasonable to assume that employees and materials for the processing plant and last section of pipeline [now the MTS] will be likely to originate from within the study area for Dogger Bank Teesside. Recognising this, and the uncertainty with regard to timing, Forewind will assess any implications of the YPP traffic demand when further detail becomes available and consider measures within the context of the proposed Construction Traffic Management Plan".

4.5.12 Therefore, the supporting Construction Traffic Management Plan for this application includes details of the proposed strategy for managing the potential for significant cumulative impacts with Dogger Bank Teesside A & B.

4.5.13 **Tables 9** and **10** provide details of the future baseline traffic flows including TEMPro growth and committed development per link for both 2015 and 2017. The future baseline flows have been incorporated into the junction assessments included in **Section 6** and **Section 7**.

Table 9 Future year (2015) baseline traffic flows

	Growthed 2015 (24hr AADT)		Committed Development Daily Traffic (24hr AADT)		Future 2015 Baseline Flows (24hr AADT)	
Link	**Total Vehicle***	**HGVs****	**Total Vehicle**	**HGVs**	**Total Vehicle**	**HGVs**
1	93,014	6,445	102	0	93,116	6,445
2	26,464	2,221	328	22	26,792	2,243
3	12,229	1,059	334	22	12,563	1,081
4	30,986	1,288	501	0	31,488	1,288
5	25,845	1,522	260	22	26,104	1,544
6	15,028	396	14	0	15,043	396
7	19,986	723	250	22	20,236	745
8	11,340	457	19	0	11,359	457
9	13,212	556	182	7	13,394	563
10	20,273	798	295	22	20,568	820
11	5,412	298	29	0	5,441	298
12	9,807	528	305	22	10,111	550
14	11,751	395	53	0	11,803	395
15	10,782	540	24	0	10,806	540
44	17,479	841	75	0	17,555	841
Notes						
*	TEMPro growth factors applied					
**	NTEM HGV growth factors applied					

Table 10 **Future year (2017) baseline traffic flows**

	Growthed 2017 (24hr AADT)		Committed Development Daily Traffic (24hr AADT)		Future 2017 Baseline Flows (24hr AADT)	
Link	**Total Vehicle***	**HGVs****	**Total Vehicle**	**HGVs**	**Total Vehicle**	**HGVs**
1	95,111	6,528	111	0	95,222	6,528
2	27,048	2,241	440	22	27,488	2,263
3	12,502	1,073	440	22	12,942	1,095
4	31,692	1,305	1504	0	33,196	1,305
5	26,430	1,542	22	22	26,452	1,564
6	15,374	401	0	0	15,374	401
7	20,444	733	22	22	20,466	755
8	11,599	463	0	0	11,599	463
9	13,513	563	7	7	13,520	570
10	20,736	808	59	22	20,794	830
11	5,535	302	86	0	5,621	302
12	10,029	535	72	22	10,101	557
14	12,020	400	158	0	12,178	400
15	11,027	547	71	0	11,099	547
44	17,876	851	209	0	18,085	851
Notes						
*	TEMPro growth factors applied					
**	NTEM HGV growth factors applied					

4.6 Sustainable Transport

4.6.1 At the heart of the NPPF is a "presumption in favour of sustainable development". The NPPF is a material consideration; in this context the following sections consider the sustainable travel options available to the project.

4.6.2 A review of the sustainable transport options available to employees of the Harbour facilities has been undertaken. Information detailed on public transport services is as captured in August 2014 and, hence, details the level of service that was operating during the period when this TA was drafted.

Accessibility by walking

4.6.3 The Chartered Institute of Highways and Transportation (CIHT) document entitled 'Guidelines for Providing for Journeys on foot', considers 2km as a 'preferred maximum' distance for commuting.

4.6.4 By this measure the whole of Dormanstown, the western edge of Redcar and majority of the Teesport Estate site and Wilton International Complex are within walking distance of the Harbour. **Figure 5** details those areas within a 2km walk of the Harbour.

Accessibility by cycle

4.6.5 The CIHT guidance 'Cycle Friendly Infrastructure, Guidelines for Planning and Design' states that three quarters of journeys by all modes are less than five miles (8km) and that this distance can be cycled comfortably by a fit person, therefore it is concluded that 8km represents a maximum realistic range for cycling trips.

4.6.6 By this measure the whole of Redcar, the west side of Marske-by-the-sea and the eastern parts of Middlesbrough, such as Grangetown, Normanby, Teesville and Eston, are all within an 8km cycling catchment of the Harbour facilities. **Figure 6** details those areas within an 8km cycle of the Harbour facilities, and **Annex 6** provides a map of the existing cycle facilities within the study area.

4.6.7 The key cycle routes to the Harbour facilities would be via the A1085. The A1085 includes an existing segregated off road cycle route, which provides a link south towards Middlesbrough and north towards Redcar.

4.6.8 The A1085 cycle route then connects to existing routes into Middlesbrough and Redcar, both of which have an extensive cycle network.

Accessibility by bus

4.6.9 The nearest bus stop to the Harbour facilities is located on West Coatham Lane adjacent to the entrance to the Wilton Complex. The existing services and frequency from this stop are summarised in **Table 11**.

Table 11 Summary of Bus Services

Service No:	Route	Approximate two way frequencies					
		Monday to Saturday			Sundays		
		First Service	Typical Frequency	Last Service	First Service	Typical Frequency	Last Service
22	Ings Farm/New Marske – Redcar – Middlesbrough	07:06	30 minutes (minute) 60 minutes (evening)	22:33	09:33	60mins	22:33
	Middlesbrough - Redcar – Ings Farm/New Marske	08:05		23:35	09:35		23:35
64/64a	New Marske – Redcar – Grangetown – Eston - Middlesbrough	06:33	30 minutes	18:27 18:18 (Saturdays)	No Service	No Service	No Service
	Middlesbrough – Eston – Grangetown – Redcar - New Marske	07:18 07:22 (Saturdays)		18.48 18.42 (Saturdays)	No Service		No Service
746/747	Middlesbrough - Lingdale	05:44	60 minutes	07:19	No Service	No Service	No Service
	Lingdale - Middlesbrough	05:15		06:26	No Service		No Service

Accessibility by rail

4.6.10 The nearest railway station (excluding Redcar British Steel) is Redcar Central which is located approximately 3.1km from the Harbour entrance. This station is on the Saltburn to Bishop Auckland line and is operated by Northern Rail. **Table 12** summarises the arrival times at Redcar Central.

Table 12 Summary of Rail Services Arriving at Redcar Central

Route	Monday to Saturday			Sunday		
	First Arrival	Typical Frequency	Last Arrival	First Arrival	Frequency	Last Arrival
Bishop Auckland - Darlington – Middlesbrough - Saltburn	09:08 (09:07 Saturdays)	60 minutes	22.18 22.17 (Saturdays)	11:12	120 minutes	21:12
Saltburn – Darlington – Middlesbrough – Bishop Auckland	06.40 06.33 (Saturdays)	30 minutes	22.51	09.48	60 minutes	22.55

4.6.11 Bus service 64 provides a direct link from the rail station to the bus stop on West Coatham Lane (adjacent to the Wilton Complex entrance).

Summary of current sustainable travel options

4.6.12 A review of the sustainable travel options demonstrates the Harbour facilities are accessible by cycle and public transport from a large catchment, with travel by foot proving a key link between locations.

4.6.13 However, during the construction phase, the workforce would be transient in nature and there would be less opportunity to align with local transport provision. During this stage the contractor would be required to augment public transport with private transport solutions (e.g. mini-bus pick up) to ensure that single occupancy car travel to site is minimised (further details are contained in the CTMP)

4.7 Highway safety

4.7.1 An examination of the routes within the study area has been undertaken to identify ‘collision clusters’. Collision cluster sites are considered to be sensitive to significant changes in traffic flows and could therefore potentially be impacted by the project.

4.7.2 RCBC do not have a defined definition for what would constitute a collision cluster, therefore NYCC criteria have been used to identify potential collisions clusters within the boundary of RCBC. NYCC’s criteria has been also been adopted for this TA to ensure consistency across the wider YPP development proposals.

4.7.3 NYCC criteria for identifying potential collision clusters within the study area for the both urban and rural areas are:

- A rural collision cluster site is one at which there have been four or more personal injury collisions within a 100m radius of each other during a three year period and the speed limit of the road is over 40mph.

- An urban collision cluster site is one at which there have been four or more personal injury collisions within a 50m radius of each other during a three year period and the speed limit of the road is 40mph or less.

4.7.4 Personal Injury Collision (PIC) data was obtained from RCBC for the most recent five year period available and examined using the above criteria (**Annex 7** provides a graphical plot of all the collisions within the study area). This identified 23 clusters, of which eight fall within the criteria for further assessment as defined by the criteria. The full list of sites is provided in **Annex 8**.

4.7.5 The cluster reference numbers within the local study area have been kept consistent with those of the wider study area; this ensures ease of reference between all documents for the YPP.

4.7.6 Where collision clusters are identified, it is also 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. **Annex 9** examines the past five years of collision data for each of the collision clusters to understand if there is an emerging pattern or trend to collisions that could be exacerbated by the development proposals, these sites are discussed further below and the locations are presented graphically within **Figure 7**.

Cluster 44: roundabout junction of the A66 and B1513

4.7.7 The junction has experienced 15 collisions within the past five years with an emerging pattern of single vehicle loss of control and rear end shunt type collisions.

Cluster 48: roundabout junction of the A171 and A173

4.7.8 The junction has experienced 12 collisions within the past five years with an emerging pattern of single vehicle loss of control and rear end shunt type collisions.

Cluster 57: roundabout junction of the A1053 and A174

4.7.9 The junction has experienced 22 collisions within the past five years and demonstrates an emerging pattern of rear end shunt, loss of control type collisions.

Cluster 59: roundabout junction of the A174 and Redcar Lane

4.7.10 The junction has experienced 12 collisions within the past five years, of which 10 are attributable to rear end shunt type collisions.

Cluster 61: roundabout junction of the A174 and A1085

4.7.11 The junction has experienced seven collisions within the past five years with an emerging pattern of rear end shunt type collisions.

4.8 Highway capacity

4.8.1 Within the local study area it has been agreed with RCBC and the Highways Agency that the junctions outlined in **Table 13** should be considered as potentially being sensitive to the development's traffic generation.

4.8.2 The junction reference numbers within the local study area have been kept consistent with those of the wider study area.

Table 13 Junctions identified as sensitive to developments traffic generation

Junction notation	Location	Junction type
Junction 9	North west Redcar, junction of the A1085 Trunk Road with the Wilton works	Five arm roundabout
Junction 10	West Redcar, junction of the A1085 Trunk Road with the Freightliner Terminal	Four arm roundabout
Junction 11	North east Middlesbrough, junction of the A1085, A66 and A1053	Five arm partially signalised roundabout
Junction 12	South east Middlesbrough, junction of the A1053, A174 and B1380	Four arm partially signalised roundabout

4.8.3 **Figure 8** shows the locations of Junctions 9 to 12 in the context of the study area.

4.8.4 The baseline queuing and delays for these identified junctions are considered within **Sections 6** and **7**, in order to provide a direct comparison with future year traffic scenarios.

5 TRIP GENERATION AND ASSIGNMENT

5.1 Assumptions

5.1.1 A suite of assumptions have been developed to enable a realistic worst case traffic generation to be established and inform the impact assessment during the construction phase. **Table 14** sets out these assumptions and provides a brief rational. The detailed application of the assumptions is discussed throughout this section in relation to the proposed Harbour facilities application.

Table 14 Worst case construction phase assumptions

Parameter	Notes
No allowance for construction material to be imported by sea and transferred to site by internal roads.	Distributes construction materials by public highway only resulting in a higher traffic demand on the network for the purpose of a robust assessment.
Maximum personnel demand is assumed to occur during maximum HGV demand.	Represents the worst case combined HGV and light vehicle traffic demand building tolerance for programme/resource changes.
Harbour facilities start of construction 2017.	2017 is the earliest realistic construction start date for the assessment of traffic impacts.
Monthly HGV movements profiled over twenty days per month (i.e. 5 day week Monday – Friday).	Represents HGV traffic generation profiled over weekdays only resulting in higher daily demand than if weekend deliveries were employed. This provides a robust daily traffic demand profile on which to assess weekday impacts Daily HGV movements are assumed over a 5 day week; however 6 day HGV movements are envisaged.
All construction employees to depart during the network peak hour (5pm – 6pm).	Represents the worst case combined impact of development and background traffic for the purpose of a robust assessment.
HGV deliveries profiled over a 10 hour window.	Allows 2 hours for breaks in deliveries.
Car share ratio of 2.5 for worker travelling direct to the Harbour site.	Industry best practice* shows a typical ratio of 3.0 could be achieved on large construction sites. The lesser figure will ensure that the worker traffic demand is robust. Details of how the car share ratio would be monitored and enforced are contained within the supporting CTMP (**ES Section 12, Appendix 12.3**)
* BAA 2003, Terminal 5 Construction Workers Public Transport Strategy 2003/04	

5.2 YPP traffic demand

5.2.1 Transport Assessments are typically informed by the derivation of trip rates (i.e. to assist with quantifying the development's predicted traffic attraction) from interrogation of established trip rate databases such as TRICS. However, there is no such data in the existing trip rate databases that could confidently quantify the trip attraction associated with the construction of the YPP.

5.2.2 The traffic generation that has informed this assessment has been derived by way of a 'first principles' approach. The first principles approach generates traffic volumes from an understanding of material quantities and personnel numbers. This information has been supplied by experienced maritime consultants Royal HaskoningDHV, who were commissioned to design the Harbour facilities.

HGVs

5.2.3 A summary of the monthly HGV traffic demand (derived from material quantities) for Phase 1 and 2 is provided in support of this assessment as **Annex 10**.

5.2.4 **Annex 11** identifies monthly HGV peaks and calculates the daily peak (assuming a 20 day month)

5.2.5 Daily demand is assumed to follow an even profile spread over ten hours, recognising that the close proximity of local supply chain would lend itself to continuous regular deliveries 'shuttling'. The forecast maximum daily demand for phase 1 is 67 two-way, from which hourly demand is derived as seven two-way movements. The maximum daily demand for phase 2 is 36 two-way and a derived hourly two way movements of 4.

5.2.6 The material arising from the capital dredging of the berth pocket and approaches would be removed by sea and therefore would not result in any HGV movements. Given this it is not considered further within this assessment.

5.2.7 The following issues have the potential to change the HGV figures derived:

- Design revisions as the project progresses from planning design to tender design.
- Post application changes in method of working informed by appointed contractor.
- Incidental HGV trips.

5.2.8 It should be noted these issues could collectively reduce or increase overall HGV demand. In order to ensure the HGV data assessed represents a 'realistic worst case' scenario a strategy of applying contingencies to the daily traffic demand for each element of the project has been adopted.

5.2.9 These contingencies have been informed by the workstreams based upon the degree of certainty (confidence threshold) in the design outputs at the application 'freeze'. This feedback has informed a contingency of 20% for the Harbour facilities which is included in the daily movement previously outlined.

Construction personnel traffic

5.2.10 **Annex 12** identifies that the peak resourcing requirements for the Harbour facilities would be 175 employees.

5.2.11 It is anticipated that the 175 construction workers would typically arrive between 8am and 9am and depart between 5pm and 6pm. However, the nature of construction works typically requires that employees work longer hours in the summer and shorter hours in the winter to take advantage of the available day light. Therefore, as a worst case it is assumed that employee trips would overlap with the am and pm network peak hours.

5.2.12 The strategy for the Harbour facilities is for construction workers to travel direct with a managed vehicle to employee ratio of at least 2.5.

5.2.13 It is considered that targeting employees at their point of origin would be more appropriate. In this regard the 2.5 employees per vehicle ratio is considered to represent a worst case scenario in the context of:

- The industry exemplar of Heathrow Terminal 5 (BAA 2003, Terminal 5 Construction Workers Public Transport Strategy 2003/04) established that a car share ratio of 3 employees per vehicle was achievable.
- The ratio does not take into account the propensity for employees to walk, cycle or use public transport.

5.2.14 This strategy is augmented by the supporting CTMP (**ES Section 12, Appendix 12.3**), which includes detail of the processes for managing, monitoring and enforcing any noncompliance. It should be noted this strategy does not preclude a travel plan being developed by the appointed contractor that exceeds (improves upon) the 2.5 ratio, rather it provides a realistic baseline on which to assess traffic impact.

5.2.15 **Table 15** set out how this strategy translates employee movements to vehicle movements and how this has informed the maximum parking provision at each site.

5.3 Peak construction traffic demand period

5.3.1 **Table 16** provides a summary of the peak periods for traffic demand during Phase 1 and 2 for both HGVs and personnel. It is evident that the peak period for construction would occur during Phase 1 and this has, therefore, been taken forward for assessment (recognising that impacts during Phase 2 would be less).

Table 15 Harbour facilities construction personnel vehicle and parking demand

Sites	Shift change over times	Employees movements		Vehicle movements			Maximum parking provision *
		Arrivals	Departures	Arrivals	Departures	Total	
Harbour	08:00 – 09:00	175	0	70	0	70	70
	17:00 – 18:00	0	175	0	70	70	
* Excludes provision for visitors and disable parking which will be provided in addition.							

Royal HaskoningDHV

Table 16 Phase 1 and Phase 2 Harbour facilities, traffic generation

	Commencement of construction	Total HGV demand	Peak daily (two-way) HGV demand	Peak daily employee demand
Phase 1	2017	6,411	66	175
Phase 2	2022	2,416	36	175*

*assumed to be identical to phase 1

5.4 Traffic distribution - construction

5.4.1 At the time of application, the supply chain for materials and the workforce cannot be informed by contractor involvement. Therefore, the following sections set out the assumptions that have been adopted to inform the predicted distribution of traffic for the construction phase.

HGV distribution

5.4.2 HGV traffic associated with the Harbour facilities is assumed to distribute from the A1085 (Link 44) and then to Teesport or the wider highway network via the A66 (Link 2).

Employee distribution

5.4.3 To inform the potential distribution of construction employees, the availability of local labour has been reviewed as part of the socio economic study which informed the ES.

5.4.4 The socio economic study also advised that types of skills required for the construction of the Harbour facilities could be accommodated from the local labour area.

5.4.5 To inform the distribution of the employees who potentially could be drawn from the local area, the socio economic study examined the distribution of residents within the local area (a 60 minute drive) with the relevant skill sets.

5.4.6 The distribution of employees per postcode cluster is outlined within **Annex 13**. This has then been factored using a gravity model approach; whereby the number of employees is divided by the journey time (taken from a route planner) from the centre of the postcode cluster either to the Harbour facility.

5.4.7 **Figure 9** provides a graphical representation of the distribution of employees in the form of a heat map.

Combined traffic distribution

5.4.8 The resultant combined HGV and employee traffic distribution is illustrated in **Figure 10** for daily movements and **Figure 11** for peak hour movements.

6 ASSESSMENT OF IMPACTS DURING CONSTRUCTION

6.1 Scope of assessment

6.1.1 The scope of this traffic impact assessment has been developed with stakeholders and includes:

- highway safety; and
- highway operation (junction capacity).

6.1.2 The environmental impacts of the proposed Harbour facilities are considered separately in **ES Section 12 Traffic and Transport**.

Embedded mitigation

6.1.3 In context with the sustainable transport review in **Section 4**, the following embedded mitigation measures (relevant to the Harbour facilities) are promoted and have been applied to the construction traffic forecasts contained in this section:

- A minimum ratio of 2.5 employees to a vehicle to reduce light commercial vehicle (LCV) traffic.
- Parking controls at all sites to support employee to vehicle ratios.

6.2 Highway safety

6.2.1 Having identified the baseline collision clusters, an assessment has been undertaken to identify emerging patterns or factors that could be exacerbated by the developments traffic generation. This narrowed down the cluster sites to only those that demonstrated an emerging pattern of collision that could be adversely impacted by development traffic.

6.2.2 These clusters are investigated further to review the projected increases in construction traffic and existing road safety measures at each site to identify if the proposed increases in traffic are likely to influence accident frequency and whether further mitigation may be appropriate. **Annex 14** of this TA provides details of the traffic increases per link compared to background traffic flows.

Cluster 44

6.2.3 Cluster 44 forms the roundabout junction of the A66 and B1513 (link 2). The junction has experienced 15 collisions within the past five years with an emerging pattern of single vehicle loss of control and rear end shunt type vehicles, of the 15 collisions nine involve vehicles travelling eastbound on the A66. The dis-aggregated collision rate of three per year is lower than average for five arm dual carriageway roundabouts[1].

6.2.4 The addition of the traffic from the Harbour facility would increase daily traffic flows on link 2 by 141 vehicles, or 0.5% compared to baseline traffic flows.

6.2.5 A review of the baseline road safety measures identified that the junction is of a modern standard including street lighting. Furthermore, on the eastbound A66 approach arm (where collisions are

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[1] Design Manual for Roads and Bridges, TD16/07 - Table 2/1.

clustered) the arm benefits from targeted road safety measures, including high friction surfacing, and advanced warning and direction signing.

6.2.6 It is considered that the quantum of daily traffic increase would not significantly influence accident frequency and that existing road safety measures are appropriate to mitigate the impact of the development.

Cluster 48

6.2.7 Cluster 48 forms the roundabout junction of the A171 and A173 to the west of Guisborough (link 10). The junction has experienced 12 collisions within the past five years with an emerging pattern of single vehicle loss of control and rear end shunt type collisions, of the 12 collisions 10 occurred on the A171 approaches. The dis-aggregated collision rate of 2.4 per year is typical for four arm dual carriageway roundabout[2].

6.2.8 The addition of Harbour facilities traffic would increase daily traffic flows on link 10 by approximately three vehicles.

6.2.9 A review of the baseline road safety measures identified that the junction is of a modern standard including street lighting. Furthermore, on the A171 approaches (where collisions are clustered) the arms benefits from targeted road safety measures, including high friction surfacing, and advanced warning and direction signing.

6.2.10 It is considered that the quantum of daily traffic increase would not significantly influence accident frequency and that existing road safety measures are appropriate to mitigate the impact of the development.

Cluster 57

6.2.11 Cluster 57 forms the roundabout junction of the A1053 and A174 (intersection of links 3, 4 and 5). The junction has experienced 22 collisions within the past five years and demonstrates an emerging pattern of rear end shunt, loss of control type collisions.

6.2.12 The addition of Harbour facilities traffic would increase daily traffic flows by up to 66 vehicles, of 0.5% compared to baseline traffic flows.

6.2.13 Further to a meeting with the Highways Agency on 7 August 2014, it was confirmed that the layout of this junction has been improved in recent years. Following these works a Stage 4, Road Safety Audit was undertaken in 2014, which noted that traffic signs on the approach arms were obstructing driver visibility and could be a contributing factor towards rear end shunts. The Highways Agency confirmed they will be addressing the report's findings.

6.2.14 In addition, the Highways Agency noted that a number of collisions occurred due to regular users of the junction being unfamiliar with the improved layout. The Highways Agency considers that this issue has settled down as users have become more familiar with the improved junction layout.

6.2.15 It is considered that the quantum of daily traffic increase predicted would not significantly influence accident frequency and that the existing road safety measures augmented by Stage 4 Road Safety Audit improvements, are appropriate to mitigate the impact of the development.

Cluster 59

6.2.16 Cluster 59 forms the roundabout junction of the A174 and Redcar Lane to the south of Redcar (link 4). The junction has experienced 12 collisions within the past five years, of which 10 are attributable to rear end shunt type collisions, of the 12 collisions, five are clustered at the Redcar Lane arm of the roundabout, three on the A174 east, two on Grewgrass Lane and two on the A174 west.

6.2.17 The addition of Harbour facilities traffic would increase daily traffic flows by approximately 26 vehicles less than a 0.1% increase compared to baseline traffic flows.

6.2.18 A review of the baseline road safety measures identified that the junction is of a modern standard including street lighting. Furthermore, the junction benefits from targeted road safety measures, including high friction surfacing, advanced lane marking and advanced warning and direction signing on the three main approaches.

6.2.19 It is considered that the quantum of daily traffic increase predicted would not significantly influence accident frequency and that the existing road safety measures are appropriate to mitigate the impact of the development.

Cluster 61

6.2.20 Cluster 64 forms the roundabout junction of the A174, A1085 and Marske Road to the south of Marske-by-the-Sea (intersection of links 4 and 14). The junction has experienced seven collisions within the past five years with an emerging pattern of rear end shunt type collisions.

6.2.21 The collisions predominately occurred on the B1269 Marske Road and A174 east arms. A review of the baseline road safety measures identified that both of these arms benefit from targeted road safety measures that include advanced direction signing, high friction surfacing and street lighting.

6.2.22 The addition of Harbour facilities traffic would increase of traffic flows approximately 26 vehicles less than a 0.1% increase compared to baseline traffic flows

6.2.23 It is considered that this quantum of daily traffic increase would not significantly influence accident frequency and that the existing road safety measures are appropriate to mitigate the impact of the development.

6.3 Highway operation

Assessment period

6.3.1 A review of the respective daily traffic profiles in **Section 4** reveals that there are two distinct peaks in daily traffic profiles; 7am to 9am in the morning and 4pm to 6pm in the evening, with the evening peak being higher than the morning peak. Therefore, in order to inform a worst case assessment, it is necessary to establish those periods when the peak development traffic would overlap with this network peak period.

6.3.2 Noting the potential for the workforce to finish the day shift during network peak hours, a worst case period between 5pm to 6pm (weekday) has been selected.

6.3.3 **Figure 11** provides a graphical overview of the distribution of YPP trips on the highway between 5pm and 6pm.

6.3.4 Having established that worst case hour for assessment would occur between 5pm and 6pm baseline, Manually Classified Turning Count data (MCTC) has been obtained for all four junctions on the 12 March 2014. However, during discussions with RCBC it was identified that there were significant road works during this period that could have affected the surveyed traffic flows.

6.3.5 Therefore, traffic count data has been taken from a TA produced by Ashley Helme Associates for the "Land at the Marske Estate" development (LaME) dated August 2013. The traffic counts for this TA were undertaken on Wednesday 1 February 2012 and precede the road works.

Junction assessment

6.3.6 This section examines in detail the effects of Driver Delay by assessing the impact of Harbour facilities traffic on the sensitive junctions and links identified in **Section 4**

6.3.7 When assessing junction capacity, reference has been made to the Ratio of Flow to Capacity (RFC), Degree of Saturation (DoS) and Practical Reserve Capacity (PRC). RFC is the standard recognised threshold for priority and roundabout junctions in the UK and DoS is the standard recognised threshold for signalised junctions. When values for RFC and DoS are above 0.85 and 90% respectively, a junction is considered to be operating beyond its desirable capacity and mitigation measures may be required. For signalised junctions the PRC quantifies the degree of spare capacity or overload.

6.3.8 Reference is made in the assessment to Passenger Car Units (PCUs). A PCU is a term used in traffic modelling to translate all vehicles into one common unit. For example a car is equivalent to one PCU whilst a HGV is typically equivalent to 2.3 PCUs, when factoring from vehicles to PCUs the following factors (**Table 17**) have been used.

Table 17 Vehicle to PCU factors

Vehicle type	Vehicle to PCU factor
Car	1.0
Light Goods Vehicle (LGV)	1.0
Other Goods Vehicle 1 (OGV1)	1.5
Other Goods Vehicle 2 (OGV2)	2.3
Public Service Vehicle (PSV)	2.0
Motorcycles	0.4

Junction 9 - North west Redcar, junction of the A1085 Trunk Road with the Wilton works

6.3.9 Junction 9 forms the roundabout junction of the A1085 Trunk Road, West Coatham Lane, Corus Works and Wilton Site.

6.3.10 MCTC data for this junction has been taken from the LaME TA. The traffic survey data has then been factored from vehicles to PCUs and from 2012 to 2017. **Annex 15** shows the surveyed traffic flows from February 2012 and **Annex 16** shows the factored PCU flows for 2017.

6.3.11 Industry standard junction modelling software ARCADY has been used to simulate the existing junction performance. **Table 18** summarises the results of the junction assessment during a 2017 weekday evening peak hour RFC for both with and without development (peak construction) scenarios. Full junction modelling outputs including details of junction geometry, are provided as **Annex 17** of this TA.

Table 18 Junction 9, junction capacity, delay and queuing

	2017 (without development)			2017 (with development)		
Junction arm	**RFC**	**Queue**	**Delay (s)**	**RFC**	**Queue**	**Delay (s)**
A1085 (South)	0.444	0.8	3.36	0.447	0.8	3.36
Proposed Harbour Access	0.000	0.0	0.00	0.068	0.1	3.18
Tata Steel Access	0.200	0.2	2.34	0.206	0.3	2.40
A1085 (North)	0.315	0.5	3.54	0.326	0.5	3.72
West Coatham Lane	0.181	0.2	3.12	0.187	0.2	3.24
Wilton Access	0.030	0.0	2.28	0.031	0.0	2.34

6.3.12 It is observed from **Table 18** that, without the development, no arms of the junction exceed 0.85 with queues of less than a single vehicle. With the addition of the construction traffic of 78 two-way vehicle movements, the junction would continue to operate with significant spare capacity, with queues no greater than a single PCU and delays of less than four seconds.

Junction 10 - West Redcar, junction of the A1085 Trunk Road with the Freightliner Terminal

6.3.13 Junction 10 forms the roundabout junction of the A1085 Trunk Road with the Freightliner Terminal.

6.3.14 MCTC data for this junction has been taken from the LaME TA. The traffic survey data has then been factored from vehicles to PCUs and from 2012 to 2017. **Annex 15** shows the surveyed traffic flows from February 2012 and **Annex 18** shows the factored PCU flows for 2017.

6.3.15 Industry standard junction modelling software ARCADY has been used to simulate the existing junction performance. **Table 19** summarises the results of the junction assessment during a 2017 weekday evening peak hour for both with and without development (peak construction) scenarios. Full junction modelling outputs including details of junction geometry, are provided as **Annex 19**.

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Table 19 Junction 10, junction capacity, delay and queuing

	2017 (without development)			2017 (with development)		
Junction arm	**RFC**	**Queue**	**Delay (s)**	**RFC**	**Queue**	**Delay (s)**
A1085 (South)	0.370	0.6	2.46	0.372	0.6	2.46
Tata Steel Access	0.170	0.2	3.96	0.170	0.2	3.96
A1085 (North)	0.402	0.7	2.64	0.436	0.8	2.82
Wilton Access	0.021	0.0	4.08	0.021	0.0	4.20

6.3.16 It is observed from **Table 19** that without the development no arms of the junction exceed 0.85 with queues of less than a single PCU. With the addition of the development traffic of 78 two-way vehicle movements the junction would continue to operate with spare capacity, with queues no greater than a single PCU and delays of less than five seconds.

Junction 11 - North east Middlesbrough, junction of the A1085, A66 and A1053

6.3.17 Junction 11 forms the signalised roundabout junction of the A1085 Trunk Road, A1053 Greystone Road, Tees Dock Road and Wilton site access, referred to as the Greystone Roundabout.

6.3.18 MCTC data for this junction has been taken from the LaME TA. The traffic survey data for this junction is presented in PCUs for February 2012, so have therefore been factored to 2017. **Annex 20** shows the surveyed traffic flows (in PCUs) from February 2012 and **Annex 21** shows the factored flows for 2017.

6.3.19 Industry standard junction modelling software LinSig V3 has been used to simulate the existing junction performance. Details of the existing signal timings and phasing's have been sourced from the Highways Agency.

6.3.20 **Table 20** summarises the results of the junction assessment during a 2017 weekday evening peak hour for both with and without development (peak construction) scenarios. The full LinSig output is included as **Annex 22**.

Table 20 Junction 11, junction capacity, delay and queuing

	2017 (without development)			2017 (with development)		
Junction arm	**DoS**	**Queue**	**Delay (s)**	**DoS**	**Queue**	**Delay (s)**
A1085 (North) Lane 1&2	64.8%	5.8	19.3	69.6%	6.8	20.5
A1085 (North) Lane 3	56.6%	6.3	20.0	61.3%	7.0	21.0
Wilton Works Access Lane 1	40.2%	2.1	16.6	43.1%	2.2	18.1
Wilton Works Access Lane 2	19.2%	0.5	18.0	21.9%	0.5	20.0
A1053 - Greystone Road Lane 1	37.1%	2.8	25.3	37.1%	2.8	25.3

Junction arm	2017 (without development)			2017 (with development)		
	DoS	Queue	Delay (s)	DoS	Queue	Delay (s)
A1053 - Greystone Road Lane 2	35.4%	2.6	25.0	35.4%	2.6	25.0
A1053 - Greystone Road Lane 3	8.1%	0.5	22.1	8.1%	0.5	22.1
A1085 (South) Lane 1	24.9%	1.3	6.7	25.4%	1.3	6.9
A1085 (South) Lane 2	21.8%	1.1	6.8	22.2%	1.1	7.0
A1053 - Tees Dock Road - Lane 1	45.7%	5.1	7.8	46.3%	5.4	7.9
A1053 - Tees Dock Road - Lane 2	66.4%	10.1	10.3	66.4%	10.0	10.3
PRC	35.5%			29.4%		

6.3.21 It is observed from **Table 20** that without the development the junction has no arms with a DoS exceeding 90%, with the largest queue of 10 PCUs on the A1053 Tees Dock Road approach. With the addition of the proposed development traffic of 78 two-way vehicle movements, there would be a slight deterioration in DoS for some arms; however, the junction would continue to operate with spare capacity, with queues only predicted to increase by one PCU and delays by two seconds, which is considered to be indiscernible.

Junction 12 - South east Middlesbrough, junction of the A1053, A174 and B1380

6.3.22 Junction 12 forms the signalised roundabout junction of the A1053, A174 and B1380.

6.3.23 MCTC data for this junction has been taken from the LaME TA. The traffic survey data for this junction is presented in PCUs for February 2012, so have therefore been factored to 2017. **Annex 20** shows the surveyed traffic flows (in PCUs) from February 2012 and **Annex 23** shows the factored flows for 2017.

6.3.24 Industry standard junction modelling software LinSig V3 has been used to simulate the existing junction performance. Details of the existing signal timings and phasing's have been sourced from the Highways Agency, as the A1053 and A174 form part of the Strategic Highway Network.

6.3.25 **Table 21** summarises the results of the junction assessment during a 2017 weekday evening peak hour for both with and without development (peak construction) scenarios. The full LinSig output is included as **Annex 24**.

Table 21 Junction 12, junction capacity, delay and queuing

Junction arm	2017 (without development)			2017 (with development)		
	DoS	Queue	Delay (s)	DoS	Queue	Delay (s)
A1053 - Greystone Road Lane 1	86.0%	8.0	29.7	87.9%	9.2	33.3
A1053 - Greystone Road Lane 2	86.0%	8.0	29.7	88.1%	9.3	33.8

	2017 (without development)			2017 (with development)		
Junction arm	**DoS**	**Queue**	**Delay (s)**	**DoS**	**Queue**	**Delay (s)**
A1053 - Greystone Road Lane 3	88.5%	9.5	34.7	90.3%	10.3	38.9
A174 (East) Lane 1	58.3%	0.7	2.1	58.3%	0.7	2.1
A174 (East) Lane 2	37.6%	3.7	17.2	37.6%	3.7	17.2
A174 (East) Lane 3	25.4%	2.4	15.6	25.4%	2.4	15.6
A174 (West) Lane 1	26.2%	2.5	8.3	26.2%	2.5	8.3
A174 (West) Lane 2 & 3	69.2%	7.1	10.7	69.3%	7.1	10.7
High Street Lane 1 & 2	80.1%	5.9	30.2	80.1%	5.9	30.2
PRC	1.6%			-0.3%		

6.3.26 It is observed from **Table 21** that without the development the junction has a positive PRC with no arms exceeding 90% and with the largest queue of nine PCUs on the A1053 Greystone Road approach. With the addition of the proposed development traffic of 27 two-way vehicle movements, there would be a slight deterioration in DoS for some arms, with the A1053 Greystones Road Lane 3 exceeding 90%; however, queuing is predicted to increase by less than two PCUs and delays by less than five seconds, which is considered to be indiscernible.

7 CUMULATIVE (IN-COMBINATION) ASSESSMENT OF IMPACTS DURING CONSTRUCTION

7.1 Introduction

7.1.1 The section considers the Traffic and Transport impacts associated the entire YPP by including the traffic demand from all elements of the project and assessing the realistic worst case 'in-combination' effects.

7.1.2 **Table 22** below details the elements that have informed the worst case (in-combination) assessment scenarios for construction.

Table 22 Summary of realistic worst case assessment scenarios

Construction Worst Case (in-combination) Elements
1. Mine and mine surface development. 2. MTS, including above ground activities at: - Dove's Nest (MTS shaft), and - all three Intermediate MTS shaft sites. 3. Wilton MTS Portal. 4. MHF phase one construction. 5. Harbour facility phase one construction.

7.1.3 The YPP Harbour facilities CIA **Part 2, Section 6** gives a detailed breakdown of the in-combination traffic derivation a summary of the salient parts are set out to inform the assessment of impacts.

7.2 In-combination construction traffic

HGVs

7.2.1 A review of the potential supply chain within the study area indicates that Teesside is the most likely source for all materials and, as such, the assessment assumes that all HGV trips would have an origin and destination in this region, with all traffic assigned to both the A66 (link 2) and A174 (link 5). HGVs associated with the removal of spoil have an origin at Billingham accessing via the A171 (link 5) and A19 (link 1), avoiding the A66.

7.2.2 From Teesside, access to the Harbour and MHF would be via 'Trunk Road', whilst access to the Mine and MTS sites primarily would be via the A171 corridor before transferring to each site via the following routes:

- Access to the Tocketts Lythe Intermediate Shaft Site would be from a new access from the A173, HGVs would access the A173 from the A171 avoiding Skelton in Cleveland.
- Access to the Lockwood Beck Intermediate Shaft Site would be from a new access with the A171.
- Access to the Lady Cross Plantation Intermediate Shaft Site would be from a new access from an unnamed road towards Egton, HGVs would access the unnamed road from the A171 avoiding Egton.
- Access to the Mine would be from a new access from the B1416, HGVs would access the B1416 from the A171 avoiding Ruswarp.

7.2.3 In order to assess a worst case in-combination scenario, consideration has been given to the interdependencies between the Mine, MTS, MHF and Harbour, and the potential for programmes to shift relative to one another. In this regard three discrete periods have been identified within the project programme whereby the combination of the project elements leads to intensive periods of HGV demand that has the potential to act in combination. Full details are contained in **Annex 25** and a summary of the derivation is provided below.

7.2.4 Period 1 has a duration of month four to 10 (inclusive), with traffic demand resulting from the Mine and MTS. Between months four and 10 the MTS sites combined would generate 213 two-way daily HGV movements (month nine for Wilton, month six for Tocketts Lythe, month seven for Lockwood Beck and Lady Cross Plantation, and month 10 for Dove's Nest) at the same time that the Mine peaks at 101 two-way daily movements (months six to eight, inclusive). This first period theoretically would result in up to 314 two-way HGV movements.

7.2.5 Period 2 has a duration of month 17 to 21 (inclusive), with traffic demand resulting from the Mine, MTS and MHF. During this period two-way HGV movements comprise of 69 from the Mine during month 17, 32 from the export of spoil (during months 18 to 21), 74 from the MHF during month 18 and 158 from the combined MTS sites during month 20 for Wilton, Lockwood Beck and Lady Cross Plantation and month 21 for Tocketts Lythe and Dove's Nest). This second period theoretically would result in up to 333 two-way HGV movements.

7.2.6 Period 3 has a duration of month 28 to 34 (inclusive), with traffic demand resulting from all elements of the project. During this period two-way HGV movements would comprise of 65 from the Mine during month 32, 32 from the export of spoil (during month 28 to 34), 76 from the MHF during month 34, 35 from the Harbour during month 32 and 33, 31 from the conveyor between the Harbour and MHF during month 30 and 147 from the MTS sites (month 28 for Wilton and Dove's Nest, month 29 for Tocketts Lythe, 33 for Lockwood Beck and 34 Lady Cross Plantation). This third period theoretically would result in up to 387 two-way HGV movements.

7.2.7 Having established three periods of maximum construction traffic intensity (**Annex 25** refers), the resultant HGV flows per period have been compared on a link by link basis to ascertain which period would induce the maximum HGV flow. The highest flow for any one of these periods has then been assigned to the network to give a maximum demand per link.

7.2.8 The peak construction traffic intensity on the majority of links within the local study area would occur during period one (coinciding with a 2015 start of construction). Therefore, the assessment of in-combination traffic impacts utilises 2015 background traffic flows.

7.2.9 **Figure 12** details the resultant worst case daily HGV daily demand on the highway network.

Personnel traffic

7.2.10 The design work streams described above have provided details of the expected resourcing requirements for the Mine, MTS, MHF and Harbour. The peak resourcing requirements for the Mine, MTS, MHF and Harbour would be 645, 766, 252 and 175 employees respectively.

7.2.11 Total employees numbers are then further disaggregated by shifts. The Mine and MTS operate 24 hrs, seven days a week for some aspects of construction and the MHF and Harbour operate 'typical' daytime shifts. This results in a peak of:

- 324 employee movements between 6am to 7am for the Mine;
- 108 employee movements between 6am to 7am for each MTS site;
- 252 employee movements between 7am to 8am and 5pm to 6pm for the MHF; and
- 175 employee movements between 8am to 9am and 5pm to 6pm for the Harbour.

7.2.12 Embedded mitigation is proposed to reduce the impact of employees driving direct to the Mine and MTS shaft site at Dove's Nest. There are three potential options (or combination of options):

1. Option 1, private transport pick-up and transfer to site.
2. Option 2, Park & Ride (P&R) site located off the A171 south of Whitby.
3. Option 3, accommodation for in-migrant workers in combination with Option 2.

7.2.13 For the purpose of developing a worst case transport scenario, Option 2 has been selected as it would induce the most trips for the shortest duration on the highway network.

7.2.14 For the Harbour and MTS Portal and MHF at Wilton, it is considered that constructing a P&R facility would not be appropriate, recognising that the facilities are ideally located adjacent to the Strategic Road Network and central to the local labour markets in Teesside. It is considered that targeting employees at their point of origin would be more appropriate. In this regard the 2.5 employees per vehicle ratio is considered to represent a worst case scenario.

7.2.15 To inform the potential distribution of construction employees, the availability of local labour and rented accommodation has been reviewed as part of the YPP socio economic study.

7.2.16 The types of specialist skills required for projects such as YPP means that construction personnel often have to be drawn from across the country and not necessarily from the local labour area (i.e. within a 60 minute commute). **Table 23** details the percentage of the workforce that could be drawn from the local area for the three main disciplines required for the construction of the Mine and MTS.

Table 23 Availability of local labour

Construction activity	Local	Non-local
Mine sinking	35%	65%
Mine buildings	65%	35%
Mine management	10%	90%
MTS operatives	30%	70%
MTS supervisors	10%	90%
MTS site support staff	100%	0%

7.2.17 Those personnel who are non-local (in-migrant labour), i.e. beyond a reasonable daily commute (up to a 60 minute drive), are likely to base themselves within local rented accommodation. To inform the distribution of in-migrant labour the availability of bed spaces within local rented accommodation within commuting distances of the project has been captured.

7.2.18 To inform the distribution of the employees who potentially could be drawn from the local area (resident workers), the socio economic study has examined the distribution of residents within the local area (a 60 minute drive) with the relevant skill sets. The resultant daily personnel traffic flows are shown in **Figure 13**.

7.3 Scope of assessment

7.3.1 As for **Section 6**, the scope of this traffic assessment has been developed with stakeholders and includes:

- highway safety; and
- highway operation (junction capacity).

7.3.2 The environmental impacts of the YPP are considered separately in the Harbour facilities CIA **Part 2, Section 6 Traffic and Transport**.

7.4 Highway safety

7.4.1 Having identified the baseline collision clusters, an assessment has been undertaken to identify emerging patterns or factors that could be exacerbated by the developments traffic generation. This narrowed down the cluster sites to only those that demonstrated an emerging pattern of collision that could be adversely impacted by the development developments traffic.

7.4.2 These clusters are investigated further to review the projected increases in YPP traffic and existing road safety measures at each site to identify if the proposed increases in traffic are likely to influence accident frequency and whether further mitigation may be appropriate.

Cluster 44

7.4.3 Cluster 44 forms the roundabout junction of the A66 and B1513 (link 2). The junction has experienced 15 collisions within the past five years with an emerging pattern of single vehicle loss of control and rear end shunt type vehicles, of the 15 collisions nine involve vehicles travelling eastbound on the A66. The dis-aggregated collision rate of three per year is lower than average for five arm dual carriageway roundabouts[2].

7.4.4 The addition of YPP traffic (759 daily two-way movements) would increase of traffic flows on link 2 by 2.8% compared to baseline traffic flows (reference **Table 8**).

7.4.5 A review of the baseline road safety measures identified that the junction is of a modern standard including street lighting. Furthermore, on the eastbound A66 approach arm (where collisions are clustered) the arm benefits from targeted road safety measures, including high friction surfacing, and advanced warning and direction signing.

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[2] Design Manual for Roads and Bridges, TD16/07 - Table 2/1.

7.4.6 It is considered that the quantum of daily traffic increase predicted would not significantly influence accident frequency and that existing road safety measures are appropriate to mitigate the impact of the development.

Cluster 48

7.4.7 Cluster 48 forms the roundabout junction of the A171 and A173 to the west of Guisborough (link 10). The junction has experienced 12 collisions within the past five years with an emerging pattern of single vehicle loss of control and rear end shunt type collisions, of the 12 collisions 10 occurred on the A171 approaches. The dis-aggregated collision rate of 2.4 per year is typical for four arm dual carriageway roundabout[2].

7.4.8 The addition of YPP traffic (1,196 daily two-way movements) would increase of traffic flows on link 10 by 5.8% compared to baseline traffic flows (reference **Table 8**).

7.4.9 A review of the baseline road safety measures identified that the junction is of a modern standard including street lighting. Furthermore, on the A171 approaches (where collisions are clustered) the arms benefits from targeted road safety measures, including high friction surfacing, and advanced warning and direction signing.

7.4.10 It is considered that the quantum of daily traffic increase predicted would not significantly influence accident frequency and that existing road safety measures are appropriate to mitigate the impact of the development.

Cluster 57

7.4.11 Cluster 57 forms the roundabout junction of the A1053 and A174 (intersection of links 3, 4 and 5). The junction has experienced 22 collisions within the past five years and demonstrates an emerging pattern of rear end shunt, loss of control type collisions.

7.4.12 The addition of YPP traffic (753 daily two-way movements) would increase of traffic flows by up to 2.8% compared to baseline traffic flows (reference **Table 8**, link 5).

7.4.13 It is considered that the quantum of daily traffic increase predicted would not significantly influence accident frequency and that the existing road safety measures augmented by Stage 4 Road Safety Audit improvements (para 6.2.14 refers) are appropriate to mitigate the impact of the development.

Cluster 59

7.4.14 Cluster 59 forms the roundabout junction of the A174 and Redcar Lane to the south of Redcar (link 4). The junction has experienced 12 collisions within the past five years, of which 10 are attributable to rear end shunt type collisions, of the 12 collisions, five are clustered at the Redcar Lane arm of the roundabout, three on the A174 east, two on Grewgrass Lane and two on the A174 west.

7.4.15 The addition of YPP traffic (180 daily two-way movements) would increase traffic flows by 0.5% compared to baseline traffic flows (reference **Table 8**).

7.4.16 A review of the baseline road safety measures identified that the junction is of a modern standard including street lighting. Furthermore, the junction benefits from targeted road safety measures, including high friction surfacing, advanced lane marking and advanced warning and direction signing on the three main approaches.

7.4.17 It is considered that the quantum of daily traffic increase predicted would not significantly influence accident frequency and that the existing road safety measures are appropriate to mitigate the impact of the development.

Cluster 61

7.4.18 Cluster 64 forms the roundabout junction of the A174, A1085 and Marske Road to the south of Marske-by-the-Sea (intersection of links 4 and 14). The junction has experienced seven collisions within the past five years with an emerging pattern of rear end shunt type collisions.

7.4.19 The collisions predominately occurred on the B1269 Marske Road and A174 east arms. A review of the baseline road safety measures identified that both of these arms benefit from targeted road safety measures that include advanced direction signing, high friction surfacing and street lighting.

7.4.20 The addition of YPP traffic (180 two-way daily movements) would increase traffic flows by up to 0.5% compared to baseline traffic flows (reference **Table 8**, link4).

7.4.21 It is considered that the quantum of daily traffic increase predicted would not significantly influence accident frequency and that the existing road safety measures are appropriate to mitigate the impact of the development.

7.5 Highway operation

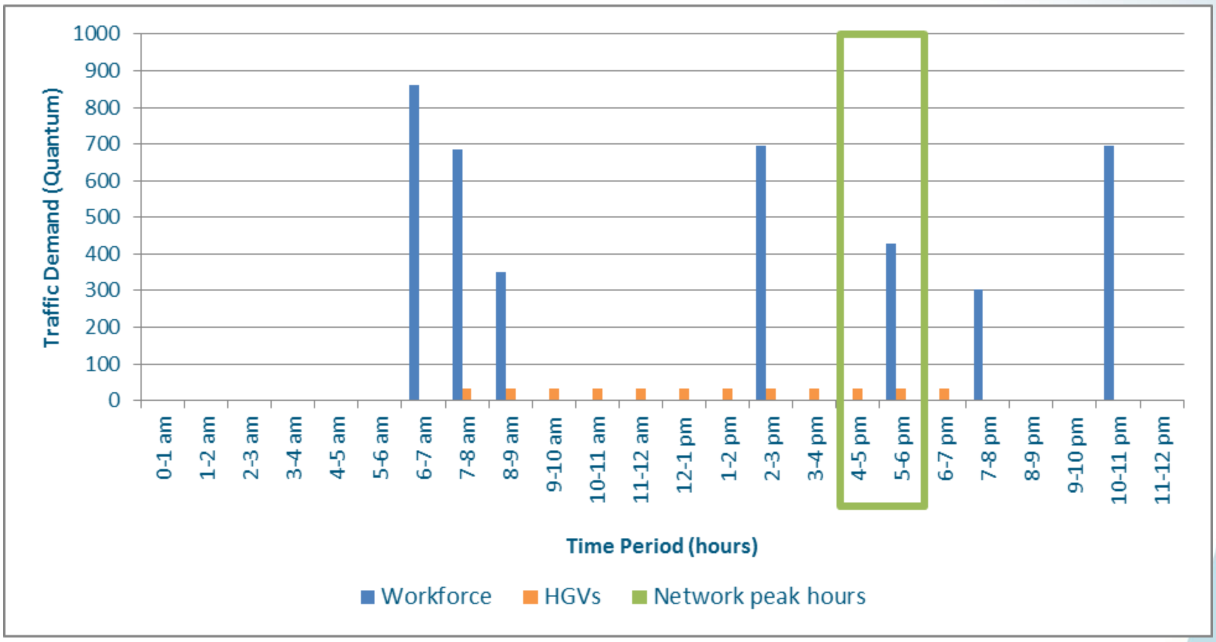
Assessment period

7.5.1 A review of the respective daily traffic profiles in **Section 4** reveals that there are two distinct peaks in daily traffic profiles; 7am to 9am in the morning and 4pm to 6pm in the evening, with the evening peak being higher than the morning peak. Therefore, in order to inform a worst case assessment it is necessary to establish those periods when the peak YPP development traffic would overlap with this network peak period. To determine this **Chart 3** sets out and illustrative daily profile for the minehead HGV and construction personnel traffic generation during the peak construction phase.

7.5.2 It is evidenced from **Chart 3** that maximum traffic demand for construction occurs between 6am and 7am, however, this period occurs prior to the network peak network hours (indicated by the green box). Therefore, in order to consider a worst case, the next highest period of demand (between 5pm to 6pm) has been selected for use in this assessment.

7.5.3 **Figure 14** of this TA provides a graphical overview of the distribution of YPP trips on the highway between 5pm and 6pm including hourly HGV movements.

Chart 3 **Construction traffic, daily profile**



Junction assessment

7.5.4 This section examines in detail the effects of Driver Delay by assessing the impact of YPP traffic on the sensitive junctions and links identified in **Section 4**.

Junction 9 - North west Redcar, junction of the A1085 Trunk Road with the Wilton works

7.5.5 Junction 9 forms the roundabout junction of the A1085 Trunk Road, West Coatham Lane, Corus Works and Wilton Site.

7.5.6 MCTC data for this junction has been taken from the LaME TA. The traffic survey data has then been factored from vehicles to PCUs and from 2012 to 2015. **Annex 26** shows the factored PCU flows for 2015.

7.5.7 Industry standard junction modelling software ARCADY has been used to simulate the existing junction performance. **Table 24** summarises the results of the junction assessment during a 2015 weekday evening peak hour RFC for both with and without development (peak construction) scenarios.

Table 24 **Junction 9, junction capacity, delay and queuing**

	2015 (without development)			2015 (with development)		
Junction arm	**RFC**	**Queue**	**Delay (s)**	**RFC**	**Queue**	**Delay (s)**
A1085 (South)	0.435	0.8	3.3	0.433	0.8	3.4
Proposed Harbour Access	0.000	0.0	0.0	0.066	0.1	3.2
Tata Steel Access	0.194	0.2	2.3	0.200	0.2	2.4

	2015 (without development)			2015 (with development)		
Junction arm	**RFC**	**Queue**	**Delay (s)**	**RFC**	**Queue**	**Delay (s)**
A1085 (North)	0.307	0.4	3.5	0.317	0.5	3.7
West Coatham Lane	0.177	0.2	3.1	0.182	0.2	3.2
Wilton Access	0.029	0.0	2.3	0.109	0.1	2.6

7.5.8 It is observed from **Table 24** that, without the development, no arms of the junction exceed 0.85 with queues of less than a single vehicle. With the addition of the construction traffic of 193 two-way vehicle movements (22 HGVs and 171 cars), the junction would continue to operate with significant spare capacity, with queues no greater a single PCU and delays of less than four seconds. Full junction modelling outputs including details of junction geometry, are provided as **Annex 27**.

Junction 10 - West Redcar, junction of the A1085 Trunk Road with the Freightliner Terminal

7.5.9 Junction 10 forms the roundabout junction of the A1085 Trunk Road with the Freightliner Terminal.

7.5.10 MCTC data for this junction has been taken from the LaME TA. The traffic survey data has then been factored from vehicles to PCUs and from 2012 to 2015. **Annex 28** shows the factored PCU flows for 2015.

7.5.11 Industry standard junction modelling software ARCADY has been used to simulate the existing junction performance. **Table 25** summarises the results of the junction assessment during a 2015 weekday evening peak hour for both with and without development (peak construction) scenarios.

Table 25 Junction 10, junction capacity, delay and queuing

	2015 (without development)			2015 (with development)		
Junction arm	**RFC**	**Queue**	**Delay (s)**	**RFC**	**Queue**	**Delay (s)**
A1085 (South)	0.361	0.6	2.5	0.368	0.6	2.5
Tata Steel Access	0.162	0.2	3.9	0.164	0.2	4.0
A1085 (North)	0.393	0.6	2.6	0.480	0.9	3.1
Wilton Access	0.020	0.0	4.0	0.022	0.0	4.4

7.5.12 It is observed from **Table 25** that without the development no arms of the junction exceed 0.85 with queues of less than a single PCU. With the addition of the development traffic of 193 two-way vehicle movements (22 HGVs and 171 cars) the junction would continue to operate with spare capacity, with queues no greater a single PCU and delays of less than five seconds. Full junction modelling outputs including details of junction geometry, are provided in **Annex 29**.

Junction 11 - North east Middlesbrough, junction of the A1085, A66 and A1053

7.5.13 Junction 11 forms the signalised roundabout junction of theA1085 Trunk Road, A1053 Greystone Road, Tees Dock Road and Wilton site access, referred to as the Greystone Roundabout.

7.5.14 MCTC data for this junction has been taken from the LaME TA. The traffic survey data for this junction is presented in PCUs for February 2012, so have therefore been factored to 2015. **Annex 30** shows the factored flows for 2015.

7.5.15 Industry standard junction modelling software LinSig V3 has been used to simulate the existing junction performance. Details of the existing signal timings and phasing's have been sourced from the Highways Agency.

7.5.16 **Table 26** summarises the results of the junction assessment during a 2015 weekday evening peak hour for both with and without development (peak construction) scenarios.

Table 26 Junction 11, junction capacity, delay and queuing

	2015 (without development)			2015 (with development)		
Junction arm	**DoS**	**Queue**	**Delay (s)**	**DoS**	**Queue**	**Delay (s)**
A1085 (North) Lane 1&2	63.5%	5.5	19.0	75.1%	8.2	22.3
A1085 (North) Lane 3	55.0%	6.0	19.7	67.1%	8.0	22.5
Wilton Works Access Lane 1	20.9%	0.8	12.8	45.9%	1.6	20.2
Wilton Works Access Lane 2	43.2%	1.2	22.5	24.1%	0.5	22.6
A1053 - Greystone Road Lane 1	37.6%	2.8	25.3	38.8%	2.9	25.5
A1053 - Greystone Road Lane 2	33.5%	2.5	24.7	37.1%	2.8	25.2
A1053 - Greystone Road Lane 3	6.3%	0.4	22.0	8.4%	0.6	22.1
A1085 (South) Lane 1	21.8%	1.1	6.4	25.5%	1.3	7.2
A1085 (South) Lane 2	23.2%	1.2	6.8	22.4%	1.1	7.4
A1053 - Tees Dock Road - Lane 1	44.6%	5.0	7.7	46.4%	5.4	7.9
A1053 - Tees Dock Road - Lane 2	64.3%	9.7	10.0	66.6%	10.4	10.4
PRC	40.0%			19.8%		

7.5.17 It is observed from **Table 26** that without the development the junction has no arms with a DoS exceeding a 90%, with the largest queue of 10 PCUs on the A1053 Tees Dock Road approach. With the addition of the proposed development traffic of 221 two-way vehicle movements (49 HGVs and 172 cars), there would be a slight deterioration in DoS for some arms; however, the junction would continue to operate with spare capacity, with queues only predicted to increase by up to three PCUs and delays by seven seconds, which is considered to be indiscernible. Full junction modelling outputs including details of signal staging, timings, etc. are provided in **Annex 31**.

Junction 12 - South east Middlesbrough, junction of the A1053, A174 and B1380

7.5.18 Junction 12 forms the signalised roundabout junction of the A1053, A174 and B1380.

7.5.19 MCTC data for this junction has been taken from the LaME TA. The traffic survey data for this junction is presented in PCUs for February 2012, so have therefore been factored to 2015. **Annex 32** shows the factored flows for 2015.

7.5.20 Industry standard junction modelling software LinSig V3 has been used to simulate the existing junction performance. Details of the existing signal timings and phasing's have been sourced from the Highways Agency, as the A1053 and A174 form part of the Strategic Highway Network.

7.5.21 **Table 27** summarises the results of the junction assessment during a 2015 weekday evening peak hour for both with and without development (peak construction) scenarios.

Table 27 Junction 12, junction capacity, delay and queuing

	2015 (without development)			2015 (with development)		
Junction arm	**DoS**	**Queue**	**Delay (s)**	**DoS**	**Queue**	**Delay (s)**
A1053 - Greystone Road Lane 1	80.0%	6.6	21.3	87.5%	9.3	31.6
A1053 - Greystone Road Lane 2	80.0%	6.6	21.3	87.9%	9.4	32.4
A1053 - Greystone Road Lane 3	85.0%	7.9	27.3	90.0%	10.3	37.3
A174 (East) Lane 1	56.7%	0.7	2.1	56.7%	0.7	2.1
A174 (East) Lane 2	36.8%	3.6	17.1	36.8%	3.6	17.1
A174 (East) Lane 3	24.0%	2.3	15.5	24.0%	2.3	15.5
A174 (West) Lane 1	25.6%	2.5	8.3	28.6%	2.9	8.5
A174 (West) Lane 2 & 3	66.5%	6.6	10.3	67.1%	6.8	10.4
High Street Lane 1 & 2	75.4%	5.3	26.7	75.9%	5.3	27.1
PRC	5.9%			0.0%		

7.5.22 It is observed from **Table 27** that without the development the junction has a positive PRC with no arms exceeding 90% and with the largest queue of eight PCUs on the A1053 Greystone Road approach. With the addition of the proposed development traffic of 95 two-way vehicle movements (28 HGVs and 67 cars), there would be a slight deterioration in DoS for some arms; however, the junction would continue to operate with spare capacity, with queues only predicted to increase by up to three PCUs and delays by ten seconds, which is considered to be indiscernible. The full LinSig output is included in **Annex 33**.

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8 SUMMARY AND CONCLUSION

8.1 Summary

8.1.1 This TA was produced in support of a DCO application for proposed Harbour facilities in Teesside. The Harbour facilities form part of the proposed YPP for the winning, working, transfer and processing of polyhalite in North Yorkshire and Redcar and Cleveland.

8.1.2 The TA considers the impacts of the Harbour Facilities in isolation and then considers the cumulative impact of all YPP principal development components within a defined local study area for both the construction and operation phases.

8.1.3 This TA is supported by a Framework CTMP which provides details of how HGV and workforce movements would be managed during the construction phase, including details of proposed monitoring, enforcement and control measures.

8.1.4 In preparing this TA a series of pre-application meetings were undertaken with transport stakeholders, this engagement served to establish the methodology for the TA and the key issues to be addressed.

8.1.5 **Section 2** sets out the development proposals and the proposed highway access arrangements.

8.1.6 **Section 3** sets outs the policy framework and the guidance which has informed the development of the TA.

8.1.7 **Section 4** defines a local study area for the TA (Redcar and Cleveland) and contains a detailed review of baseline transport conditions in terms of highway characteristics, traffic flows, sustainable transport options, road safety, and junction capacity. Future year baseline traffic flows for 2017 are derived by the application of TEMpro growth factors and the inclusion of committed development traffic.

8.1.8 **Section 5** sets out in detail the HGV and personnel trip generation for the proposed developments for the peak construction Phase 1.

8.1.9 **Section 6** assesses the impact of peak Harbour facilities construction traffic on highway safety and operation. No impacts are identified that require mitigation (over and above those embedded in the development proposals).

8.1.10 **Section 7** assesses the in-combination impacts of the Harbour facilities and the other YPP developments within the defined local study area. No impacts are identified that require mitigation (over and above those embedded in the development proposals).

8.2 Conclusion

8.2.1 The TA has examined in detail the transport impacts resulting from traffic generated by the Harbour facilities. Potential impacts have been mitigated by the inclusion of embedded mitigation in the development proposals.

8.2.2 In accordance with the NPPF, it has been demonstrated that the residual construction and operational phase traffic impact of the proposed Harbour facilities would not represent a 'severe' impact.

8.3 References

Ashley Helme Associates. (August 2013). Land at the Marske Estate, Transport Assessment

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Figures

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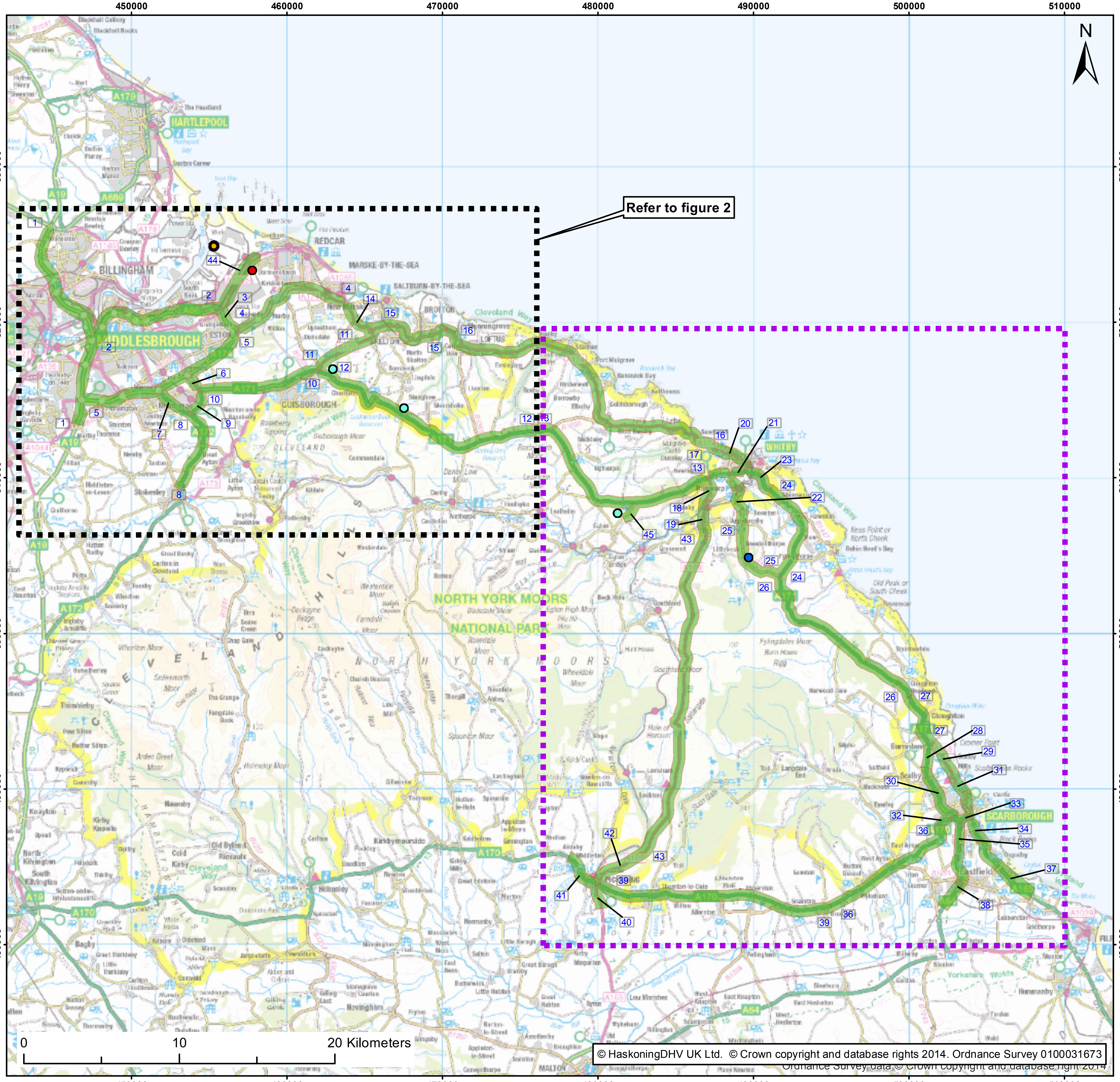

Legend:

- Study Area
- 1 Link Designations
- Mine and Doves Nest MTS
- Intermediate MTS Site
- Materials Handling Facility and Wilton MTS Site
- Harbour
- Redcar and Cleveland Study Area
- North Yorkshire Study Area

Client:	Project:
York Potash Limited	York Potash Project Harbour Facilities

Title: Wider Study Area

Part:	Figure:	Drawing No:
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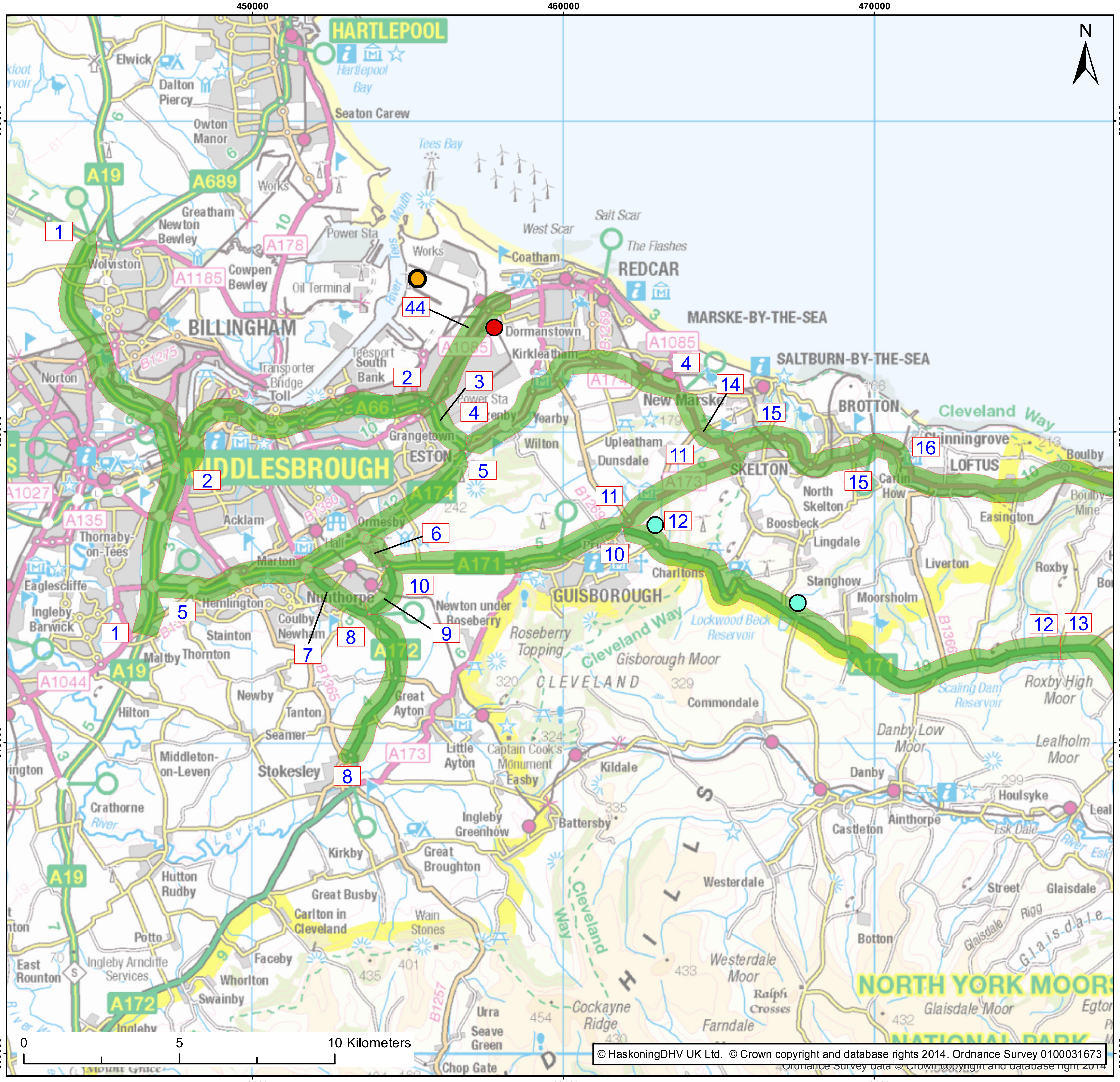

Legend:

- Study Area
- 1 Link Designations
- Intermediate MTS Site
- Materials Handling Facility and Wilton MTS Site
- Harbour Facilities

Client:	Project:
York Potash Limited	York Potash Project Harbour Facilities

Title:

Redcar and Cleveland Study Area

Part:	Figure:	Drawing No:
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Legend:

- Mine and Dove's Nest MTS
- Intermediate MTS Site
- Materials Handling Facility and MTS Portal Site
- Harbour

Client: York Potash Limited	Project: York Potash Project Harbour Facilities

Title: Wider Highway Network

Part:	Figure:	Drawing No:
HF	3	9Y0989-HF-TA-003

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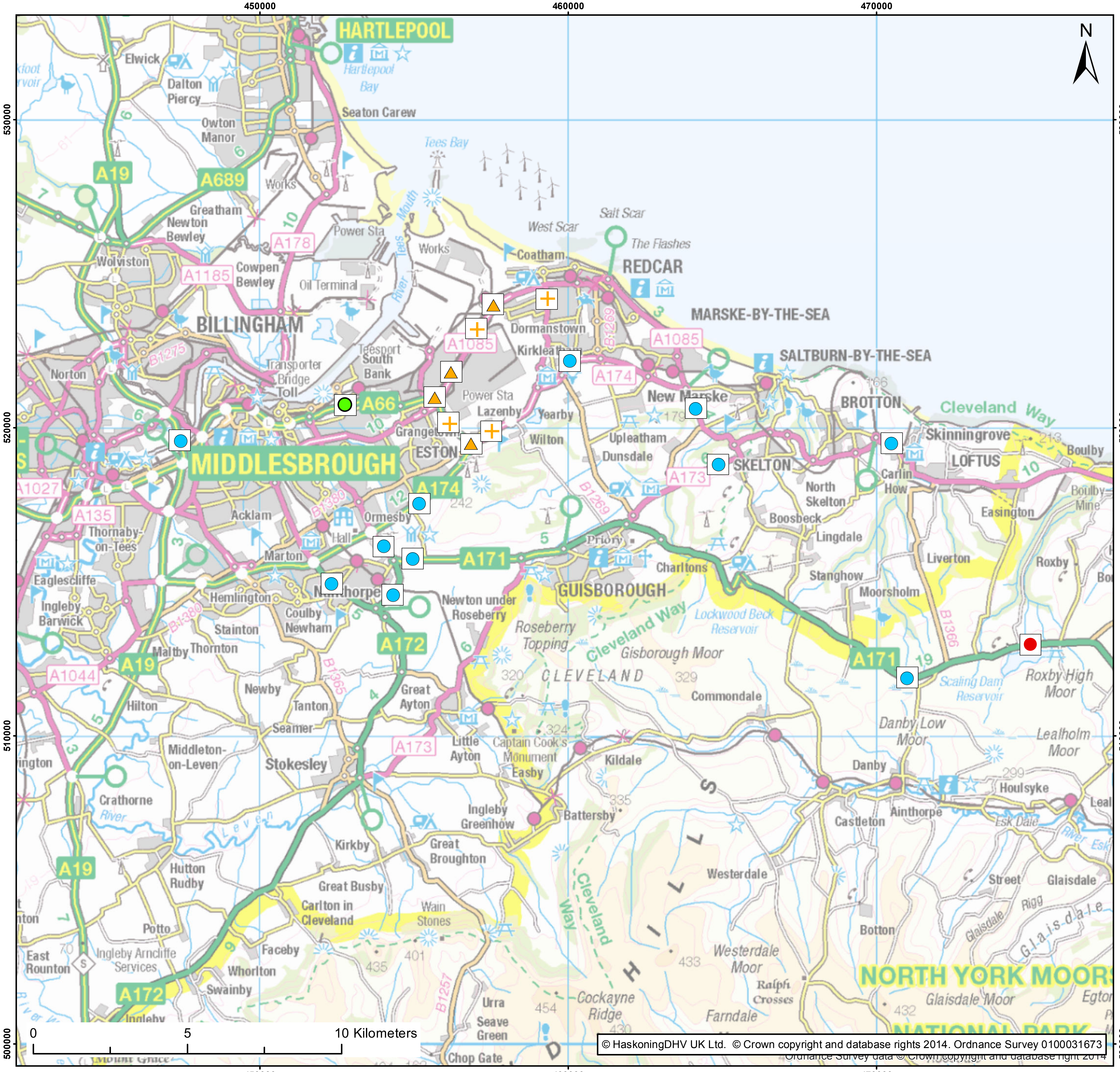

Legend:

- Middlesbrough Council Permanent Automatic Traffic Counts (2013/2014)
- Previous application automatic traffic counts
- Department for Transport AADF automatic traffic counts 2012
- RHDHV commissioned manual classified turning counts (April 2014)
- RHDHV commissioned temporary automatic traffic counts (April 2014)

Client:	Project:
York Potash Limited	York Potash Project Harbour Facilities

Title: Traffic Count Locations

Part:	Figure:	Drawing No:
HF	4	9Y0989-HF-TA-004

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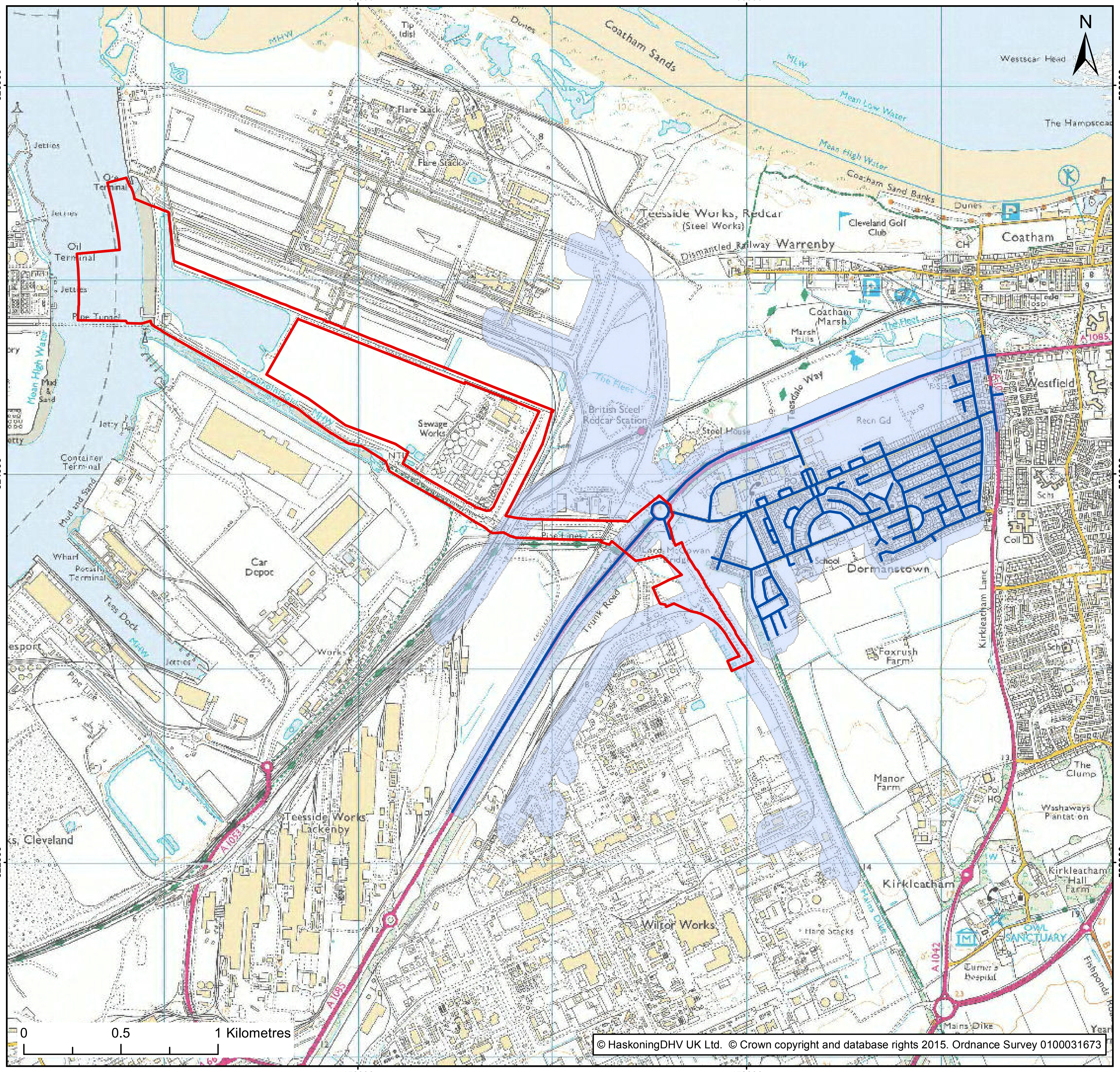

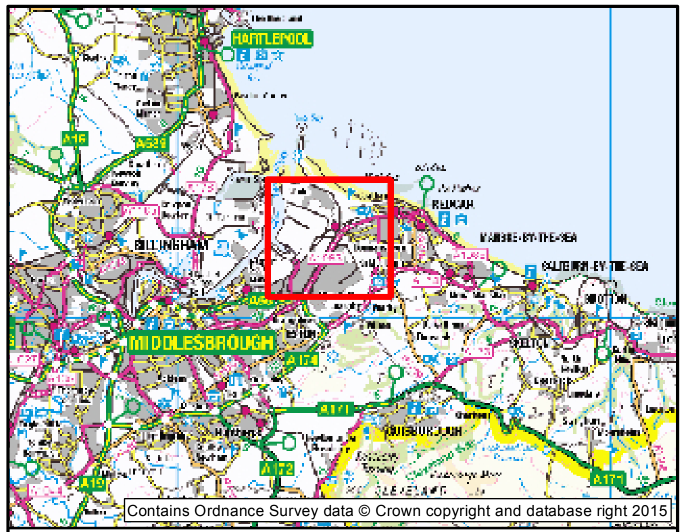

Legend:

Harbour Facility - Extent of works

2 km Walking Catchment from Harbour Facility

Note:
DCO Order Limits as of 24/02/15

Client:	Project:
York Potash Limited	York Potash Project Harbour Facilities

Title:
2km Walking Catchment from Entrance of Harbour Facilities site

Part:	Figure:	Drawing No:
HF	5	9Y0989-HF-TA-005

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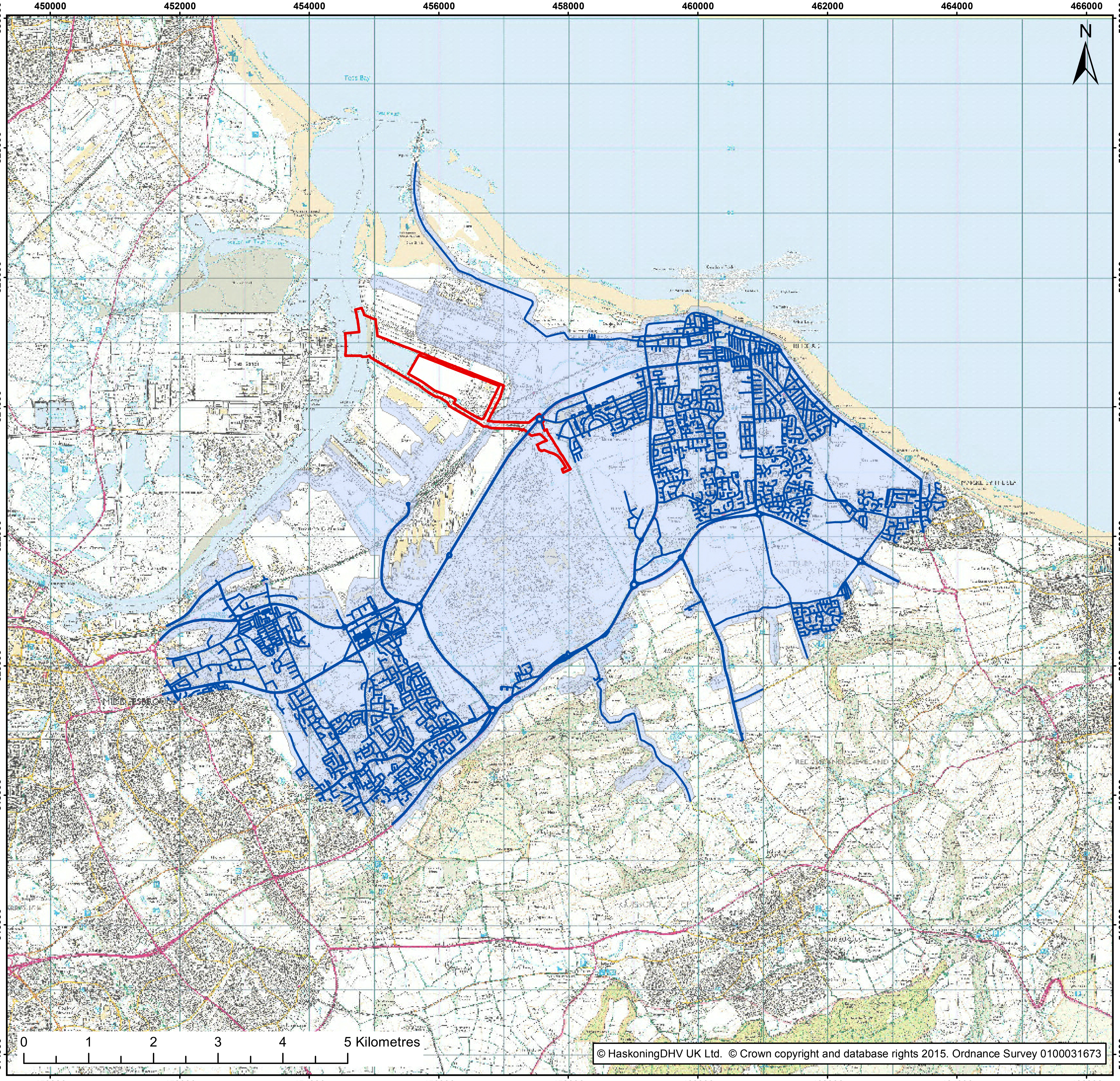

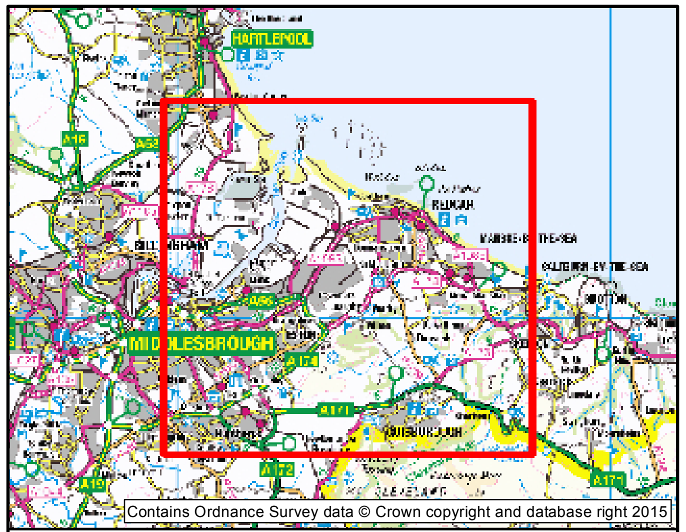

Legend:

- Harbour Facility - Extent of works
- 8 km Cycling Catchment from Harbour Facility

Note:
DCO Order Limits as of 24/02/15

Client:	Project:
York Potash Limited	York Potash Project Harbour Facilities

Title:
8km Cycling Catchment from Entrance of Harbour Facilities site

Part:	Figure:	Drawing No:
HF	6	9Y9890-HF-TA-6

Rev:	Date:	Drawn:	Checked:	Size:	Scale:
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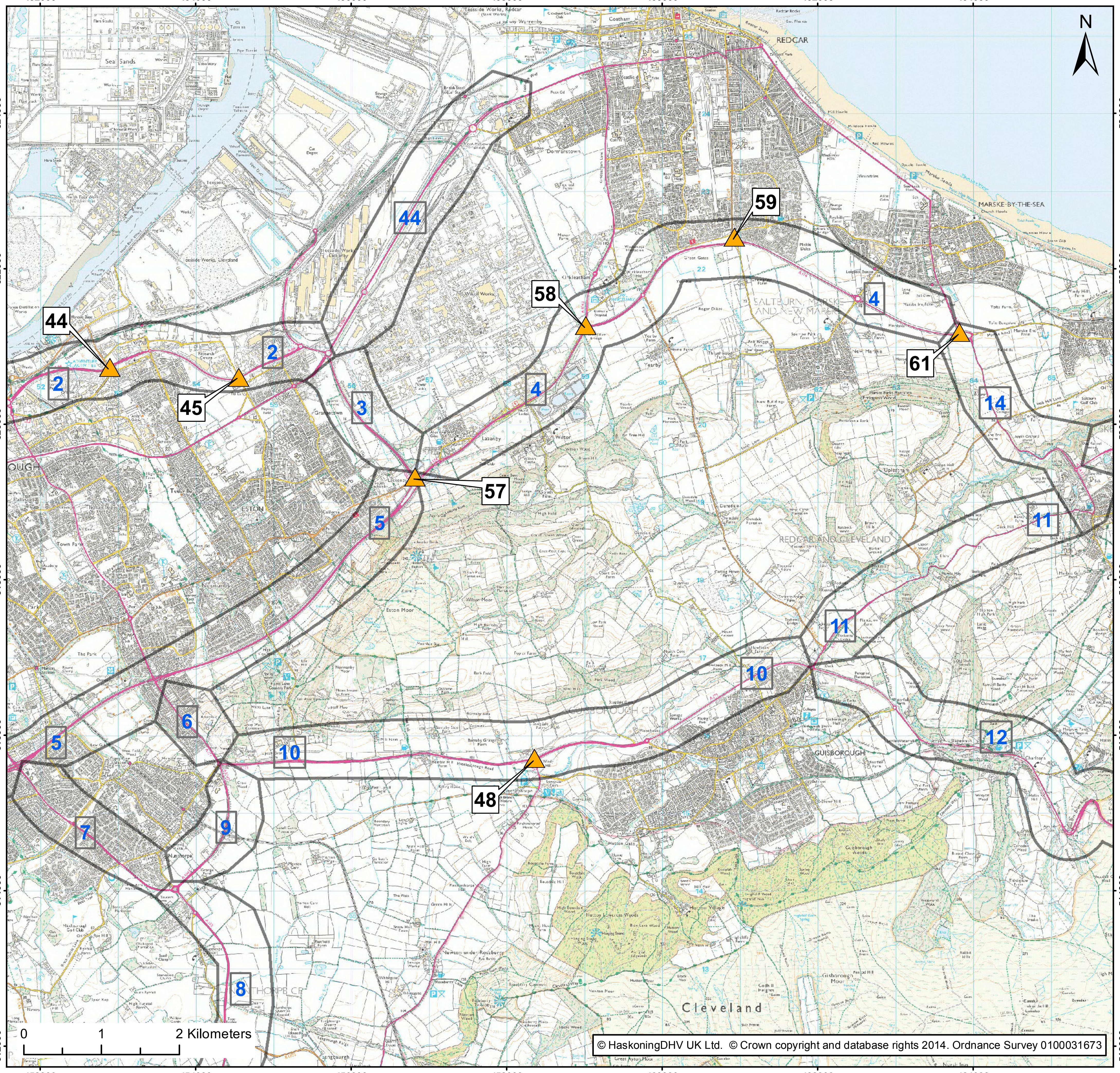

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Legend:

- Collision Cluster
- 1 Link Designation
- 10 Collision Cluster Reference

Client:	Project:
York Potash Limited	York Potash Project Harbour Facilities

Title: Collision Clusters

Part:	Figure:	Drawing No:
HF	7	9Y0989-HF-TA-007

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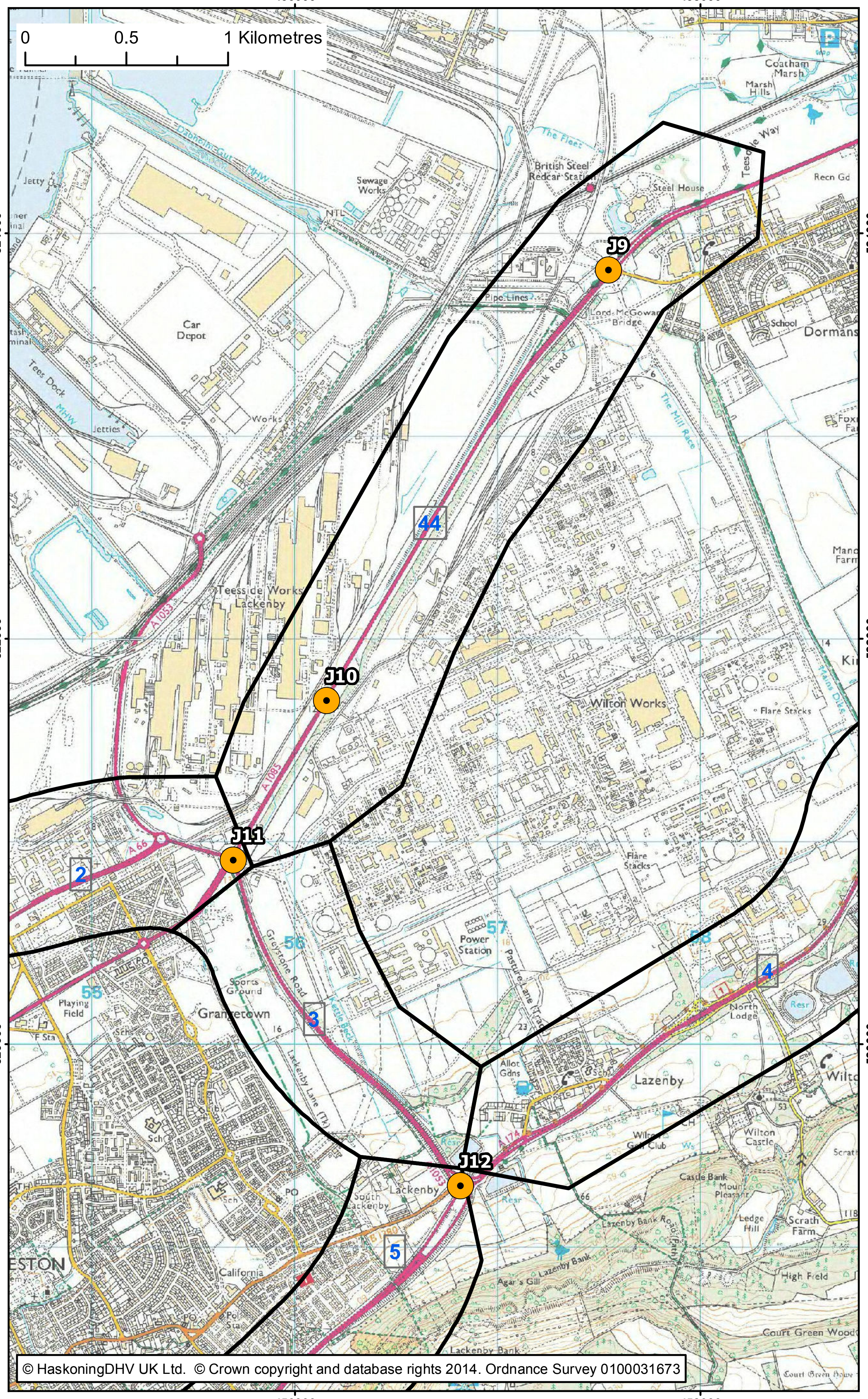

N

Legend:

- Study Area
- Congested Junction
- 1 Link Designation

Client:	Project:
York Potash Limited	York Potash Project Harbour Facilities

Title: Congested Junctions J9 - J12

Part:	Figure:	Drawing No:
HF	8	9Y0989-HF-TA-008

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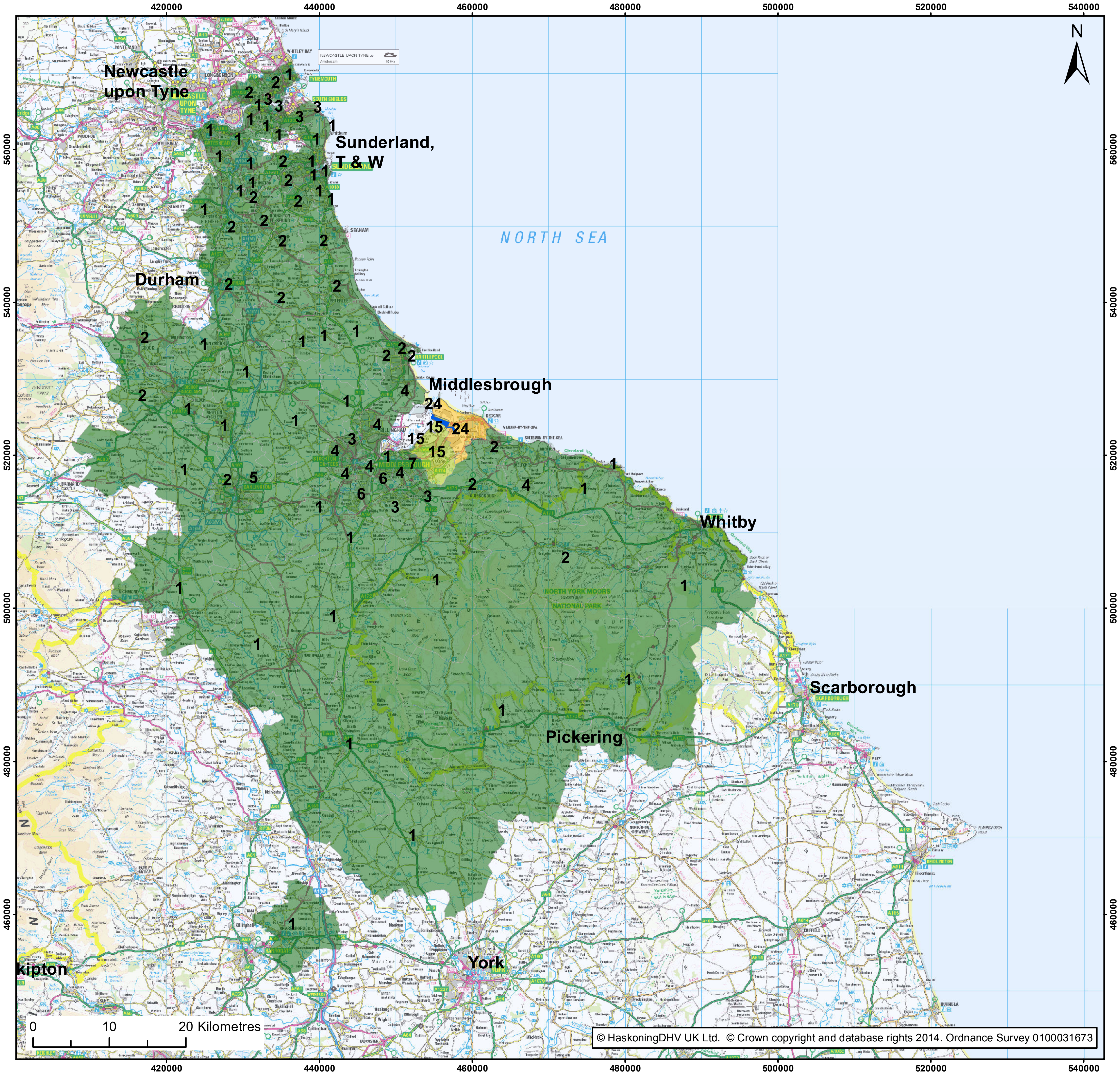

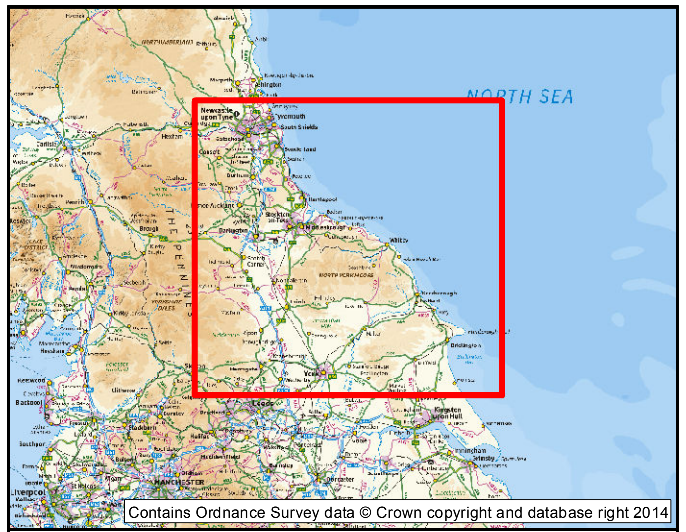

Legend:

Harbour Facility

Estimated Number of Workers per Postal District

- 1 - 10
- 10 - 20
- 20 - 30
- 30+

Client: York Potash Limited

Project: York Potash Project Harbour Facilities

Title: Location of Labour for the Construction of the Harbour Facilities

Part:	Figure:	Drawing No:
HF	9	9Y0989-HF-TA-009

Rev:	Date:	Drawn:	Checked:	Size:	Scale:
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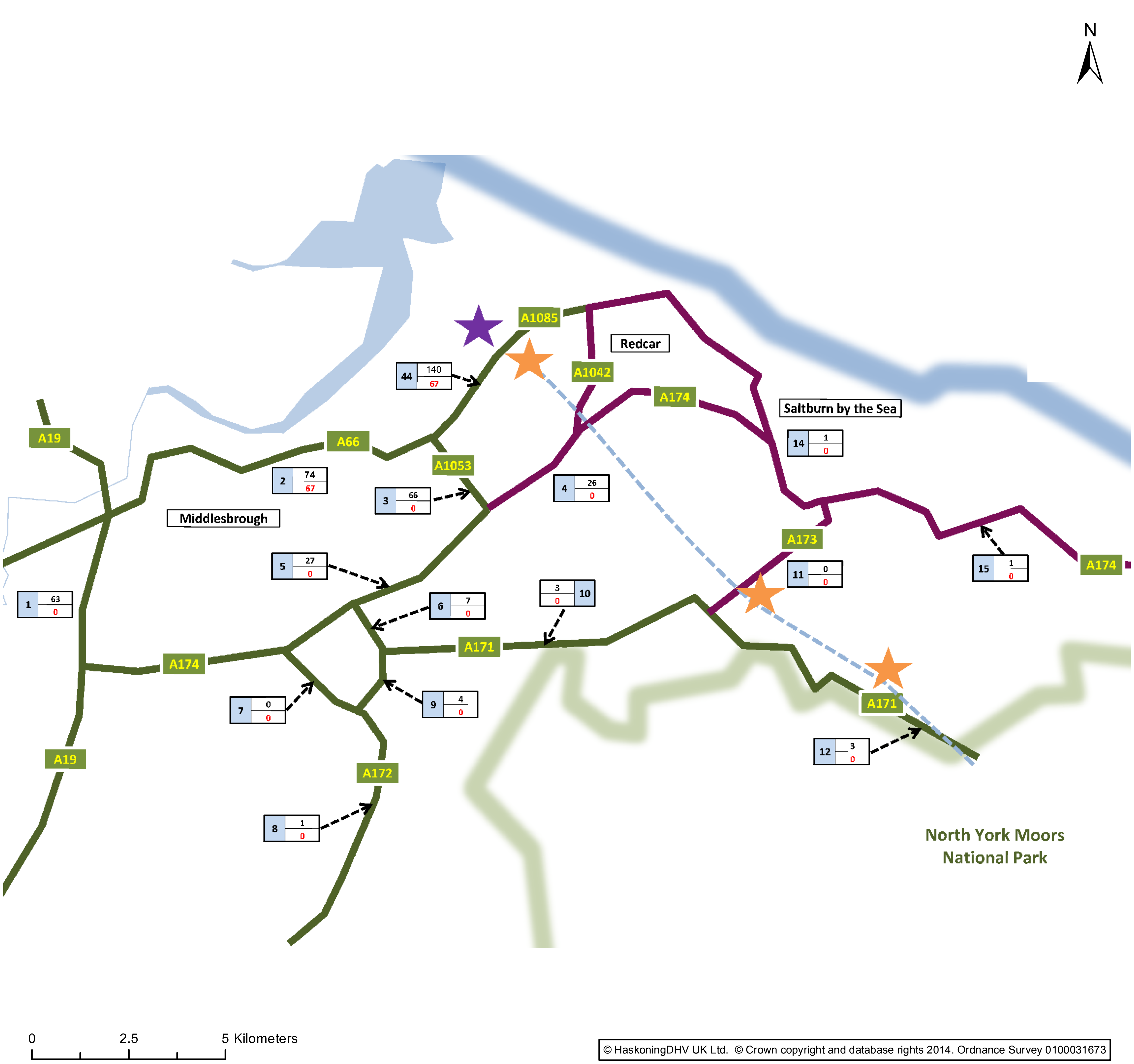

Legend:

X	Link Designation
x,xxx	Annual average daily traffic (Personnel)
x,xxx	Annual average daily traffic (HGVs)
	Primary Routes
	Main Roads
	Secondary Roads
	Proposed MTS route
	Proposed Harbour Facilities
	Proposed MTS Locations
	North York Moors, National Park boundary

Client: York Potash Limited

Project: York Potash Project Harbour Facilities

Title: Harbour Facilities Construction Peak 2017 Combined Daily Traffic Distribution

Part:	Figure:	Drawing No:
HF	10	9Y0989-HF-TA-010

Rev:	Date:	Drawn:	Checked:	Size:	Scale:
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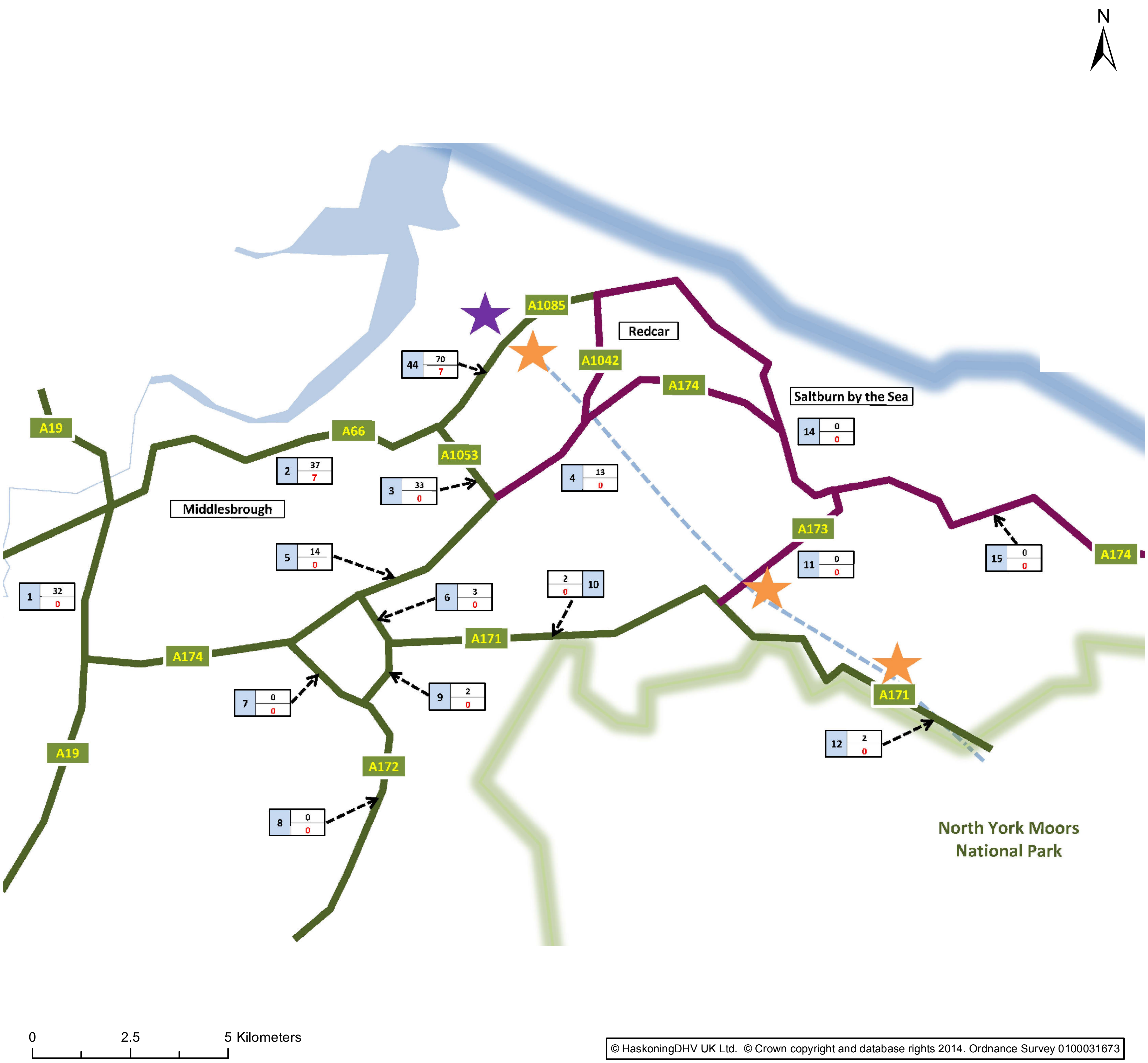

Legend:

X	Link Designation
x,xxx	Peak Hour (5pm-6pm) Personnel traffic
x,xxx	Peak Hour (5pm-6pm) HGV traffic
	Primary Routes
	Main Roads
	Secondary Roads
	Proposed MTS route
	Proposed Harbour Facilities
	Proposed MTS locations
	North York Moors, National Park boundary

Client: York Potash Limited

Project: York Potash Project Harbour Facilities

Title: Harbour Facilities Construction Peak 2017 Combined Peak Hour 5pm - 6pm Traffic Distribution

Part: HF | Figure: 11 | Drawing No: 9Y0989-HF-TA-011

Rev:	Date:	Drawn:	Checked:	Size:	Scale:
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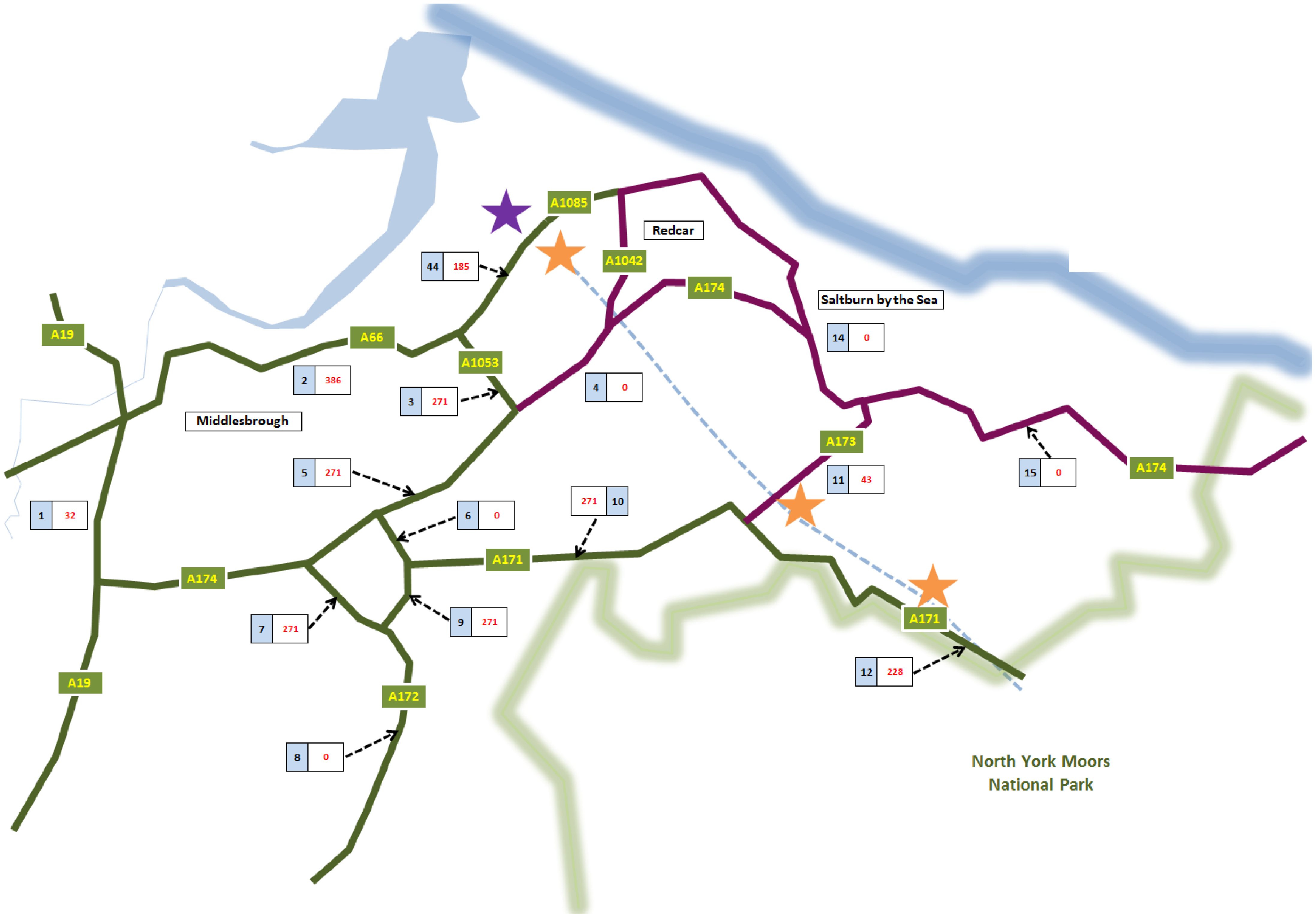

Legend:

- X — Link Designation
- X,XXX — Daily Construction Peak Traffic (HGVs)
- Primary Routes
- Main Roads
- Secondary Roads
- Proposed MTS route
- Proposed Harbour Facilities
- Proposed MTS Locations
- North York Moors, National Park boundary

Client: York Potash Limited

Project: York Potash Project Harbour Facilities

Title: In Combination Construction Peak 2015 HGV Daily Traffic Distribution

Part: HF | Figure: 12 | Drawing No: 9Y0989-HF-TA-012

Rev:	Date:	Drawn:	Checked:	Size:	Scale:
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1	17/03/2015	JPR	SKT	A3	NTS

Co-ordinate system: British National Grid

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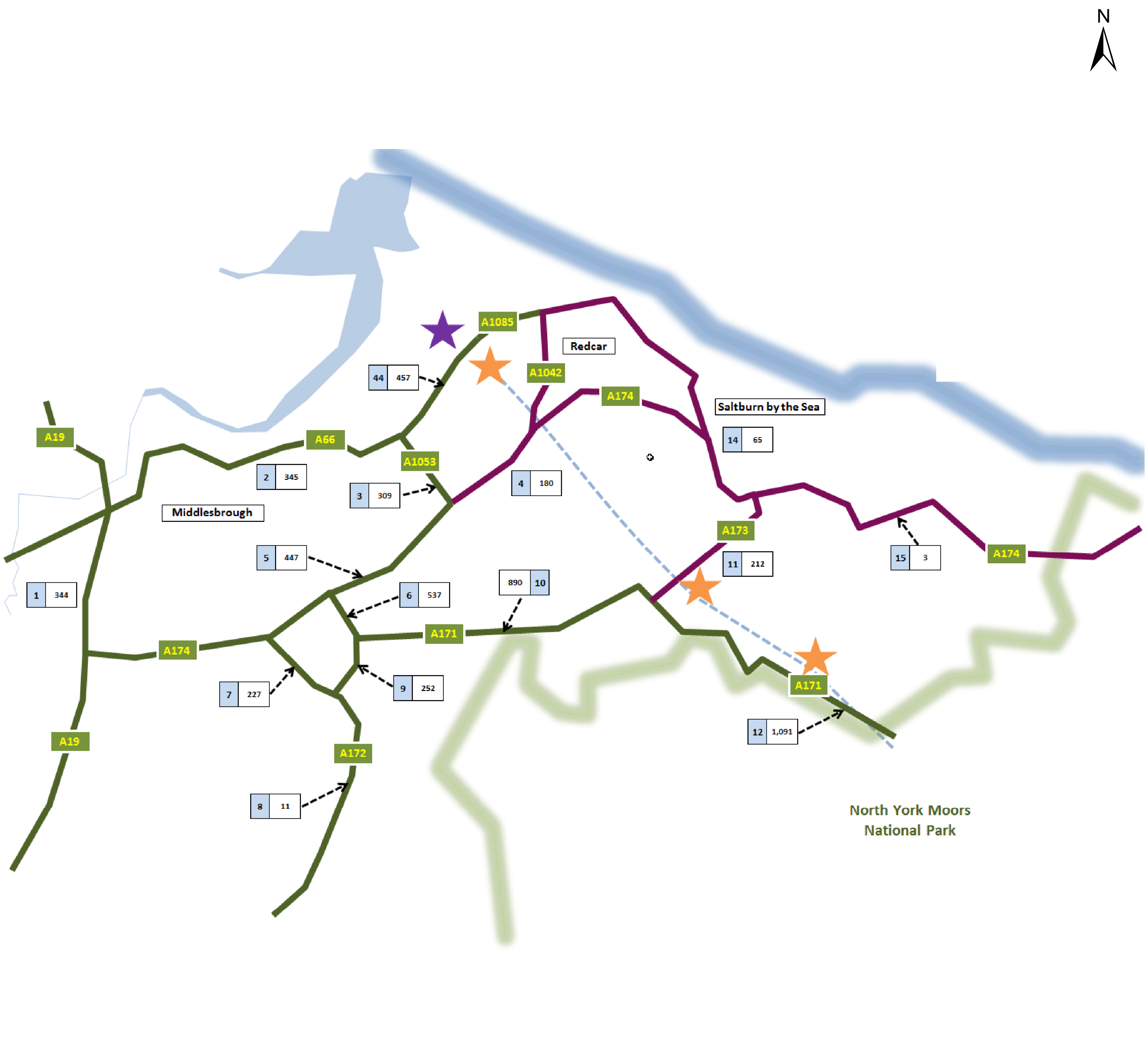

Legend:

X	Link Designation
x,xxx	Daily Construction Peak Traffic (Personnel)
	Primary Routes
	Main Roads
	Secondary Roads
	Proposed MTS route
	Proposed Harbour Facilities
	Proposed MTS Locations
	North York Moors, National Park boundary

Client:	Project:
York Potash Limited	York Potash Project Harbour Facilities

Title:
In Combination Construction
Peak 2015 Personnel
Daily Traffic Distribution

Part:	Figure:	Drawing No:
HF	13	9Y0989-HF-TA-013

Rev:	Date:	Drawn:	Checked:	Size:	Scale:
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1	17/03/2015	JPR	SKT	A3	NTS

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Legend:

X	Link Designation
x,xxx	Peak Hour (5pm-6pm) Personnel traffic
x,xxx	Peak Hour (5pm-6pm) HGV traffic
	Primary Routes
	Main Roads
	Secondary Roads
	Proposed MTS route
	Proposed Harbour Facilities
	Proposed MTS locations
	North York Moors, National Park boundary

Client: York Potash Limited

Project: York Potash Project Harbour Facilities

Title: In Combination Construction Peak 2015 Combined Peak Hour 5pm - 6pm Traffic Distribution

Part:	Figure:	Drawing No:
HF	14	9Y0989-HF-TA-014

Rev:	Date:	Drawn:	Checked:	Size:	Scale:
0	08/12/2014	MCP	SKT	A3	NTS
1	17/03/2015	JPR	SKT	A3	NTS

Co-ordinate system: British National Grid

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Annex 1

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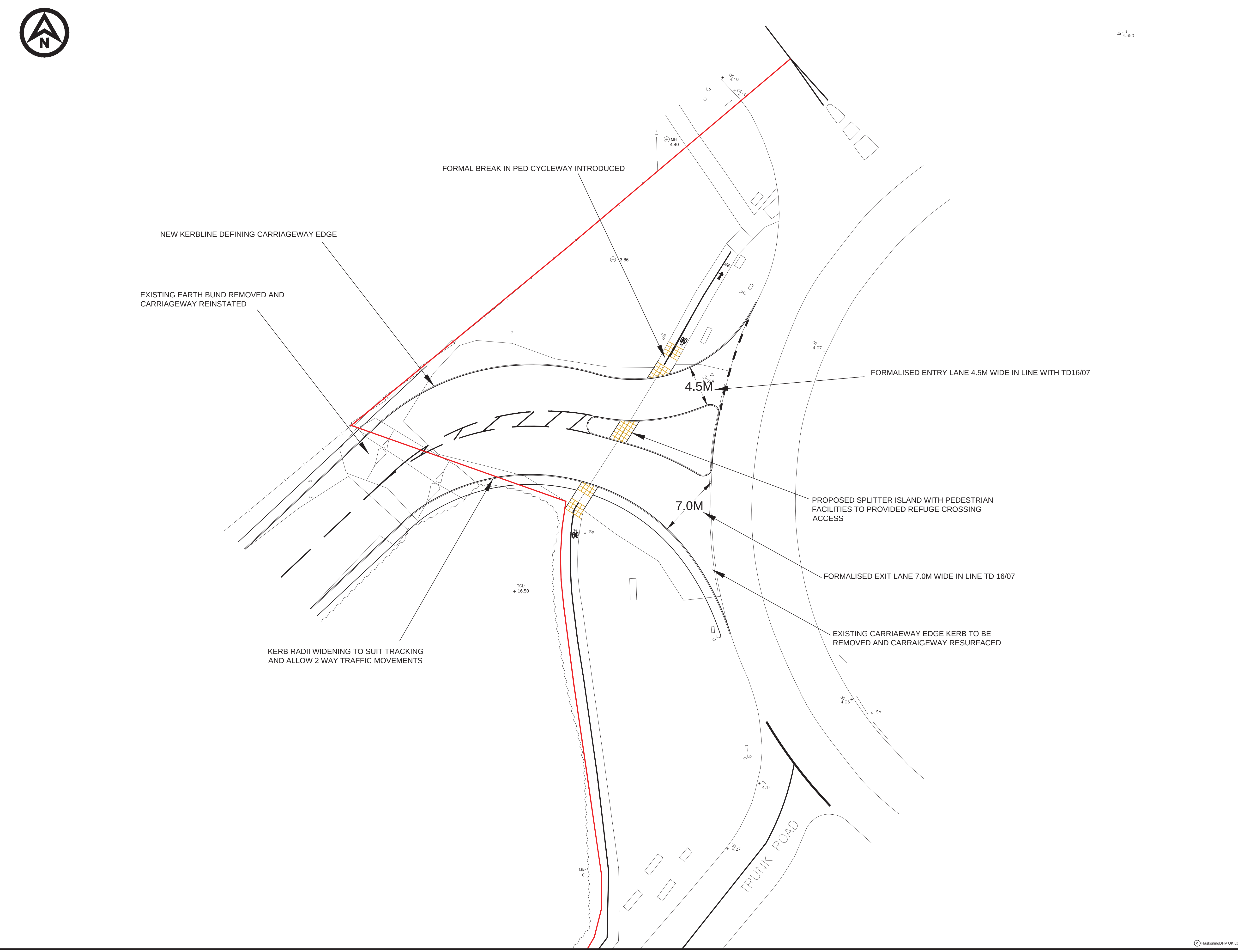

NOTES

1. THE PROPOSED ACCESS ALTERATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH DESIGN MANUAL FOR ROADS AND BRIDGES TD19/06 VOLUME 6, SECTION 2, PART 3

KEY

EXISTING HIGHWAY BOUNDARY

REV	DATE	DESCRIPTION	BY	CHK	APP
3	03.12.14	DOCUMENT	RO	DJ	DJ
2	25.11.14	NOTES AND TITLE AMENDED	RO	DJ	DJ
1	20.11.14	HIGHWAY BOUNDARY ADDED	RO	DJ	DJ

REVISIONS

YORKPOTASH
A Sirius Minerals Project

PROJECT

YORK POTASH
GENERAL ARRANGEMENT DRAWING

TITLE

THE YORK POTASH HARBOUR
FACILITES ORDER 201X
HARBOUR CONSTRUCTION
ROUTE ACCESS.
REGULATION 5 (2) (o)
DOCUMENT 3.11

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DATE 18.11.14	CLIENT'S REF.	
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Annex 2

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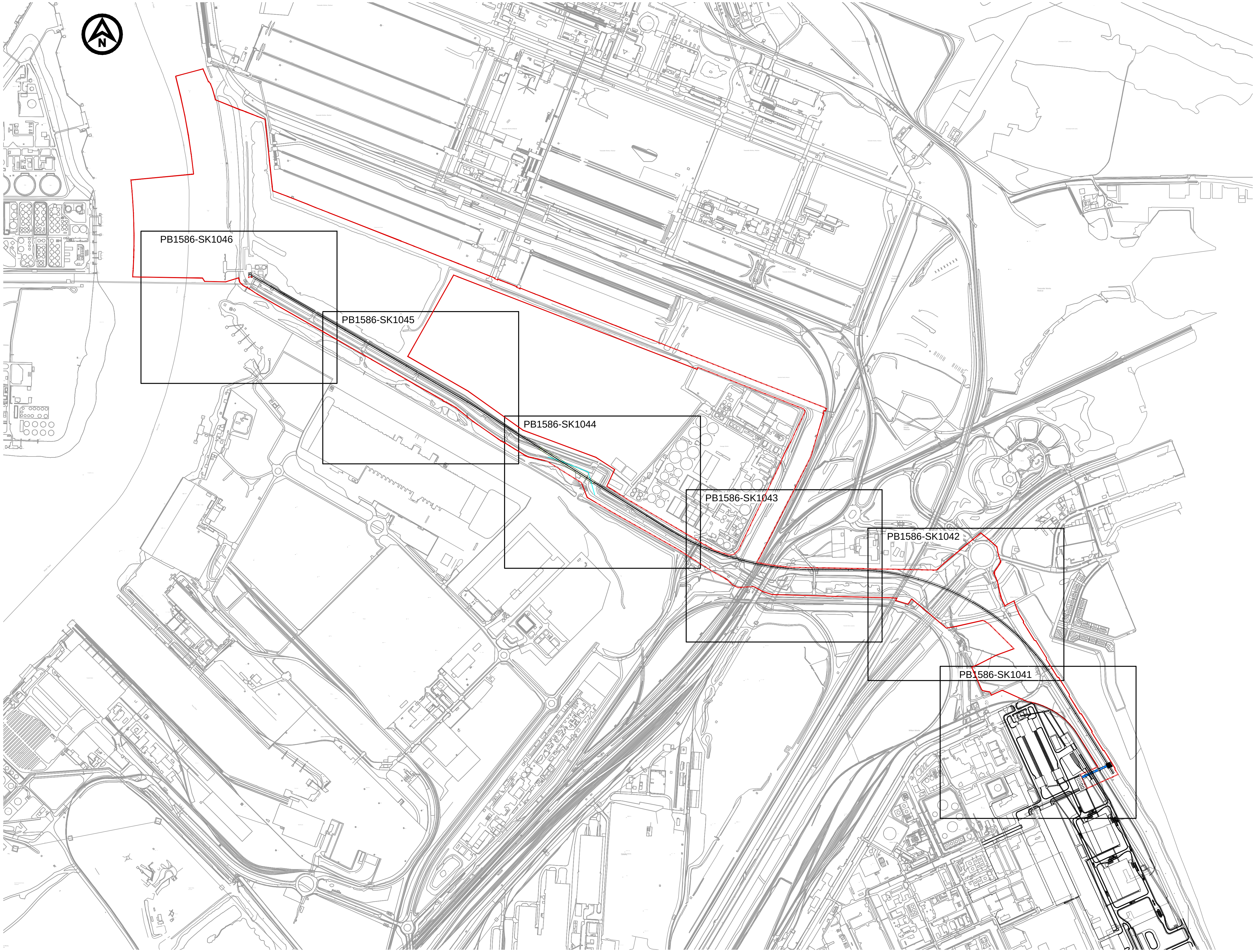

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C	12.03.15	MINOR REVISIONS	LW	DGB	MH
B	05.03.15	ISSUED FOR INFORMATION	TF	DGB	MH
A	03-02-15	ISSUED FOR INFORMATION	LW	DGB	SM

REVISIONS

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PROJECT

YORK POTASH

TITLE

THE YORK POTASH
HARBOUR FACILITIES ORDER 201X
CONVEYOR ROUTE
SOUTHERN ROUTE - KEY PLAN
REGULATION 5(2)(o) DOCUMENT 3.3A

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DATE JAN'15	CLIENT'S REF.	
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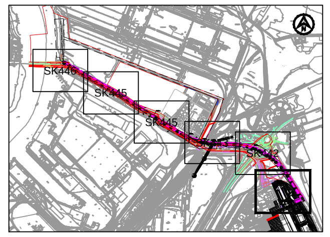
DRAWING No. PB1586-SK1040	REVISION E	

DRG No. PB1586-SK1041

NOTES

MAJOR CROSSINGS

MC 0 : Eastern Boundary Road	- Pass over in bridge
MC 1 : Highway A1085	- Pass over in bridge
MC 2 : YPL 1st access road	- Pass over in bridge
MC 3 : Hot metal rail	- Pass over in bridge
MC 4 : NWL 2nd access road	- Pass over in bridge
MC 5 : National power grid lines	- Pass under 10 m clearance
MC 6 : SSI road bridge	- Pass over in bridge
MC 7 : National rail way	- Pass over in bridge
MC 8 : Access NWL W.T.P.	- Pass over in bridge
MC 9 : Outfall	- Pass over in bridge



KEY PLAN
SCALE 1:50000

LEGEND - CONVEYOR

- TYPE 3 - OPEN CONVEYOR - 2 LEGS
- TYPE 4 - OVAL ENCLOSED CONVEYOR - 2 LEGS
- TRANSFER TOWER
- ACCESS ROADS
- CONVEYOR FOOTINGS
- CONVEYOR AT THE QUAY

LEGEND - EXISTING SERVICES

- EASEMENT ZONES
- GAS - BP CATS
- GAS - GDF SUEZ
- GAS - RWE
- FIBRE OPTIC CABLE
- MISC - DRAINS, CABLES, DUCTS
- FOUL WATER - SEMBCORP
- WATER - NWL
- GAS - ABANDONED
- ABOVEGROUND PIPELINE CORRIDOR
- OVERHEAD POWER CABLES
- CONVEYOR LIMITS OF DEVIATION

REV	DATE	DESCRIPTION	BY	CHK	APP
E	19.03.15	PLANNING ISSUE	LW	DGB	MH
D	16.03.15	MINOR REVISIONS	CH	DGB	MH
C	12.03.15	MINOR REVISIONS	LW	DGB	MH
B	05.03.15	ISSUED FOR INFORMATION	TF	DGB	MH
A	03-02-15	ISSUED FOR INFORMATION	LW	DGB	SM

REVISIONS

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PROJECT
YORK POTASH

TITLE
THE YORK POTASH
HARBOUR FACILITIES ORDER 201X
CONVEYOR ROUTE PLANS
SOUTHERN ROUTE - SHEET 1
REGULATION 5(2)(o) DOCUMENT 3.3B

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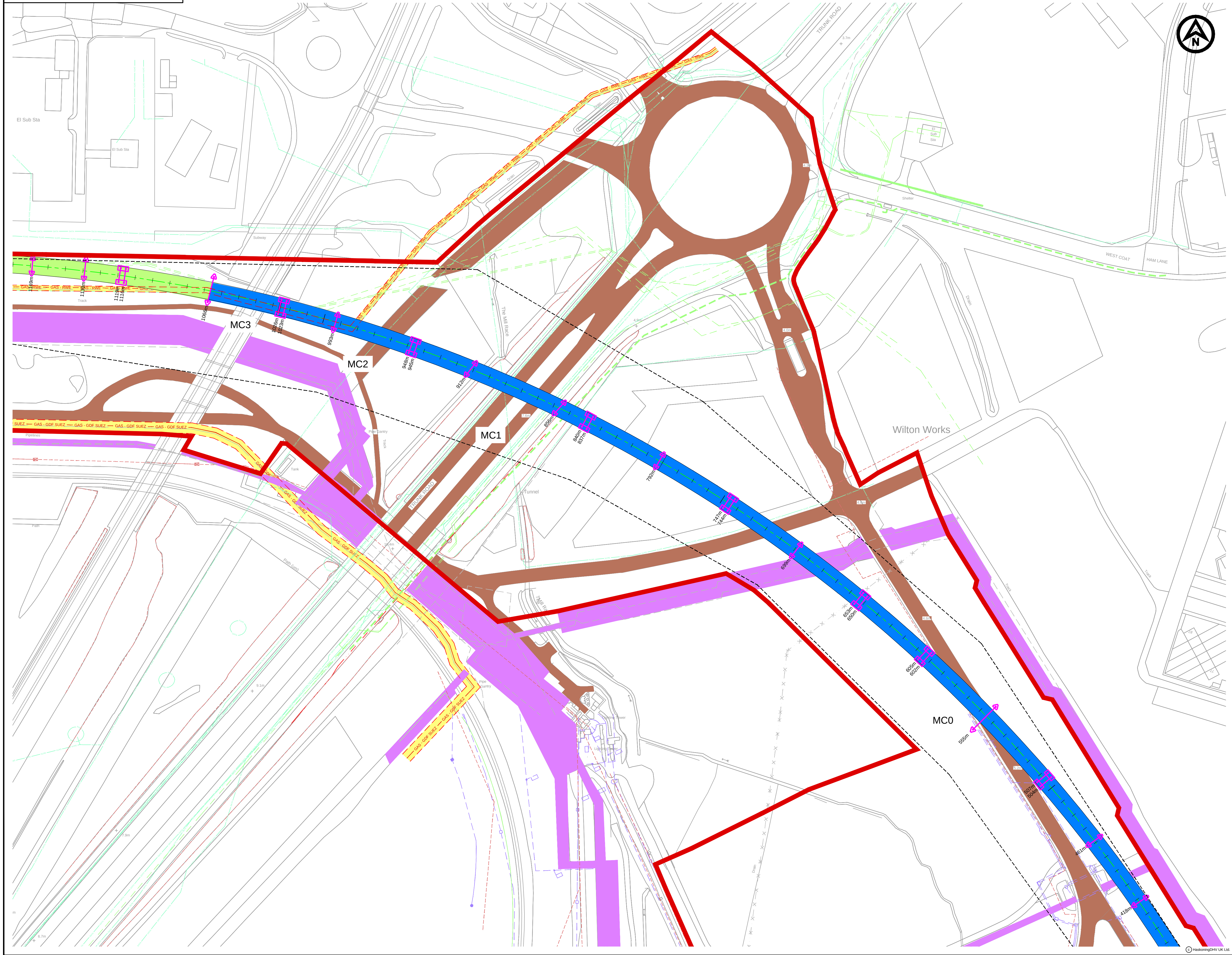
REVISION E

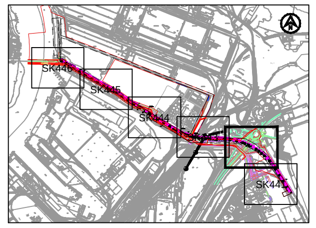
DRG No. PB1586-SK1042



NOTES

MAJOR CROSSINGS

MC 0 : Eastern Boundary Road	- Pass over in bridge
MC 1 : Highway A1085	- Pass over in bridge
MC 2 : YPL 1st access road	- Pass over in bridge
MC 3 : Hot metal rail	- Pass over in bridge
MC 4 : NWL 2nd access road	- Pass over in bridge
MC 5 : National power grid lines	- Pass under 10 m clearance
MC 6 : SSI road bridge	- Pass over in bridge
MC 7 : National rail way	- Pass over in bridge
MC 8 : Access NWL W.T.P.	- Pass over in bridge
MC 9 : Outfall	- Pass over in bridge



KEY PLAN
SCALE 1:50000

LEGEND - CONVEYOR

- TYPE 3 - OPEN CONVEYOR - 2 LEGS
- TYPE 4 - OVAL ENCLOSED CONVEYOR - 2 LEGS
- TRANSFER TOWER
- ACCESS ROADS
- CONVEYOR FOOTINGS
- CONVEYOR AT THE QUAY

LEGEND - EXISTING SERVICES

- EASEMENT ZONES
- GAS - BP CATS
- GAS - GDF SUEZ
- GAS - RWE
- FIBRE OPTIC CABLE
- MISC - DRAINS, CABLES, DUCTS
- FOUL WATER - SEMBCORP
- WATER - NWL
- GAS - ABANDONED
- ABOVEGROUND PIPELINE CORRIDOR
- OVERHEAD POWER CABLES
- CONVEYOR LIMITS OF DEVIATION

REV	DATE	DESCRIPTION	BY	CHK	APP
E	19.03.15	PLANNING ISSUE	LW	DGB	MH
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A	03-02-15	ISSUED FOR INFORMATION	LW	DGB	SM

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PROJECT
YORK POTASH

TITLE
THE YORK POTASH
HARBOUR FACILITIES ORDER 201X
CONVEYOR ROUTE PLANS
SOUTHERN ROUTE - SHEET 2
REGULATION 5(2)(o) DOCUMENT 3.3C

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REVISION E

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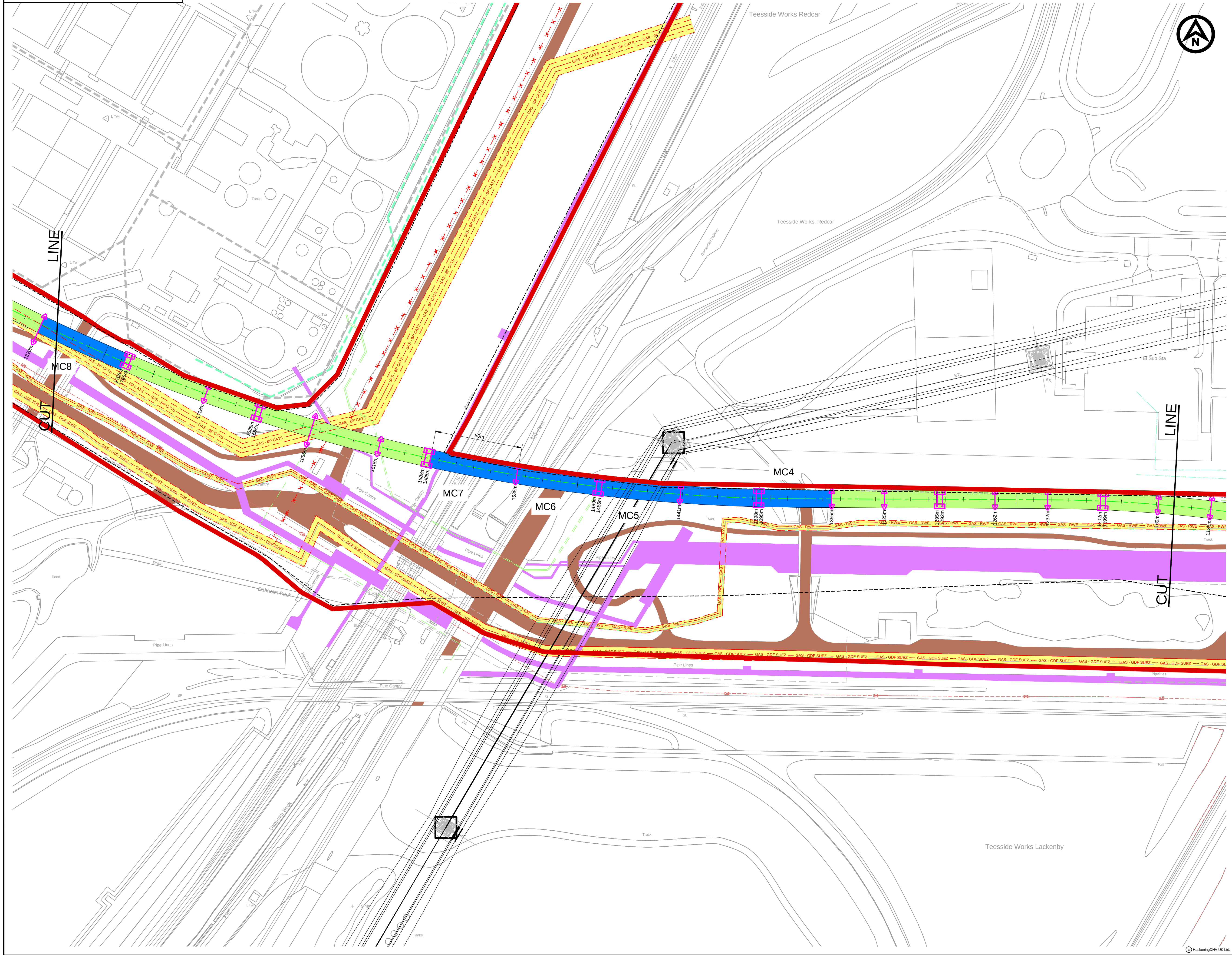

NOTES

MAJOR CROSSINGS

MC 0 : Eastern Boundary Road - Pass over in bridge
MC 1 : Highway A1085 - Pass over in bridge
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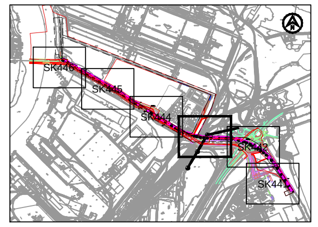
MC 3 : Hot metal rail - Pass over in bridge
MC 4 : NWL 2nd access road - Pass over in bridge
MC 5 : National power grid lines - Pass under 10 m clearance
MC 6 : SSI road bridge - Pass over in bridge
MC 7 : National rail way - Pass over in bridge
MC 8 : Access NWL W.T.P. - Pass over in bridge
MC 9 : Outfall - Pass over in bridge



KEY PLAN
SCALE 1:50000

LEGEND - CONVEYOR

- TYPE 3 - OPEN CONVEYOR - 2 LEGS
- TYPE 4 - OVAL ENCLOSED CONVEYOR - 2 LEGS
- TRANSFER TOWER
- ACCESS ROADS
- CONVEYOR FOOTINGS
- CONVEYOR AT THE QUAY

LEGEND - EXISTING SERVICES

- EASEMENT ZONES
- GAS - BP CATS
- GAS - GDF SUEZ
- GAS - RWE
- FIBRE OPTIC CABLE
- MISC - DRAINS, CABLES, DUCTS
- FOUL WATER - SEMBCORP
- WATER - NWL
- GAS - ABANDONED
- ABOVEGROUND PIPELINE CORRIDOR
- OVERHEAD POWER CABLES
- CONVEYOR LIMITS OF DEVIATION

REV	DATE	DESCRIPTION	BY	CHK	APP
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D	16.03.15	MINOR REVISIONS	CH	DGB	MH
C	11.03.15	MINOR REVISIONS	LW	DGB	MH
B	05.03.15	ISSUED FOR INFORMATION	TF	DGB	MH
A	03-02-15	ISSUED FOR INFORMATION	LW	DGB	SM

REVISIONS

YORKPOTASH
A Sirius Minerals Project

PROJECT
YORK POTASH

TITLE
THE YORK POTASH
HARBOUR FACILITIES ORDER 201X
CONVEYOR ROUTE PLANS
SOUTHERN ROUTE - SHEET 3
REGULATION 5(2)(o) DOCUMENT 3.3D

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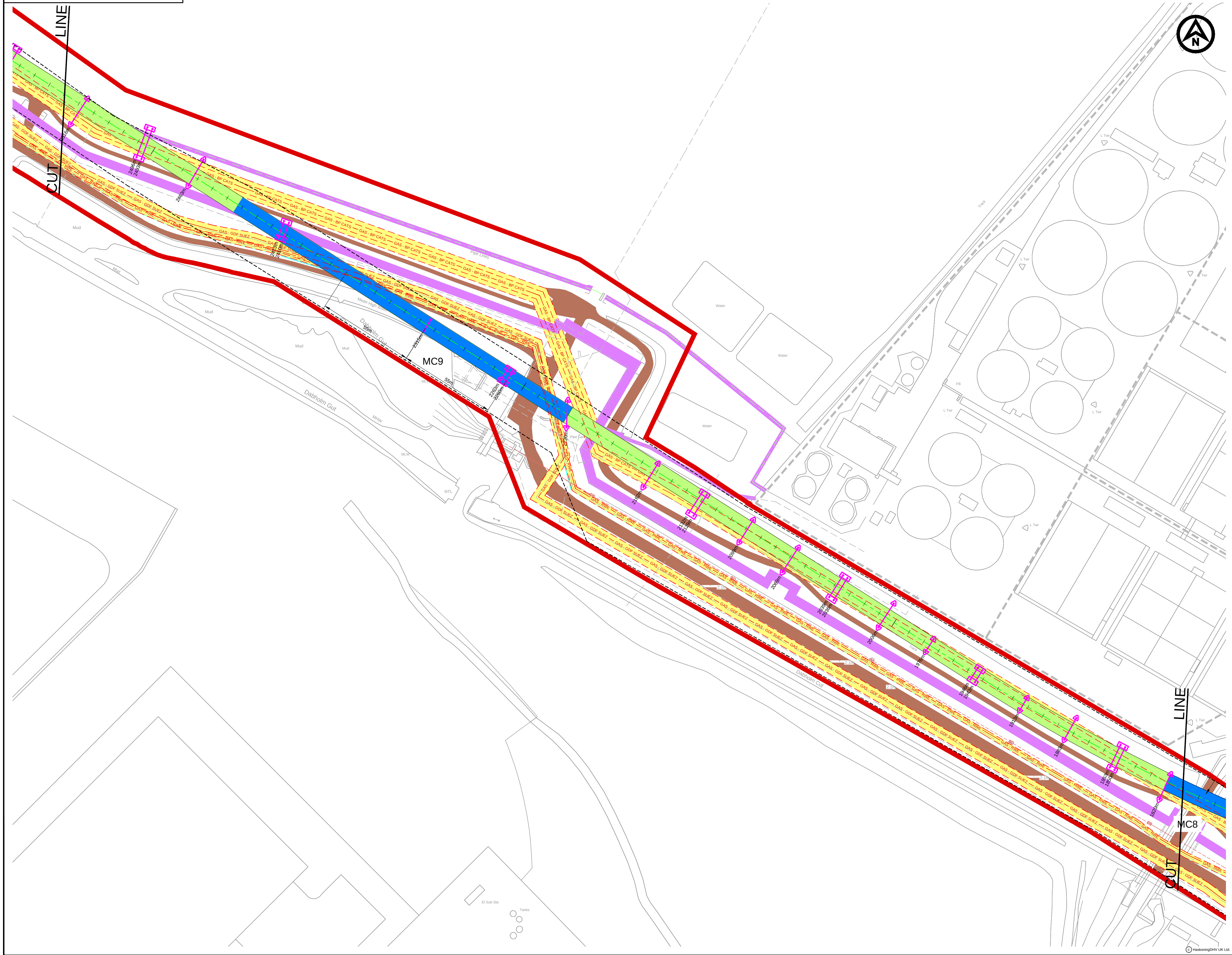

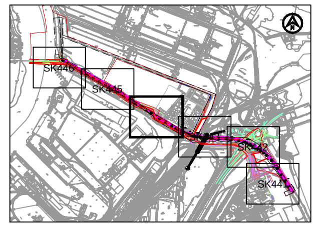

KEY PLAN
SCALE 1:50000

NOTES

MAJOR CROSSINGS

MC 0 : Eastern Boundary Road - Pass over in bridge
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MC 7 : National rail way - Pass over in bridge
MC 8 : Access NWL W.T.P. - Pass over in bridge
MC 9 : Outfall - Pass over in bridge

LEGEND - CONVEYOR

- TYPE 3 - OPEN CONVEYOR - 2 LEGS
- TYPE 4 - OVAL ENCLOSED CONVEYOR - 2 LEGS
- TRANSFER TOWER
- ACCESS ROADS
- CONVEYOR FOOTINGS
- CONVEYOR AT THE QUAY

LEGEND - EXISTING SERVICES

- EASEMENT ZONES
- GAS - BP CATS
- GAS - GDF SUEZ
- GAS - RWE
- FIBRE OPTIC CABLE
- MISC - DRAINS, CABLES, DUCTS
- FOUL WATER - SEMBCORP
- WATER - NWL
- GAS - ABANDONED
- ABOVEGROUND PIPELINE CORRIDOR
- OVERHEAD POWER CABLES
- CONVEYOR LIMITS OF DEVIATION

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B	05.03.15	ISSUED FOR INFORMATION	TF	DGB	MH
A	03-02-15	ISSUED FOR INFORMATION	LW	DGB	SM

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YORKPOTASH
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YORK POTASH

TITLE
THE YORK POTASH
HARBOUR FACILITIES ORDER 201X
CONVEYOR ROUTE PLANS
SOUTHERN ROUTE - SHEET 4
REGULATION 5(2)(o) DOCUMENT 3.3E

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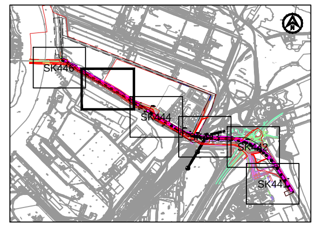
DRAWING No. PB1586-SK1044 — REVISION E

DRG No. PB1586-SK1045

NOTES

MAJOR CROSSINGS

MC 0 : Eastern Boundary Road	- Pass over in bridge
MC 1 : Highway A1085	- Pass over in bridge
MC 2 : YPL 1st access road	- Pass over in bridge
MC 3 : Hot metal rail	- Pass over in bridge
MC 4 : NWL 2nd access road	- Pass over in bridge
MC 5 : National power grid lines	- Pass under 10 m clearance
MC 6 : SSI road bridge	- Pass over in bridge
MC 7 : National rail way	- Pass over in bridge
MC 8 : Access NWL W.T.P.	- Pass over in bridge
MC 9 : Outfall	- Pass over in bridge



KEY PLAN
SCALE 1:50000

LEGEND - CONVEYOR

- TYPE 3 - OPEN CONVEYOR - 2 LEGS
- TYPE 4 - OVAL ENCLOSED CONVEYOR - 2 LEGS
- TRANSFER TOWER
- ACCESS ROADS
- CONVEYOR FOOTINGS
- CONVEYOR AT THE QUAY

LEGEND - EXISTING SERVICES

- EASEMENT ZONES
- GAS - BP CATS
- GAS - GDF SUEZ
- GAS - RWE
- FIBRE OPTIC CABLE
- MISC - DRAINS, CABLES, DUCTS
- FOUL WATER - SEMBCORP
- WATER - NWL
- GAS - ABANDONED
- ABOVEGROUND PIPELINE CORRIDOR
- OVERHEAD POWER CABLES
- CONVEYOR LIMITS OF DEVIATION

REV	DATE	DESCRIPTION	BY	CHK	APP
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A	03-02-15	ISSUED FOR INFORMATION	LW	DGB	SM

REVISIONS

YORKPOTASH
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PROJECT
YORK POTASH

TITLE
THE YORK POTASH
HARBOUR FACILITIES ORDER 201X
CONVEYOR ROUTE PLANS
SOUTHERN ROUTE - SHEET 5
REGULATION 5(2)(o) DOCUMENT 3.3F

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REVISION E

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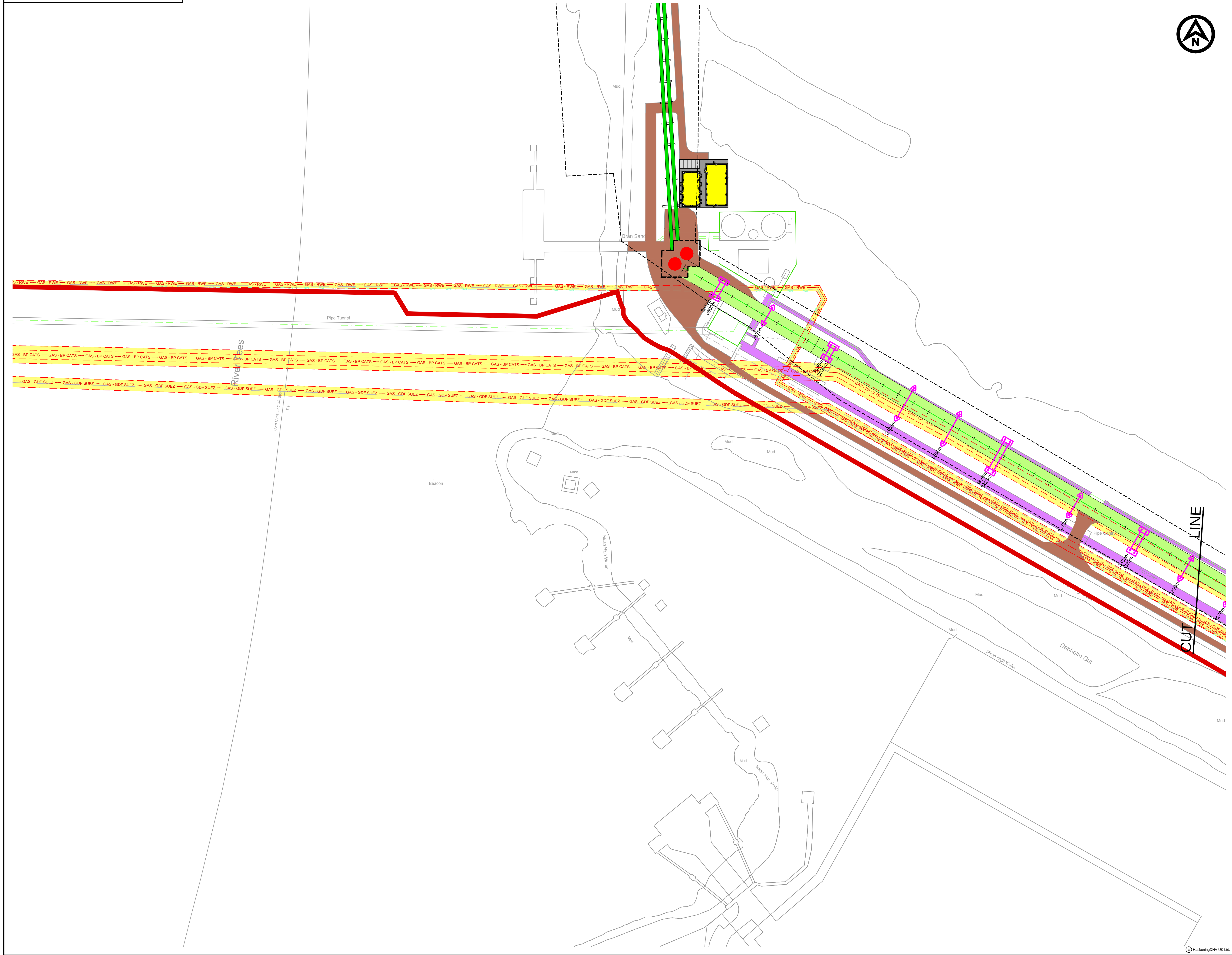

NOTES

MAJOR CROSSINGS

MC 0 : Eastern Boundary Road	- Pass over in bridge
MC 1 : Highway A1085	- Pass over in bridge
MC 2 : YPL 1st access road	- Pass over in bridge
MC 3 : Hot metal rail	- Pass over in bridge
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MC 8 : Access NWL W.T.P.	- Pass over in bridge
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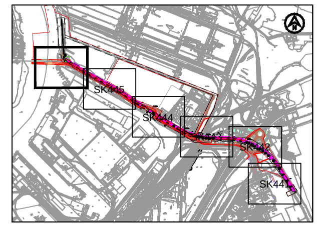

KEY PLAN

SCALE 1:50000

LEGEND - CONVEYOR

- TYPE 3 - OPEN CONVEYOR - 2 LEGS
- TYPE 4 - OVAL ENCLOSED CONVEYOR - 2 LEGS
- SURGE BINS
- ACCESS ROADS
- EXISTING BUILDING

LEGEND - EXISTING SERVICES

- EASEMENT ZONES
- GAS - BP CATS
- GAS - GDF SUEZ
- GAS - RWE
- FIBRE OPTIC CABLE
- MISC - DRAINS, CABLES, DUCTS
- FOUL WATER - SEMBCORP
- WATER - NWL
- GAS - ABANDONED
- ABOVEGROUND PIPELINE CORRIDOR
- OVERHEAD POWER CABLES
- CONVEYOR FOOTINGS
- CONVEYOR AT THE QUAY
- CONVEYOR LIMITS OF DEVIATION

REV	DATE	DESCRIPTION	BY	CHK	APP
E	19.03.15	PLANNING ISSUE	LW	DGB	MH
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REVISIONS

YORKPOTASH
A Sirius Minerals Project

PROJECT

YORK POTASH

TITLE

THE YORK POTASH
HARBOUR FACILITIES ORDER 201X
CONVEYOR ROUTE PLANS
SOUTHERN ROUTE - SHEET 6
REGULATION 5(2)(o) DOCUMENT 3.3G

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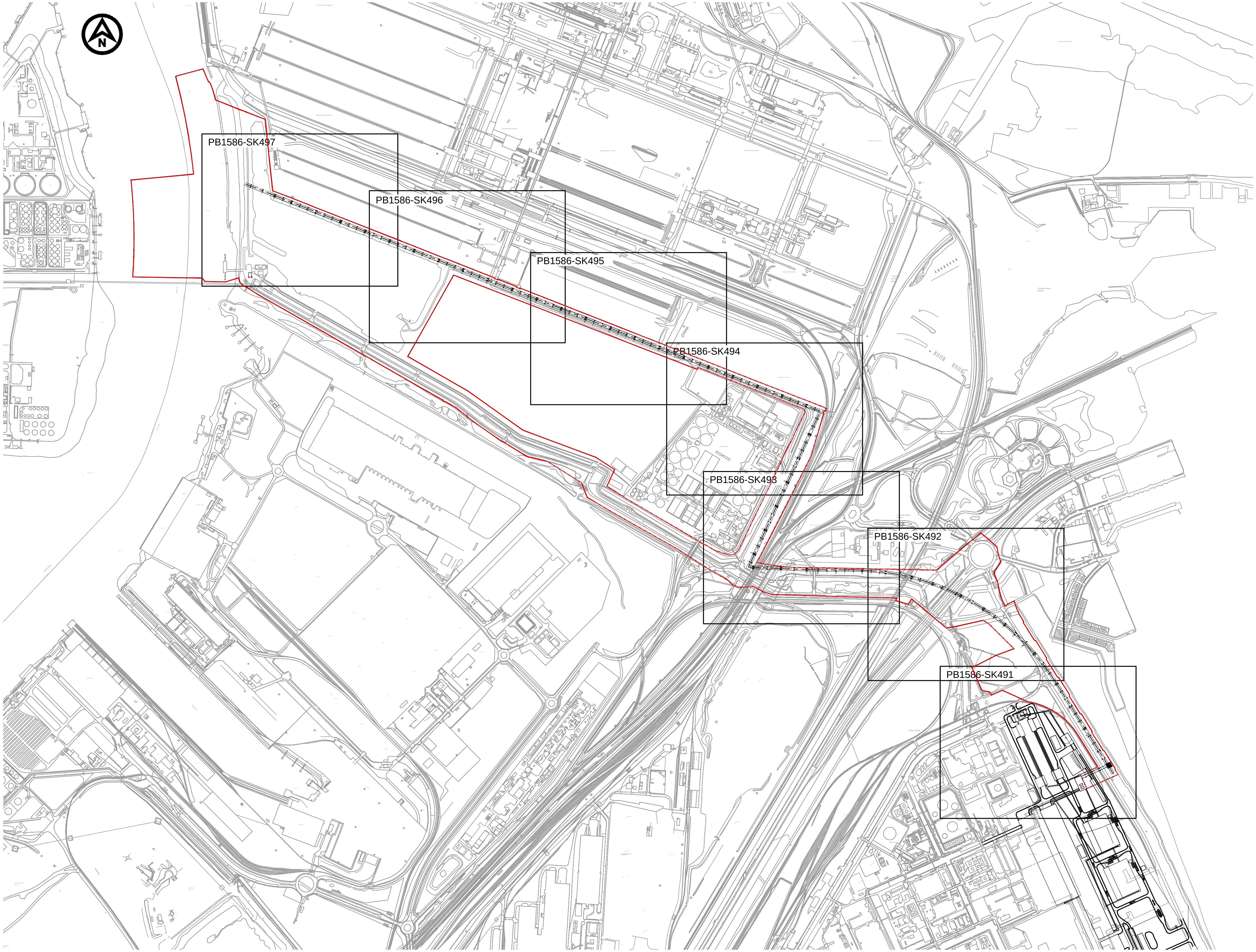
DRAWING No. PB1586-SK1046

REVISION E

DRG No. PB1586-SK490



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A	27-02-15	FIRST ISSUE	LW	DGB	RWP

REVISIONS

YORKPOTASH
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PROJECT

YORK POTASH

TITLE

THE YORK POTASH
HARBOUR FACILITIES ORDER 201X
CONVEYOR NORTHERN ROUTE - KEY PLAN
REGULATION 5(2)(o)
DOCUMENT 3.3H

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SCALE AT A1 NTS	AUTOCAD REF. PB1586-SK490	

DRAWING No. PB1586-SK490

REVISION E

DRG No. PB1586-SK491

NOTES

MAJOR CROSSINGS

MC 0 : Eastern Boundary Road - Pass over in bridge
MC 1 : Highway A1085 - Pass over in bridge
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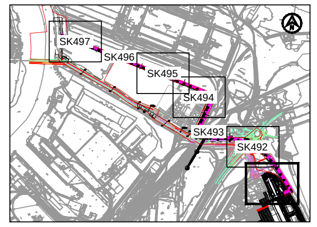

KEY PLAN
SCALE 1:50000

LEGEND - CONVEYOR

TYPE 3 - OPEN CONVEYOR - 2 LEGS
TYPE 4 - OVAL ENCLOSED CONVEYOR - 2 LEGS
TRANSFER TOWER
ACCESS ROUTES
CONVEYOR FOOTINGS
CONVEYOR AT THE QUAY

LEGEND - EXISTING SERVICES

EASEMENT ZONES
GAS - BP CATS
GAS - GDF SUEZ
GAS - RWE
FIBRE OPTIC CABLE
MISC - DRAINS, CABLES, DUCTS
FOUL WATER - SEMBCORP
WATER - NWL
GAS - ABANDONED
ABOVEGROUND PIPELINE CORRIDOR
OVERHEAD POWER CABLES
CONVEYOR LATERAL LIMITS OF DEVIATION

REV	DATE	DESCRIPTION	BY	CHK	APP
E	19.03.15	PLANNING ISSUE	LW	DGB	MH
D	16.03.15	MINOR REVISIONS	CH	DGB	MH
C	12.03.15	MINOR REVISIONS	LW	DGB	MH
B	05.03.15	ISSUED FOR APPROVAL	TF	DGB	MH
A	27-02-15	FIRST ISSUE	LW	DGB	RWP

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YORKPOTASH
A Sirius Minerals Project

PROJECT

YORK POTASH

TITLE

THE YORK POTASH
HARBOUR FACILITIES ORDER 201X
CONVEYOR ROUTE PLANS
NORTHERN ROUTE - SHEET 1
REGULATION 5(2)(o) DOCUMENT 3.3I

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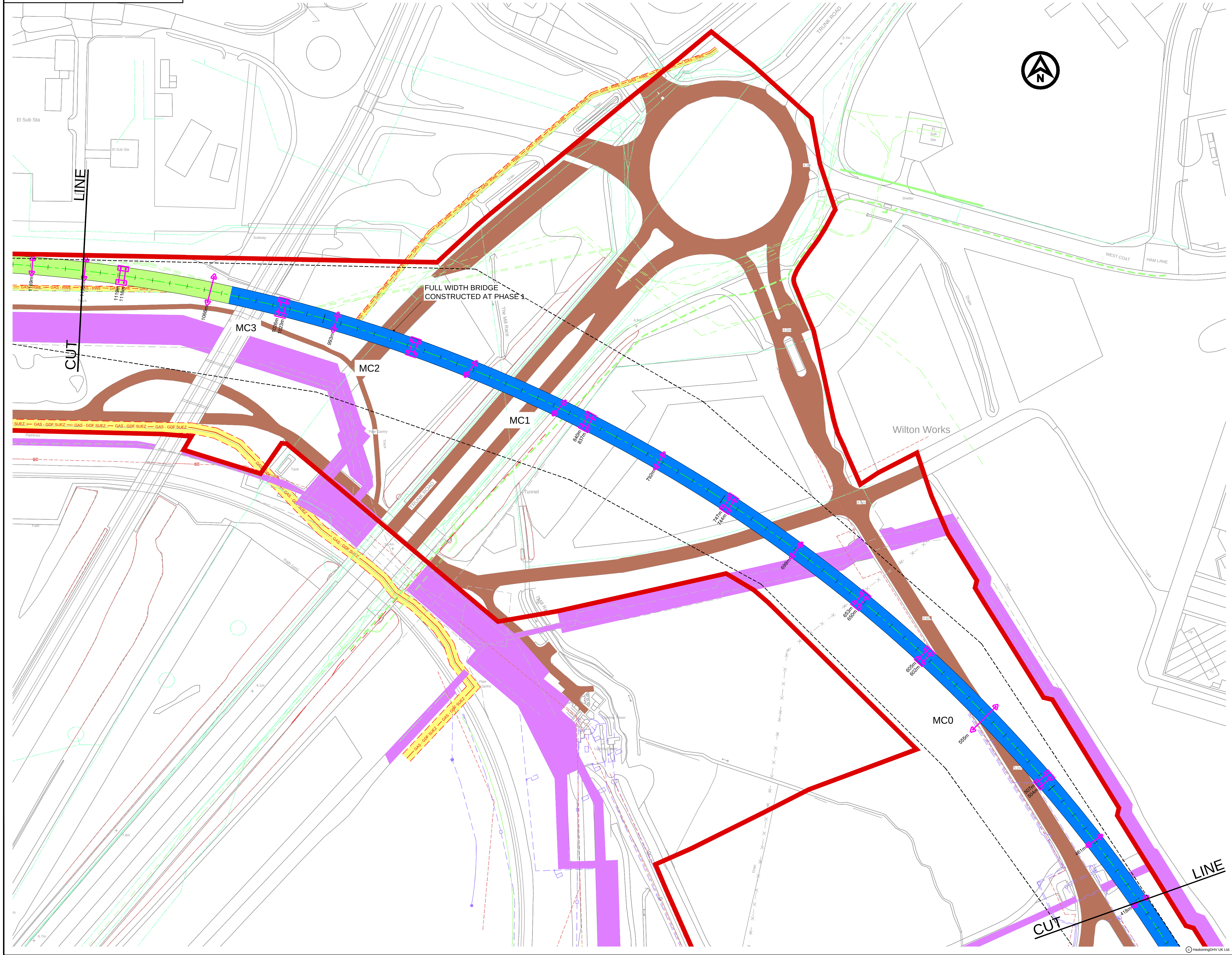
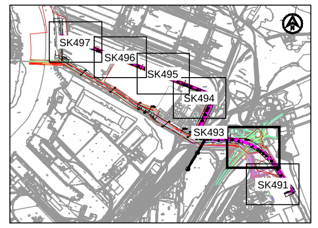
DRG No. PB1586-SK492



NOTES

MAJOR CROSSINGS

MC 0 : Eastern Boundary Road - Pass over in bridge
MC 1 : Highway A1085 - Pass over in bridge
MC 2 : YPL 1st access road - Pass over in bridge
MC 3 : Hot metal rail - Pass over in bridge
MC 4 : NWL 2nd access road - Pass over in bridge
MC 5 : National power grid lines - Pass under 10 m clearance
MC 6 : SSI road bridge - Pass over in bridge
MC 7 : National rail way - Pass over in bridge
MC 8 : Access NWL W.T.P. - Pass over in bridge
MC 9 : Outfall - Pass over in bridge



KEY PLAN
SCALE 1:50000

LEGEND - CONVEYOR

TYPE 3 - OPEN CONVEYOR - 2 LEGS
TYPE 4 - OVAL ENCLOSED CONVEYOR - 2 LEGS
TRANSFER TOWER
ACCESS ROUTES
CONVEYOR FOOTINGS
CONVEYOR AT THE QUAY

LEGEND - EXISTING SERVICES

EASEMENT ZONES
GAS - BP CATS
GAS - GDF SUEZ
GAS - RWE
FIBRE OPTIC CABLE
MISC - DRAINS, CABLES, DUCTS
FOUL WATER - SEMBCORP
WATER - NWL
GAS - ABANDONED
ABOVEGROUND PIPELINE CORRIDOR
OVERHEAD POWER CABLES
CONVEYOR LATERAL LIMITS OF DEVIATION

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YORK POTASH

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THE YORK POTASH
HARBOUR FACILITIES ORDER 201X
CONVEYOR ROUTE PLANS
NORTHERN ROUTE - SHEET 2
REGULATION 5(2)(o) DOCUMENT 3.3J

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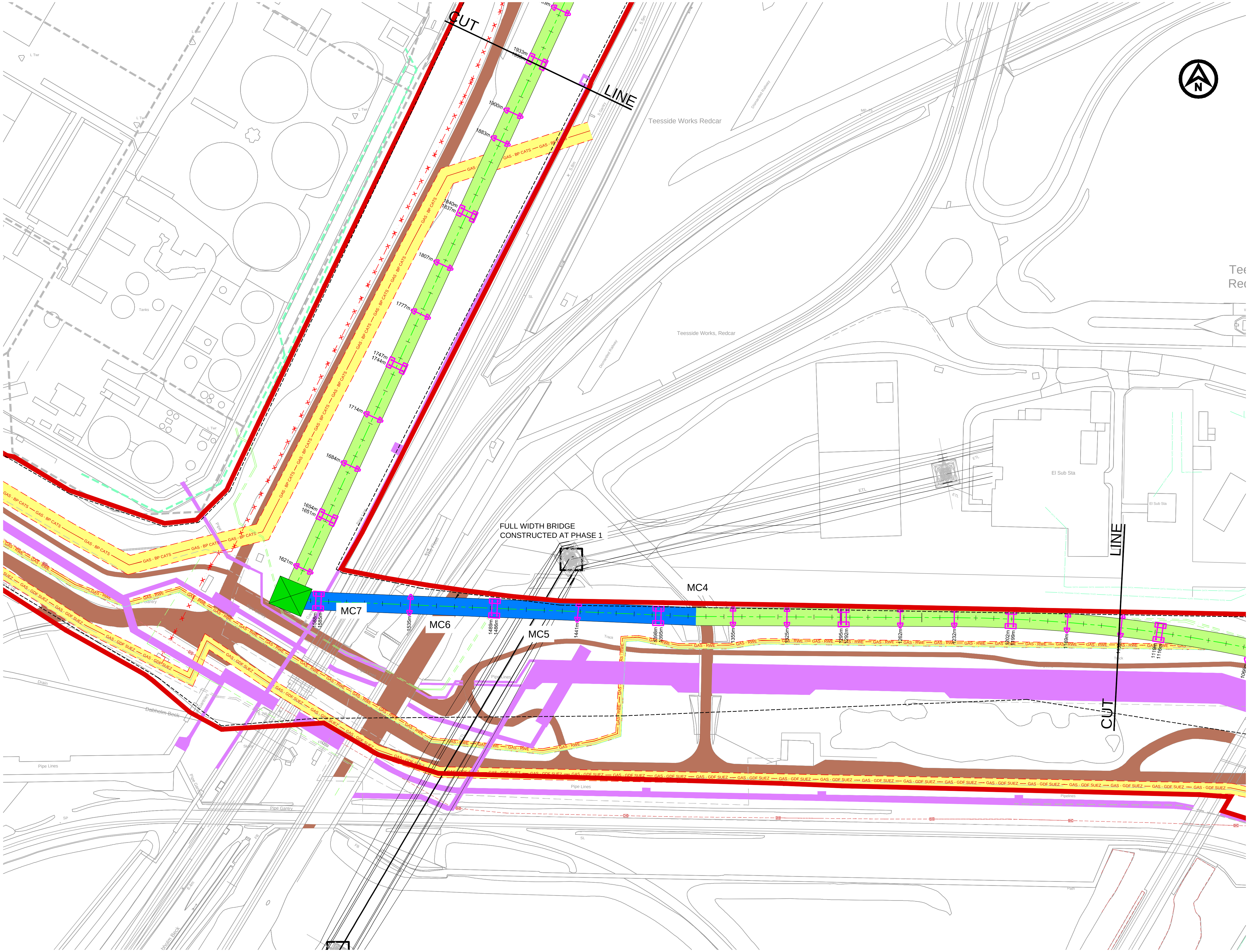
REVISION E

DRG No. PB1586-SK493



NOTES

MAJOR CROSSINGS

MC 0 : Eastern Boundary Road - Pass over in bridge
MC 1 : Highway A1085 - Pass over in bridge
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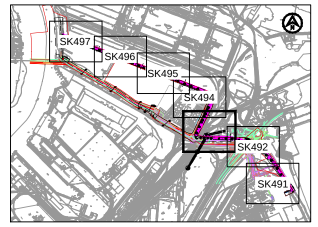
MC 3 : Hot metal rail - Pass over in bridge
MC 4 : NWL 2nd access road - Pass over in bridge
MC 5 : National power grid lines - Pass under 10 m clearance
MC 6 : SSI road bridge - Pass over in bridge
MC 7 : National rail way - Pass over in bridge
MC 8 : Access NWL W.T.P. - Pass over in bridge
MC 9 : Outfall - Pass over in bridge



KEY PLAN
SCALE 1:50000

LEGEND - CONVEYOR

- TYPE 3 - OPEN CONVEYOR - 2 LEGS
- TYPE 4 - OVAL ENCLOSED CONVEYOR - 2 LEGS
- TRANSFER TOWER
- ACCESS ROUTES
- CONVEYOR FOOTINGS
- CONVEYOR AT THE QUAY

LEGEND - EXISTING SERVICES

- EASEMENT ZONES
- GAS - BP CATS
- GAS - GDF SUEZ
- GAS - RWE
- FIBRE OPTIC CABLE
- MISC - DRAINS, CABLES, DUCTS
- FOUL WATER - SEMBCORP
- WATER - NWL
- GAS - ABANDONED
- ABOVEGROUND PIPELINE CORRIDOR
- OVERHEAD POWER CABLES
- CONVEYOR LATERAL LIMITS OF DEVIATION

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TITLE
THE YORK POTASH
HARBOUR FACILITIES ORDER 201X
CONVEYOR ROUTE PLANS
NORTHERN ROUTE - SHEET 3
REGULATION 5(2)(o) DOCUMENT 3.3K

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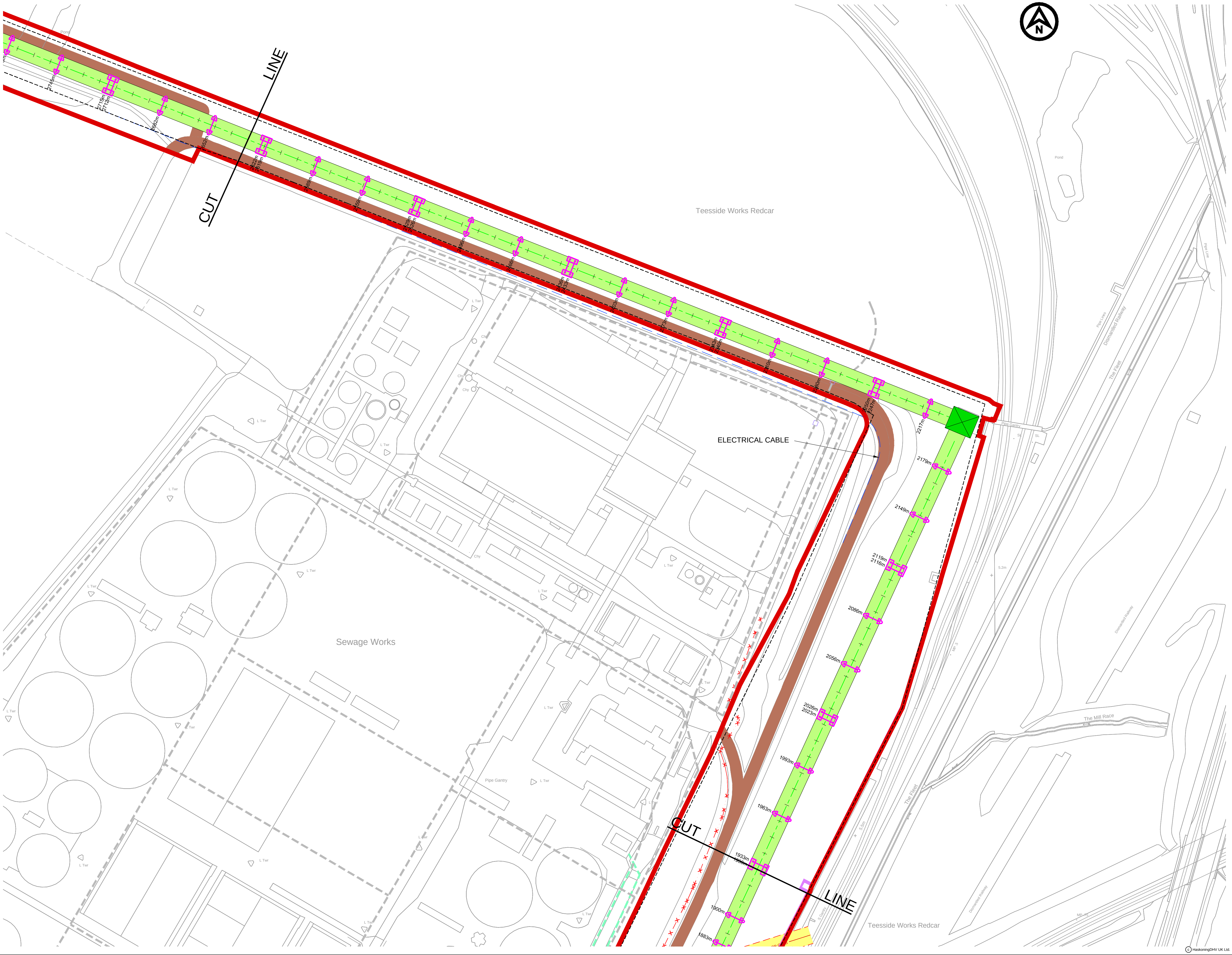
DRG No. PB1586-SK494



NOTES

1. FOR QUAY PLAN DETAILS REFER TO DRAWINGS NO. PB1586-SK91, SK93, SK122 & SK123.

MAJOR CROSSINGS

MC 0 : Eastern Boundary Road - Pass over in bridge
MC 1 : Highway A1085 - Pass over in bridge
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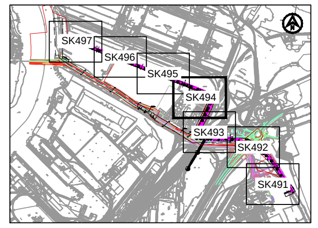
MC 8 : Access NWL W.T.P. - Pass over in bridge
MC 9 : Outfall - Pass over in bridge



KEY PLAN
SCALE 1:50000

LEGEND - CONVEYOR

TYPE 3 - OPEN CONVEYOR - 2 LEGS
TYPE 4 - OVAL ENCLOSED CONVEYOR - 2 LEGS
TRANSFER TOWER
ACCESS ROUTES
CONVEYOR FOOTINGS
CONVEYOR AT THE QUAY

LEGEND - EXISTING SERVICES

EASEMENT ZONES
GAS - BP CATS
GAS - GDF SUEZ
GAS - RWE
FIBRE OPTIC CABLE
MISC - DRAINS, CABLES, DUCTS
FOUL WATER - SEMBCORP
WATER - NWL
GAS - ABANDONED
ABOVEGROUND PIPELINE CORRIDOR
OVERHEAD POWER CABLES
CONVEYOR LATERAL LIMITS OF DEVIATION
ELECTRICAL CABLE

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THE YORK POTASH
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CONVEYOR ROUTE PLANS
NORTHERN ROUTE - SHEET 4
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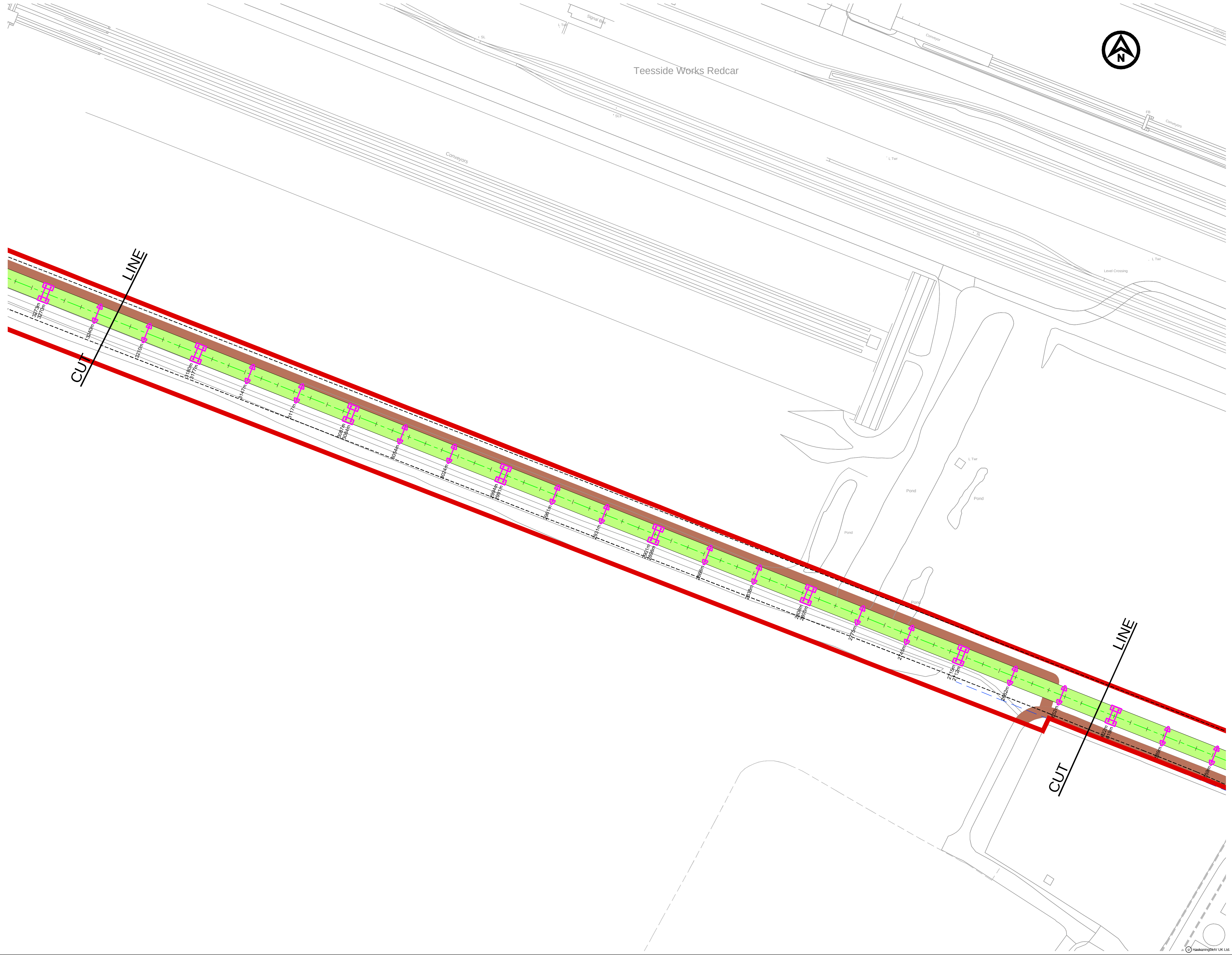
DRG No. PB1586-SK495



NOTES

MAJOR CROSSINGS

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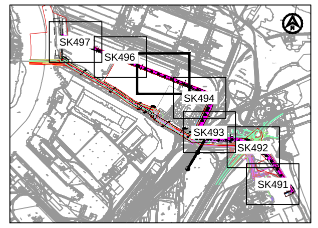
MC 6 : SSI road bridge	- Pass over in bridge
MC 7 : National rail way	- Pass over in bridge
MC 8 : Access NWL W.T.P.	- Pass over in bridge
MC 9 : Outfall	- Pass over in bridge



KEY PLAN
SCALE 1:50000

LEGEND - CONVEYOR

- TYPE 3 - OPEN CONVEYOR - 2 LEGS
- TYPE 4 - OVAL ENCLOSED CONVEYOR - 2 LEGS
- TRANSFER TOWER
- ACCESS ROUTES
- CONVEYOR FOOTINGS
- CONVEYOR AT THE QUAY

LEGEND - EXISTING SERVICES

- EASEMENT ZONES
- GAS - BP CATS
- GAS - GDF SUEZ
- GAS - RWE
- FIBRE OPTIC CABLE
- MISC - DRAINS, CABLES, DUCTS
- FOUL WATER - SEMBCORP
- WATER - NWL
- GAS - ABANDONED
- ABOVEGROUND PIPELINE CORRIDOR
- OVERHEAD POWER CABLES
- CONVEYOR LATERAL LIMITS OF DEVIATION

REV	DATE	DESCRIPTION	BY	CHK	APP
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REVISIONS

YORKPOTASH
A Sirius Minerals Project

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YORK POTASH

TITLE

THE YORK POTASH
HARBOUR FACILITIES ORDER 201X
CONVEYOR ROUTE PLANS
NORTHERN ROUTE - SHEET 5
REGULATION 5(2)(o) DOCUMENT 3.3M

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PB1586-SK495	E

DRG No. PB1586-SK496

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NOTES

MAJOR CROSSINGS

MC 0 : Eastern Boundary Road	- Pass over in bridge
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MC 8 : Access NWL W.T.P.	- Pass over in bridge
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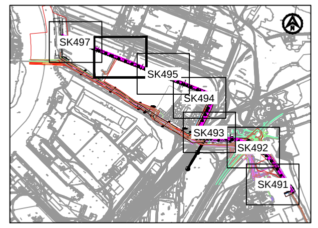

KEY PLAN
SCALE 1:50000

LEGEND - CONVEYOR

- TYPE 3 - OPEN CONVEYOR - 2 LEGS
- TYPE 4 - OVAL ENCLOSED CONVEYOR - 2 LEGS
- TRANSFER TOWER
- ACCESS ROUTES
- CONVEYOR FOOTINGS
- CONVEYOR AT THE QUAY

LEGEND - EXISTING SERVICES

- EASEMENT ZONES
- GAS - BP CATS
- GAS - GDF SUEZ
- GAS - RWE
- FIBRE OPTIC CABLE
- MISC - DRAINS, CABLES, DUCTS
- FOUL WATER - SEMBCORP
- WATER - NWL
- GAS - ABANDONED
- ABOVEGROUND PIPELINE CORRIDOR
- OVERHEAD POWER CABLES
- CONVEYOR LATERAL LIMITS OF DEVIATION

REV	DATE	DESCRIPTION	BY	CHK	APP
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YORK POTASH

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THE YORK POTASH
HARBOUR FACILITIES ORDER 201X
CONVEYOR ROUTE PLANS
NORTHERN ROUTE - SHEET 6
REGULATION 5(2)(o) DOCUMENT 3.3N

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PB1586-SK496	E

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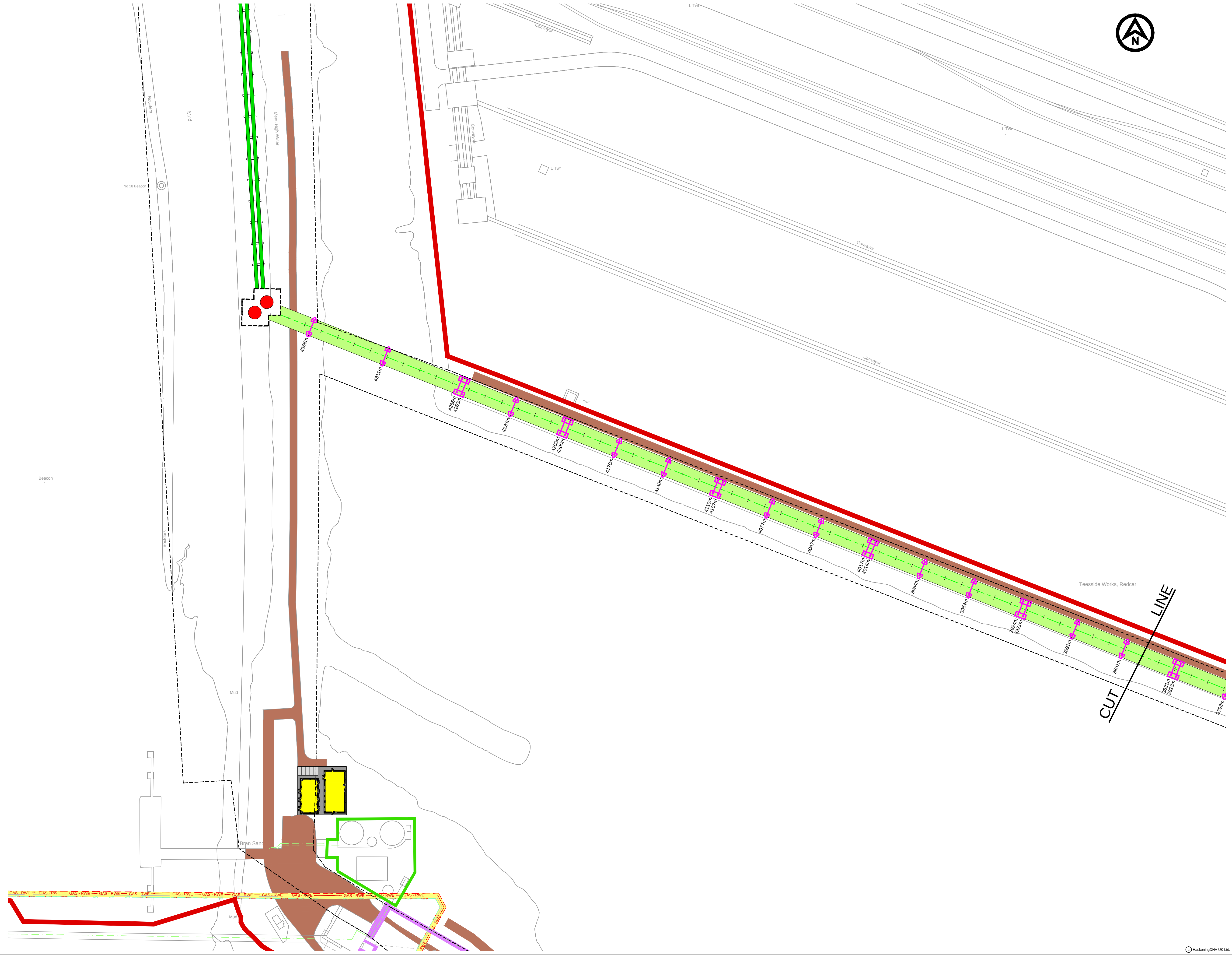

NOTES

MAJOR CROSSINGS

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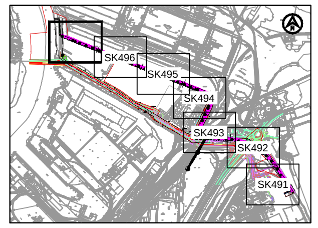

KEY PLAN
SCALE 1:50000

LEGEND - CONVEYOR

- TYPE 3 - OPEN CONVEYOR - 2 LEGS
- TYPE 4 - OVAL ENCLOSED CONVEYOR - 2 LEGS
- TRANSFER TOWER
- ACCESS ROUTES
- CONVEYOR FOOTINGS
- CONVEYOR AT THE QUAY

LEGEND - EXISTING SERVICES

- EASEMENT ZONES
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- WATER - NWL
- GAS - ABANDONED
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- OVERHEAD POWER CABLES
- CONVEYOR LATERAL LIMITS OF DEVIATION

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NORTHERN ROUTE - SHEET 7
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