Royal HaskoningDHV
Enhancing Society Together

York Potash Harbour Facilities ES Appendix 12.3 Harbour Facilities Framework Construction Traffic Management Plan

Document title: York Potash Harbour Facilities ES Appendix 12.3 Harbour Facilities Framework Construction Traffic Management Plan
Status: Rev 1
Date: 18/03/2015
Project name: York Potash Project
Project number: 9Y0989
Client: York Potash Ltd
Client contact: James Barrie

Reference: 9Y0989/303688/Lond
Drafted by: Brian Laird, Robbie Shadbolt and Sam Taylor
Checked by: Andrew Ross
Date / initials check: 18/03/2015 AR
Approved by: Andrew Ross
Date / initials approval: 18/03/2015 AR

1 INTRODUCTION

1.1 Background

1.1.1 This Framework Construction Traffic Management Plan (CTMP) 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.
- Harbour facilities at Teesside.

1.1.2 The Framework CTMP supports the Harbour facilities Environmental Statement (ES) **Section 12 Traffic and Transport** and Transport Assessment (TA) **Section 12**, **Appendix 12.2** by outlining how YPP construction traffic demand would be managed through control strategies and supporting measures, monitoring, review and enforcement. The framework set out will be adopted through the contractor procurement process and would be developed in to a full plan prior to commencement of works on site, but remain a 'living' document.

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 was submitted to RCBC as a 'County Matter' planning application, reference R/2014/0626/FFM.

1.3 Scope

1.3.1 During pre-application consultation (**Section 1.6** refers) the Highways Agency requested that the Framework CTMP for the MHF (submitted in support of application ref: R/2014/0626/FFM) should extend its scope to cover Harbour facilities trips and that subsequent versions should include these movements.

1.3.2 In recognition of these comments, the scope of the Harbour facilities CTMP extends to all YPP developments that generate traffic in the Teesside Area, namely: the Harbour facilities, MHF and MTS Portal site in Wilton. Therefore (subject to consent) the Harbour facilities CTMP would supersede the MHF CTMP. In addition, the cumulative traffic flows from other YPP principal developments that enter into the RCBC administration area are considered in order to facilitate a comprehensive management strategy.

1.4 Objectives of the CTMP

1.4.1 The following objectives have been established:

- mitigate the forecast environmental impacts of traffic associated with the YPP;
- manage the movement of construction workers and materials required for the YPP to be as efficient as possible;
- oblige all contracted project transport providers to comply with the construction traffic management plan requirements; and
- update the construction transport plan as information related to transport of procured items becomes available.

1.4.2 These objectives served to guide the development of measures, targets and management processes contained within this CTMP.

1.5 Report Structure

1.5.1 Following this introduction the report has been structured as follows:

- Section 2 - describes the development proposals;
- Section 3 - sets out the proposed controls and processes;
- Section 4 - sets out the proposed targets to which the CTMP would be bound, and the proposed monitoring approach;
- Section 5 - sets out the management structure responsible for the CTMP; and
- Section 6 - sets out the corrective measures/actions to ensure the CTMP is effectively enforced.

1.6 Consultation

1.6.1 A Preliminary Environmental Report (PER) was submitted to all stakeholders with an interest in the proposed Harbour facilities. **Table 1** provides a summary of the responses received that are relevant to Traffic and Transport and indicates what their relationship is with the CTMP

1.6.2 When considering the application for the MHF (reference R/2014/0626/FFM), the Highways Agency directed that a number of conditions are applied which are also relevant to the Harbour facilities CTMP. **Table 2** sets out these conditions and how this document has sought to addresses the matters raised.

Table 1 Summary of responses to the PER

Consultee	Comment	CTMP relationship
Highways Agency (HA)	The HA expressed concern regarding the impact on the A1053 and A1053/A174 Greystones junction.	The impact on the A1053 and A1053/174 junction has been assessed as 'not severe' in the Transport Assessment (TA). The CTMP sets out strategies to ensure the traffic demand considered is not exceeded.
	The HA advised on locations to be avoided during peak network hours.	Further discussion with the HA has reduced this requirement, as the impact is predicted to be not severe during peak network hours. The CTMP sets out strategies for ensuring the traffic demand presented in the TA is not exceeded.
	The HA advised on locations to be avoided due to road works.	The CTMP sets out a management structure (**Section 5** refers) for proactively liaising with

Consultee	Comment	CTMP relationship
	The HA advised that peak construction traffic demand should not coincide with other development peak flows (e.g. Dogger Bank).	highway stakeholders and major scheme developers.
Redcar and Cleveland Borough Council	RCBC expressed concern with regard to the impacts of additional construction and operational traffic on the structural integrity of the A1085 or the safe flow of traffic.	**Section 3** sets out a proposal for highway surveys. The TA has assessed the road safety impact as not severe. The CTMP sets out strategies to ensure that the traffic demand assessed is not exceeded.
North York Moors National Parks Authority	NYMNPA advised of the potential for cumulative transport impacts during the construction period for the whole YPP.	The TA assessed the cumulative impacts of the YPP as not severe. The CTMP sets out strategies to ensure the traffic demand assessed is not exceeded.

Table 2 Potential HA conditions

Comment	Harbour facilities CTMP response
The number of journey to work vehicle trips generated should be of a ratio of such that a maximum of one vehicle journey be generated per 2.5 workers per trip as set out in the Framework Construction Management Plan	The 2.5 worker to vehicle ratio stipulation would be extended to the Harbour facilities.
Management and Enforcement of the Framework Construction Management Plan should extend beyond its current remit to include Harbour construction trips and subsequent versions of this document should include these movements.	The scope of the Harbour facilities CTMP includes all YPP principle developments within the Teesside Area namely: • Harbour facilities; • MTS Portal; and • MHF.
The number of employees at the Harbour facility should be limited to 175 as set out in the Harbour Shift Times.	It is considered that it would be more pragmatic to condition the peak traffic demand generated by employees (as set out in **Section 2**). This would ensure that the traffic impact is managed whilst not constraining employment levels
The number of employees at the Material Handling Facility should be limited to 252 as set out in the Harbour Shift Times (enclosed)	See above.
The number of Peak Hour trips should be limited to levels illustrated in Construction Hour 17:00 - 18:00 Traffic Flows figure	Revised figure presented in this document, incorporating the Harbour facilities (**Figure 4**).
Management and Enforcement of the Framework Construction Management Plan should be undertaken with Redcar and Cleveland District Council and any areas where traffic levels are exceeded above notified to the Highways Agency.	**Section 5** sets out the proposed management structure.
Changes to the construction schedule (enclosed) should be notified to the Redcar and Cleveland District Council and any areas where traffic levels are exceeded notified to the Highways Agency.	

BLANK PAGE

2 DEVELOPMENT PROPOSALS

2.1 Introduction

2.1.1 This section of the Framework CTMP provides an overview of the proposed YPP developments in Teesside.

2.2 Harbour facilities

2.2.1 In summary, the Harbour facilities 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.

2.2.2 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

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

2.2.4 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.

2.2.5 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.

2.2.6 The open quay structure would require more deliveries by road and therefore forms the basis for the scenarios presented in the Harbour facilities TA.

2.2.7 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.

2.2.8 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.

2.2.9 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.

2.2.10 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.

2.2.11 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.

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

2.3 MHF and MTS Portal

2.3.1 The MHF and MTS Portal would be located in Redcar, within the Wilton International Complex (an established existing industrial area). The process buildings (and other structures that form part of the MHF) are described in **Table 4** below.

Table 4 Summary of the maximum dimensions of the process buildings

Process building	Approximate dimensions (m)	Approximate area (m^2)	Approximate maximum height (m)
Portal head house	15 x 15	225	10
Conveyor drive housing	75 x 15	1,125	25
Locomotive shed	75 x 45	3,375	25
Surge bin & secondary crushing	47 x 27	1,269	40
Run of Mine (ROM) material emergency store	42 x 30	1,260	33
Stage 1 and Stage 2 Screening (Classification)	45 x 18	810	35
Crushing (HPGR)	35 x 35	1,225	30

Process building	Approximate dimensions (m)	Approximate area (m^2)	Approximate maximum height (m)
Stage 1 and Stage 2 combined granulation, drying, pellet screening and coating building	120 x 90	10,800	40
Stage 1 and Stage 2 finished product screening	50 x 25	1,250	25
Stage 1 finished product store	500 x 60	30,000	35
Stage 2 finished product store	330 x 60	19,800	35
Proposed buildings within the MHF which are not directly part of the product processing			
Site administration offices	73 x 18	1,314	10
Water treatment plant	70 x 60	4,200	20
Substation A	35 x 20	700	10
Substation B	50 x 25	1,250	10
Substation C	40 x 25	1,000	10

2.3.2 The MTS would rise to the surface at the MHF via the MTS Portal. The facility is capable of processing the mined product and preparing the final product for distribution.

2.3.3 The MTS Portal ramp would be excavated from existing ground level down to the proposed level of the start of the tunnel (approximately 18m below ground level) with a 3% fall. This would create a cutting of approximately 360m long and 10m wide. To facilitate the construction of the portal ramp, an earth retaining structure (likely to be formed using large diameter, contiguous piles) would be required to a maximum height of 18m (i.e. the maximum depth of the excavation required). The excavation would generate approximately 75,000m^3 of arisings which would be integrated into the landscaping proposals for the site.

2.3.4 The layout of the proposed MHF and MTS portal is shown in **Annex 3**.

2.4 Construction Site Location

2.4.1 **Figure 1** details the highway network that formed the study area for the Harbour facilities TA and associated link notation. A short description of the MHF, MTS Portal and Harbour facilities location is provided below.

2.4.2 The MHF, MTS Portal and Harbour facilities are located approximately 3km west of Redcar town centre and 9km to the east of central Middlesbrough. The MHF and MTS Portal is located within the Wilton International Complex and the Harbour on the south bank of the River Tees. The sites are within the administrative boundary of RCBC. The sites are served by the A1085 (Trunk Road), which connects to the wider strategic road network.

2.4.3 Access to the MHF and Harbour facilities would be taken off the southern arm of the A1085 (Trunk Road) West Coatham Lane roundabout junction which currently serves the Wilton Complex, known as the East Gate. It would also be possible to access the Harbour from the same roundabout junction but via a currently unused western arm following the implementation of the highway improvements

(referred to in para. 2.2.10), construction vehicles would then proceed to the Harbour site via a series of internal roads. Both accesses would be subject to the security measures and induction procedures being sufficiently flexible to enable such volume of traffic to be processed during a working day.

2.4.4 Alternative site access points to the MHF are available in three other locations if required, all of which join from the major road network. These comprise the South-East Gate (accessed from the junction of the A1042 and the A174 at Kirkleatham), the South Gate (accessed from the A174) and the West Gate (accessed from the roundabout junction of the A1053 and the A1085).

2.5 Construction Programme

2.5.1 The total construction duration for the YPP would be 58 months. **Annex 4** provides details of the duration for principal developments.

2.6 Haul Routes

2.6.1 A review of the potential supply chain within the local study area indicates that Teesside is the most likely source for all materials and, as such, the primary haul route has been developed assuming that all HGV trips to the MHF would have an origin in Teesside and would utilise the A174 (link 5) and A66 (link 2) to access the MHF via the A1085 (link 44). It is assumed that all HGV trips to the Harbour would originate in Teesside also and utilise the A66 (link 2) and A1085 Trunk Road (link 44). The haul route to the MHF, Wilton MTS and Harbour Facilities is shown graphically in **Figure 2.**

2.7 Construction Traffic Demand

2.7.1 The traffic generation that has informed the TA has been derived by way of a 'first principles' approach. This generates traffic volumes from an understanding of material quantities[1] and personnel numbers. Work streams were commissioned which focused on discrete elements of the YPP. Work streams were led by industry experienced consultants drawing on further professional expertise for specialist elements of the projects. **Table 5** gives an overview of how this combined expertise has guided this process.

Table 5 MHF, MTS Portal and Harbour work streams

Work stream	Lead consultant	Supplementary specialist advice	Transport input
Mine and MTS engineering	Worley ParsonsTWP (RSA)	• Mining machinery specification • Shaft sinking specification	• Construction and operation material requirements • Workforce requirements • Construction duration
Materials Handling Facility	K Home (UK)	• n/a	• Construction and operation material requirements • Workforce requirements • Construction duration
Harbour	Royal HaskoningDHV	n/a	• Construction and operation material requirements

[1] Material is defined as all imports required to construct the YPP and exports resulting from reinstatement activities. The term does not the export of spoil or polyhalite off-site.

Work stream	Lead consultant	Supplementary specialist advice	Transport input
	(UK)		• Workforce requirements • Construction duration

2.7.2 The full derivation of in-combination HGV and personnel traffic demand is contained in the Harbour facilities TA. A summary of the headlines is provided below.

HGV demand

2.7.3 The combined HGV demand output from the work streams was fed into a consolidated programme to understand the in-combination daily HGV demand for all YPP principal developments. **Annex 5** sets out the resultant derived HGV movements.

2.7.4 Construction works would need to be undertaken seven days a week. However, deliveries of materials to and from site would be dependent upon materials suppliers' permits. In order to consider a realistic worst case it has been assumed that the monthly HGV demand would be spread over a 20 day window. **Table 6** sets out the maximum daily demand from each of the Teesside developments:

Table 6 Harbour facilities, MHF and MTS Portal maximum daily HGVs

Development	Maximum daily two-way HGVs
Harbour facilities	67
MHF	76
MTS Portal	43
Combined maximum	185

2.7.5 **Figure 3** details the peak daily HGV flows assigned to the highway network. The flows represent the maximum demand that could be experienced by a discrete link from all of the YPP principal developments (i.e. Mine and MTS construction traffic passing through the Teesside area, joined by HGVs generated by the Harbour facilities, MTS Portal and MHF). Note that on the A1085 (link 44) adjacent to the Wilton International Complex, a maximum combined daily (two-way) total of 185 HGVs is forecast by the assessment scenario (in accordance with **Table 6**).

2.7.6 HGV deliveries are made over an assumed standard ten hour period, which for the A1085 (link 44) equates to a rounded hourly flow of 18 two-way HGVs.

Personnel traffic demand

2.7.7 The work streams provided details of the expected resourcing requirements for the MHF, MTS Portal and Harbour facilities. **Annex 6** details the workforce loading; peak demand under the assessed scenario for the MHF, MTS Portal and Harbour facilities would be 252, 146 and 175 construction workers respectively.

2.7.8 The total construction worker numbers are further disaggregated by shifts as set out in **Annex 7**. The MTS Portal would be subject to 24hour, seven day a week shifts and the MHF and Harbour facilities

would have a typical single construction shift. In summary, **Table 7** provides details of the resourcing requirements per shift for the MHF, MTS Portal and Harbour facilities.

Table 7 MHF, MTS Portal and Harbour shifts

	Shifts	Shift times	Employee numbers
1	MTS Portal, morning shift	6am – 2pm	42
2	MTS Portal, Day shift	6am – 7pm	24
3	MTS Portal, Back shift	2pm – 10pm	40
4	MTS Portal, Night shift	10pm – 6am	40
5	MHF, day shift	8am – 5pm	252
6	Harbour facilities, day shift	9am – 5pm	175

2.7.9 From **Table 7** it is observed that the peak of employee movements would occur in the evening (shifts 5 and 6) when a total of 427 MHF and Harbour day shift workers depart via the A1085 'Trunk Road'. Contractors would be required to adhere to a minimum 2.5 ratio of employee to vehicle; therefore, the maximum hourly traffic generation would be 171 (two-way) vehicles.

Combined HGV and personnel peak traffic

2.7.10 The combined peak hour (5pm-6pm) HGV and personnel YPP traffic was assigned to the highway network and is detailed in **Figure 4**. It can be noted that the A1085 (link 44) adjacent to the Wilton International Complex has a total YPP traffic demand of 18 HGVs and 171 light vehicles (two-way).

2.8 Abnormal Indivisible Loads

2.8.1 **Annex 8** contains a routing feasibility assessment for Abnormal Indivisible Loads (AILs) associated with the Tunnel Boring Machine (TBM) for the MTS. The assessment considers a worst case load envelope (associated with the movement of a 3.7m square, 90 tonne TBM component) and details the most suitable routes and mitigation measures to reduce the impacts. Prior to movement of such loads, full consultation would be undertaken with the highway authorities and Police to ensure delivery is scheduled to minimise delay on the highway network.

3 CONTROL PROCESSES AND MEASURES

3.1 Introduction

3.1.1 This section outlines the control processes and measures that support and complement the transport strategy. These controls and measures are being included in the procurement process and, therefore, would be embedded in and developed throughout the construction phase.

3.2 Control of Personnel Movements

3.2.1 The MHF, MTS Portal and Harbour facilities are situated in an area where sustainable transport options provide a viable option for access to site. However, it is recognised that, during the construction phase, the demographic of the workforce would be continually changing; as such this would limit the opportunity to align local transport provision and encourage mode shift.

3.2.2 In recognition of this, the transport strategy for the MHF, MTS Portal and Harbour facilities aims to introduce parking restrictions to discourage the propensity for single occupancy car travel to site, aligned to the provision public/private transport alternatives. The full range of measures proposed is discussed below.

Car share/High Occupancy Vehicle (HOV)

3.2.3 Construction workers would have to travel direct to site within a HOV to employee ratio of at least 2.5. This would be the primary travel choice for those working at the MHF, MTS Portal and Harbour facilities.

3.2.4 To encourage construction workers to car-share, a database of construction worker origins would be established and utilised to set up and keep under review car share pools and nominated drivers.

Minibus services

3.2.5 In support of the HOV policy, private vehicles (minibuses) would run on agreed routes and allow groups to travel in a HOV. Minibus services would also make local pickups (if required) from transport interchanges, such as railway stations.

Guaranteed lift home

3.2.6 A guaranteed lift home would be provided for personnel in the event that their lift fails due to unforeseen circumstances and to reassure non-designated drivers they could get home in an emergency, utilising pool cars or taxis.

Parking restraint

3.2.7 Parking would be restricted to enforce a 2.5 employee to car ratio during peak construction.

3.2.8 **Annex 9** contains preliminary calculations on required car park capacity for the MHF, MTS Portal and Harbour facilities, noting that there would be a requirement for a peak of 144 spaces for the MHF and MTS Portal and 70 spaces at the Harbour facilities. It should be noted that these figures exclude provision for visitor and disabled parking, which would be provided in addition.

3.2.9 All parking bays would be clearly marked, including disabled and visitor spaces, to facilitate the effective monitoring and enforcement of any 'double' parking.

Walking and cycle facilities

3.2.10 Walking and cycling to site would be supported by the provision of changing facilities, to include lockers and showers.

3.2.11 In addition, cycling would be further encouraged through the provision of secure and covered cycle parking facilities (quantum to be greed with RCBC when workforce demographic established) and employees would be offered interest free loans for the purchase of cycle equipment and cycles in order to encourage the take up of cycling.

Public transport season tickets

3.2.12 In recognition of the potential for some employees to be able to use public transport as a means for travelling to work, interest free season ticket loans (for bus and rail travel) would be offered to construction workers. This would remove the high initial cost of purchasing season tickets.

Travel packs

3.2.13 A Travel Pack would be provided to all employees. The packs would include information such as details of car share schemes, walking/cycling routes, and bus and train times.

3.3 Control of HGV movements

Delivery times and daily profile

3.3.1 Deliveries are proposed to be undertaken within a 12 hour window, with an even distribution throughout the day to avoid excessive hourly demand. The contractors would be responsible for managing the daily demand for deliveries and exports for their own fleet and that of their supply chain partners, to ensure they comply with agreed daily traffic profiles. This would be achieved through the implementation of a booking system for deliveries in order to meet the stated objectives of the CTMP. The booking system would require the contractor and supply chain partners to pre-book slots for deliveries in advance, with only a small number of slots reserved for late changes and unplanned deliveries, thereby enabling a daily profile to be maintained within assessed levels.

3.3.2 The contractor would be assisted in managing the daily profile of import / export by the provision of stockpile areas at the MHF and Harbour facilities. These would facilitate advanced planning of deliveries and export, and enable a smooth import/export profile to be maintained.

Haul route compliance

3.3.3 To ensure that HGVs use the designated routes, the following measures are proposed:

- The delivery routes would be communicated by the contractors to all individuals and companies involved in the transport of materials and plant to and from site.
- An information pack would be distributed to all individuals involved in the transport of materials. The pack would be a convenient size so it can be stored in a truck cab. The pack would include key

information on delivery routes, procedures for dealing with emergencies, and disciplinary measures for non-compliance.

- All suppliers and drivers would be required to provide details (registration numbers/markings) of their fleet to YPL. This would allow for checking and enforcement of any reported breaches of the agreed delivery routes.

Managing highway condition

3.3.4 To ensure that the impact of HGV traffic would not have a long term negative impact upon the structure of the A1085, a precondition survey would be undertaken. This would comprise a visual inspection and photographic record. In addition, highway condition records would be obtained from the HA and RCBC to ascertain any asset deterioration that is of particular concern and the proposed timing of any intervention.

3.3.5 The condition surveys would be repeated annually during construction, to identify any deterioration in the highway which is attributable to this construction exercise and any remedial actions which might be required would be agreed with the highway authorities.

Network resilience

3.3.6 YPP daily traffic demand is likely to impact on highway network resilience during major incidents or block the highway itself due to breakdowns or collisions. **Table 8** provides a summary of these network resilience issues and details measures proposed to mitigate these impacts.

Table 8 Network resilience issues

Network reliance issues	Mitigation measures
Managing traffic demand during major incidents such as accidents on the highway.	YPL would liaise with local Police to establish a line of communication with regard to road traffic incidents. Should YPL be notified of an incident then the contractors would liaise direct with suppliers to suspend HGV deliveries along affected routes. Those deliveries en route from the site /suppliers that cannot be recalled can then be accommodated onsite until the incident is cleared.
Incidents involving YPP HGV traffic blocking the highway, such as, breakdowns, accidents, etc.	Contractors/Suppliers would be expected to only utilise hauliers that have existing arrangements with recovery services.

3.4 Driver training

3.4.1 It is proposed that personnel would be required to attend 'toolbox talks' regarding safer driving. These talks would cover topics such as safe driving techniques on the public highway and on internal site roadways.

3.4.2 Professional HGV and PCV drivers are required, by law, to obtain a Certificate of Professional Competence and must complete 35 hours of periodic training every five years to retain the certificate. Upon meeting this criterion drivers are issued with a Driver Qualification Card (DQC) and are required to carry it at all times while driving professionally.

3.4.3 YPL would offer appropriate training to drivers to help them to maintain their Certificate of Professional Competence, this training could be tailored to the address some of the challenges of driving within North Yorkshire, such as driving during adverse weather. All drivers of HGVs and PCVs would be required to present a valid DQC to security when delivering to any site.

3.5 Control of dust and dirt

3.5.1 Proposed mitigation measures for controlling dust and dirt arising from vehicle movements off-site, include providing hard surfacing at the access points, wheel washing, road sweeping and covered loads.

3.6 Managing Road Safety

3.6.1 To ensure that the impact of YPP HGV traffic would not have an adverse impact upon the safe operation of the highway network, it is proposed that a strategy to mitigate potential emerging road safety issues is embedded with the CTMP.

3.6.2 This would place a requirement on the contractor to record all accidents and near misses and regularly report to transport stakeholders via the YPP Liaison Group (full details of the proposed management structure are included in **Section 5**). These reports would be supported by police data on accidents and, if emerging issues were identified, proposals would be put to the YPP Liaison Group and, if approved, funding would be made available to implement targeted mitigation under an agreement with YPL.

3.6.3 It is anticipated intervention would not entail 'hard' highway engineering solutions; rather the focus is to be applied to be education, training and publicity. The types of mitigation that could be employed include:

- Additional police enforcement (e.g. extra mobile cameras on the A171).
- Public awareness of the dangers of overtaking.
- Training – e.g. funding some Pass Plus driving course aimed at young males.

Pursuit of these and other initiatives to improve road safety is an objective of the YPP Liaison Group, the Project, and that of YPL as a promoter of a Zero Harm Culture.

4 TARGETS AND MONITORING

4.1 Targets

4.1.1 The targets set out in this section are provisional and would be updated on the appointment of contractors; when a final draft CTMP would be produced. They serve primarily to inform the procurement process and to demonstrate the commitment made by YPL to managing HGV demand.

4.1.2 **Section 2** sets out the maximum daily and peak hour traffic movements predicted to be generated from the Harbour facilities, MHF and MTS Portal. These form appropriate targets which could be monitored at the point of entry/exit at the respective sites. It is suggested that targets should focus on peak hour traffic derivation (recognising stakeholder concerns with peak hour traffic generation). The following targets are therefore proposed.

- Maximum peak hour 18 two-way HGV movements.
- Maximum peak hour 171 two-way employee vehicle movements.

4.2 Monitoring Strategy

4.2.1 The HGV and construction worker movements associated with the YPP would be continuously monitored through the use of a permanent classified Automatic Traffic Counter (ATC) and/or Automatic Number Plat Recognition (ANPR) cameras positioned at the site accesses.

4.2.2 It is proposed that for the duration of the construction phase, monthly traffic count data would be collated by YPL. Undertaking this monitoring on a monthly basis would ensure that any issues are identified at an early stage and dealt with promptly; in addition discrete data could be extracted to address any stakeholder complaints.

4.2.3 Contractors would be responsible for maintaining detailed delivery schedules and these would serve to augment the traffic counts to give a complete evidence base.

4.2.4 The monitoring of personnel movements would take the form of YPL instigated spot surveys to determine car park occupancy and collation of staff feedback and stakeholder complaints.

4.2.5 It is proposed that construction workers, contractors and suppliers would be provided with an email address to allow for feedback or ideas and recommendations to address any gaps or constraints in the CTMP.

4.2.6 To help the public distinguish YPP construction traffic from other traffic on the network, and therefore effectively report any concerns, it is proposed that each vehicle would be required to display a unique identifier within the window of the cab (e.g. a red cross on a yellow background).

BLANK PAGE

5 CTMP MANAGEMENT STRUCTURE

5.1.1 A management structure has been developed to oversee the implementation of the CTMP and the monitoring and enforcement of construction traffic movements.

5.2 YPP Liaison Group

5.2.1 YPL would set up a Liaison Group (LG) and administer that group to facilitate regular liaison with relevant parties throughout the construction and operation of the development.

5.2.2 With regard to transport, the group's principal responsibility would be to review monitoring reports and direct action as necessary. Proposed LG members would include:

- York Potash Limited;
- Redcar and Cleveland Borough Council; and
- Specialist ad-hoc attendees, such as the Highways Agency, transport providers, emergency services and major developers (e.g. Forewind for Dogger Bank).

5.2.3 In addition, a contractor representation would be required to attend the meeting.

5.3 Local Community Input

5.3.1 Local community groups (e.g. Parish Councils, special interest groups) would be made aware of the LG as the vehicle for collating and investigating enquires from the public.

5.4 Travel Plan Co-ordinator

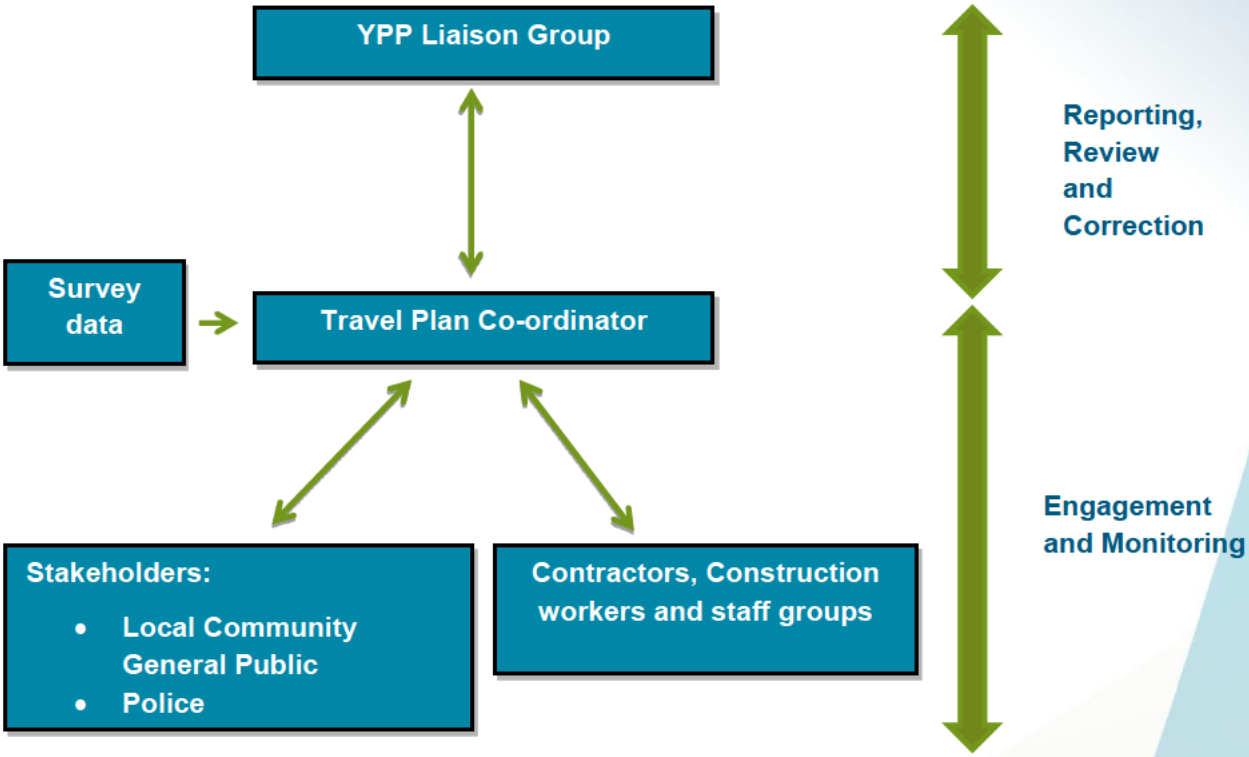
5.4.1 A Travel Plan Co-ordinator (TPC) would be appointed by YPL and contact details would be made available prior to the commencement of works. Their responsibilities would include:

- managing the implementation of the CTMP;
- reporting the monitoring of the CTMP to the LG;
- acting as a point of contact for the local community and report feedback to the LG; and
- acting as a point of contact for construction workers, sub-contractors and the general public.

5.5 Communication

5.5.1 The Travel Plan Co-ordinator would act as a key link between all parties involved with the CTMP. They would report on the monitoring survey data of the CTMP to the LG, as well as reporting feedback from the local community, contractors, construction workers and staff groups. They would also be responsible for communicating any corrective action taken by the LG. The proposed relationships between the parties are shown in **Diagram 1**.

Diagram 1 Proposed Management Structure



5.6 Review of the Strategy

5.6.1 The objectives of the review would be to assess the success of the CTMP and to identify the potential for further initiatives. The TPC would be responsible for undertaking the review and for producing a quarter year monitoring report. Successive reports would form appendices to the CTMP document available to stakeholders on request.

5.6.2 Data recorded from the monitoring process would be drawn together to produce a quarterly monitoring report, thereby allowing the TPC to identify effective / ineffective measures and the requirement for any remedial action to be undertaken to achieve the agreed targets. The results would then be reported to the LG so that it may be reviewed and any corrective action agreed.

5.6.3 The review process would also allow the appropriateness of the monitoring programme to be assessed and amendments to be proposed where necessary.

5.7 Quarterly Monitoring Report

5.7.1 The quarterly monitoring report would be structured based on the following headlines:

- Introduction and Background – this should provide details of the number of construction workers at each site (total and per shift), the number of parking spaces provided, and other matters.
- Results of Surveys – the TPC should detail the results of the surveys that have been undertaken against indicators defined in the CTMP, including current travel situation and target levels. These may include the levels of car sharing and the proportion of HGVs entering the MHF and Harbour facilities. Data obtained from the surveys should be included as an appendix.

- Achievements – this should include the work undertaken over the previous three month period with evidence and examples.
- Specific Measures – this should detail how all measures from the CTMP have been implemented in terms of infrastructure, policy and promotion for each specific travel mode and strategy (walking, cycling, car sharing, plus general measures and working practices). Evidence of how each measure has been implemented would be required.
- Summary – the TPC should detail whether the CTMP is on track to meet its targets and if not, why not.
- Future Plan – this should detail the CTMP for the next three month period to include any specific outcomes or desired results with any additional measures that are to be included to remediate action.

BLANK PAGE

6 ENFORCEMENT

6.1 Introduction

6.1.1 This section provides a summary of the mechanisms that would ensure that the CTMP is effectively enforced.

6.2 Potential Breaches

6.2.1 To ensure that the aims of the CTMP can be effectively enforced, it is important to define what would constitute a breach. It is proposed that the following would constitute a breach of the CTMP, whereby corrective measures would be required:

- Construction workers overspill parking on the public highway, rather than parking in marked bays at the MHF or Harbour facilities.
- YPP construction traffic exceeding agreed thresholds.
- YPP construction traffic operating outside of agreed hours.
- YPP construction HGVs not adhering to the agreed haul routes.
- YPP construction traffic being driven inappropriately, e.g. speeding.
- YPP construction traffic not displaying the unique identifier.

6.3 Corrective Process

6.3.1 On receipt of a report of a potential breach, the TPC would investigate the circumstance and compile a report for the LG. The report would outline the outcome of the investigation and what corrective action had been implemented. A three stage correction process is proposed:

- **Stage one –** This would be a formal warning.
- **Stage two –** If a further material breach is identified, the contractor would be given a further warning and required to produce an action plan to outline how the issue would be rectified and any additional mitigation measures proposed.
- **Stage three –** Should further breaches occur the contractor would be required to remove the offender from site and the contractor/supplier would receive a formal warning. Any continued breaches by individuals of the supplier/contractor may be dealt with through the formal dispute procedures of the contract.

6.3.2 Individual employee breaches would be addressed through UK employment law, whereby the three stage process outlined would form the basis for disciplinary proceedings.

6.4 Contract Intervention

6.4.1 Provisions of the CTMP would form part of the contractual agreement between YPL and its contractors. Each would, therefore, need to comply with required aspects of the CTMP, individually and together; examples of which are set out below:

- agreed HGV thresholds;
- the haul routes;
- the booking system;
- the monitoring regime;
- parking management;
- the AIL management; and
- the corrective measures.

BLANK PAGE

7 SUMMARY

7.1.1 The Framework CTMP supports the Harbour facilities ES **Section 12 Traffic and Transport** and TA **Section 12**, **Appendix 12.2** by outlining how YPP construction traffic demand would be managed by control strategies and supporting measures, monitoring, review and enforcement. The framework would be adopted through the contractor procurement process and would be developed into a full plan prior to commencement of works on site, but remain a 'living' document.

7.1.2 A management structure is outlined to oversee the implementation of the CTMP, including proposed monitoring, review and enforcement of construction traffic movements.

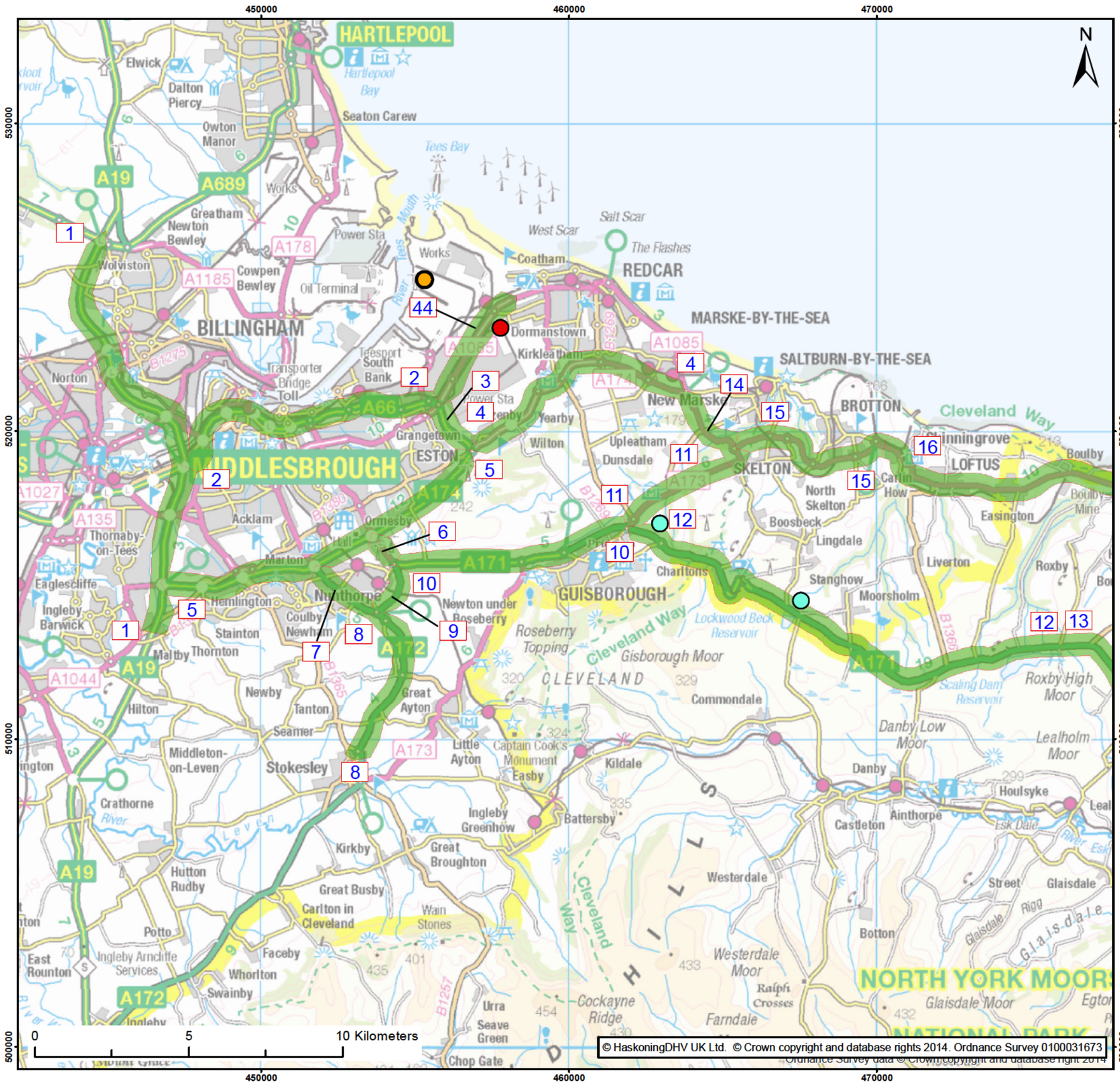
BLANK PAGE

Royal HaskoningDHV

Enhancing Society Together

Figures

BLANK PAGE



Legend:

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

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

Title: Redcar and Cleveland Study Area

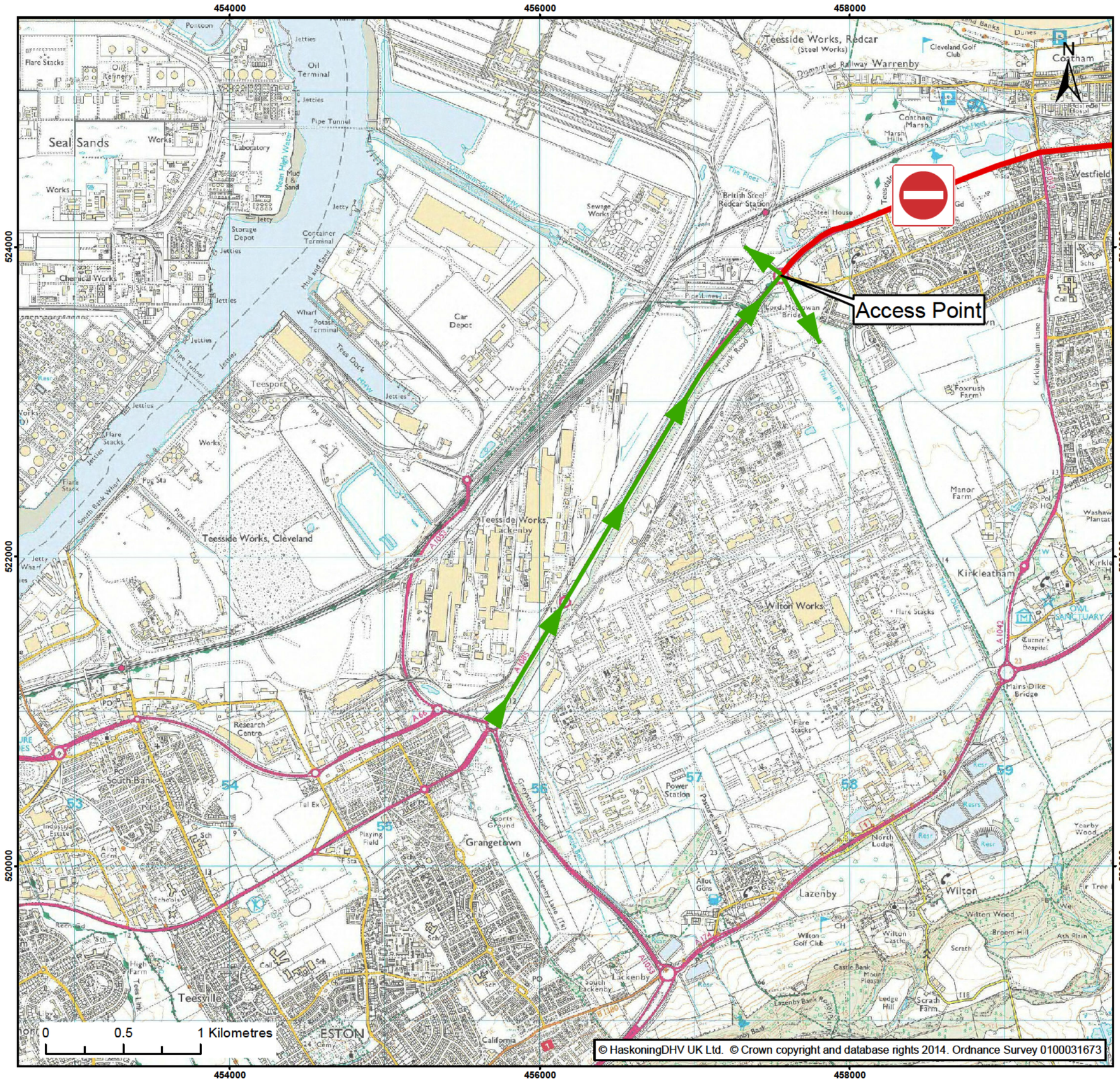
Part:	Figure:	Drawing No:
HF	1	9Y0989-HF-CTMP-001

Rev:	Date:	Drawn:	Checked:	Size:	Scale:
0	08/12/2014	MCP	SKT	A3	1:125,000

Co-ordinate system: British National Grid

Royal HaskoningDHV
Enhancing Society Together

ROYAL HASKONINGDHV
INDUSTRY, ENERGY & MINING
RIGHTWELL HOUSE
BRETTON
PETERBOROUGH
PE3 8DW
+44 (0)1733 33 44 55
www.royalhaskoningdhv.com



Legend:

- HGV Routes
- HGV Route to and from Harbour Facilities
- Routes to Harbour Facilities to be avoided by HGV's

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

Title: Harbour Facilities Haul Route

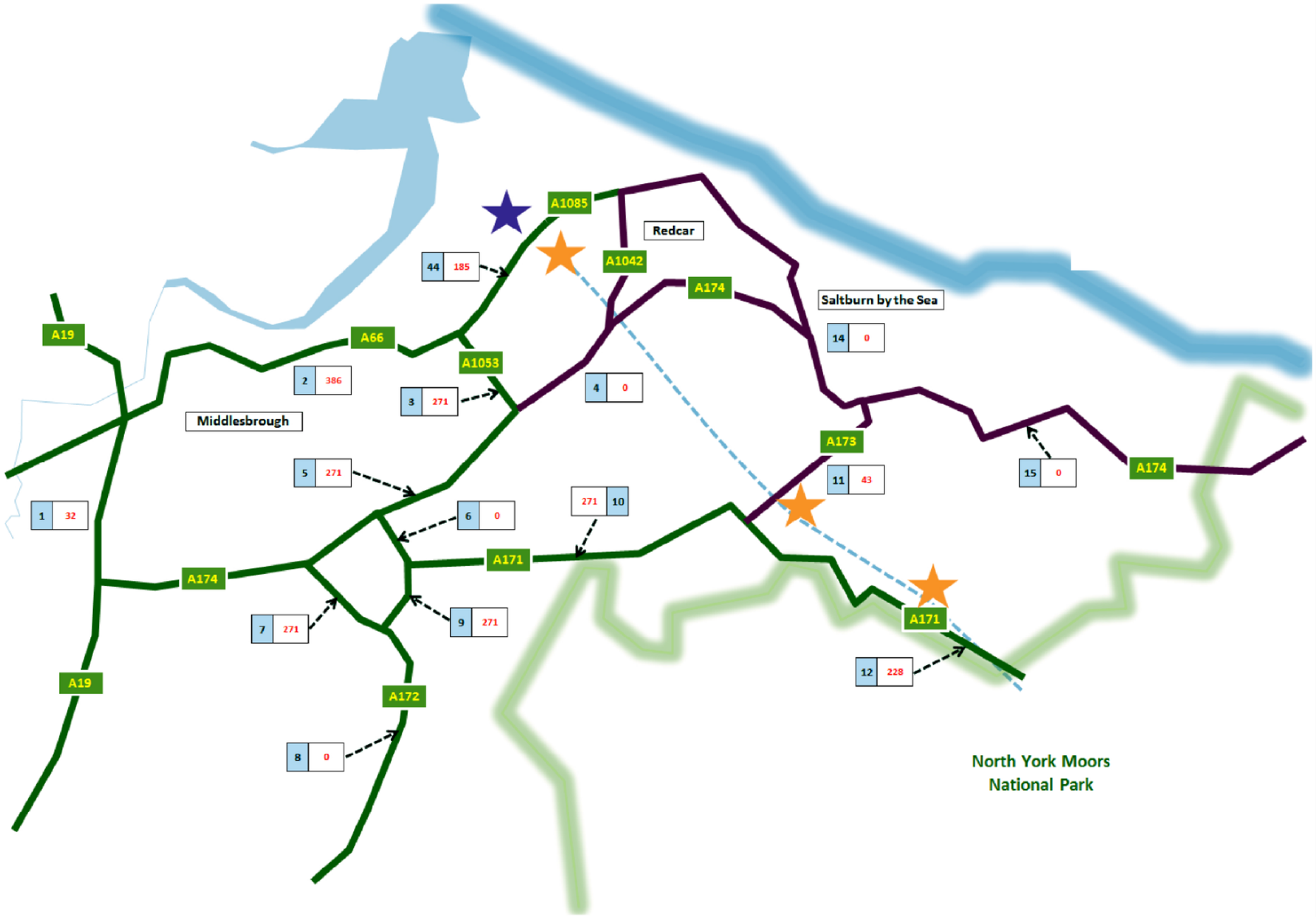
Part:	Figure:	Drawing No:
HF	2	9Y0989-HF-CTMP-002

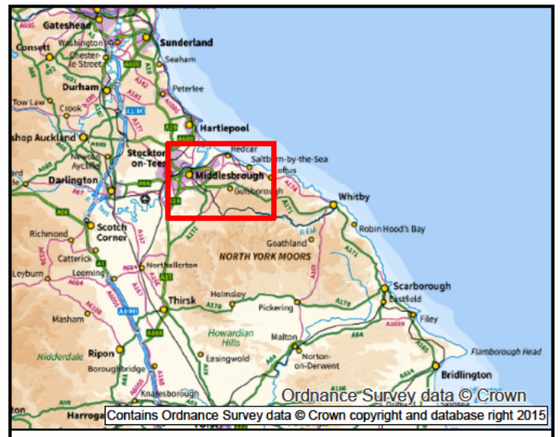
Rev:	Date:	Drawn:	Checked:	Size:	Scale:
0	08/12/2014	MCP	SKT	A3	1:25,000

Co-ordinate system: British National Grid

Royal HaskoningDHV
Enhancing Society Together

ROYAL HASKONINGDHV
INDUSTRY, ENERGY & MINING
RIGHTWELL HOUSE
BRETTON
PETERBOROUGH
PE3 8DW
+44 (0)1733 33 44 55
www.royalhaskoningdhv.com





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

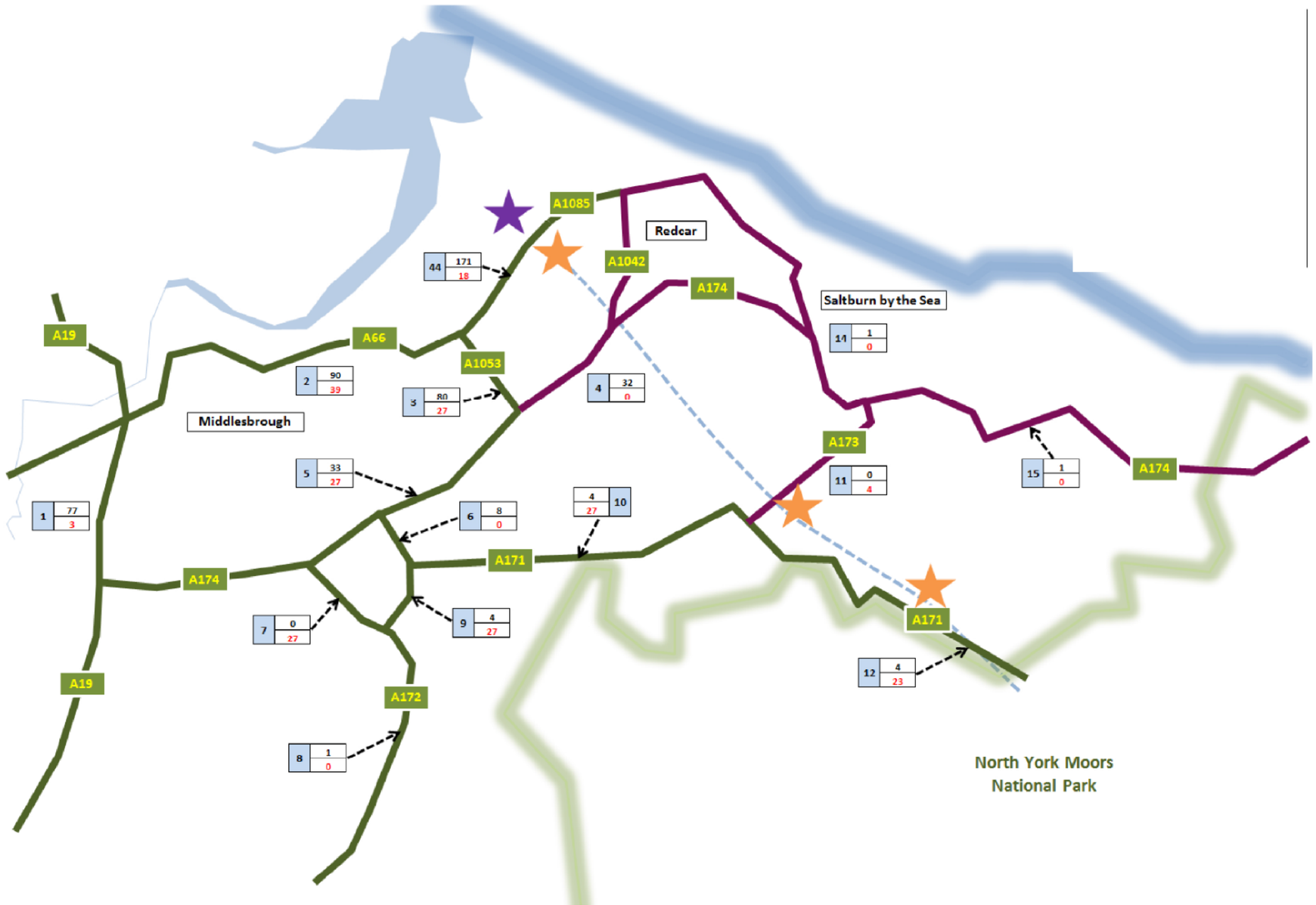
Part:	Figure:	Drawing No:
HF	3	9Y0989-HF-CTMP-003

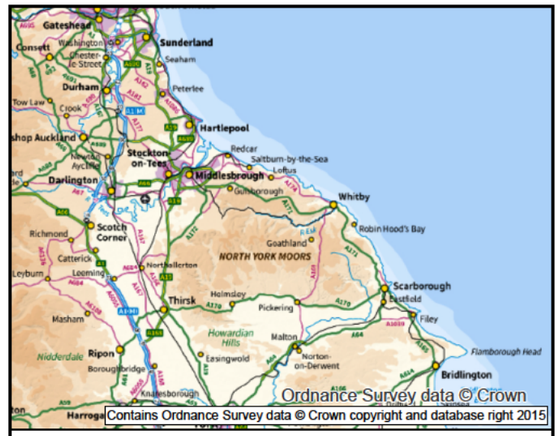
Rev:	Date:	Drawn:	Checked:	Size:	Scale:
0	08/12/2014	MCP	SKT	A3	NTS
1	17/03/2015	JPR	SKT	A3	NTS

Co-ordinate system: British National Grid

Royal HaskoningDHV
Enhancing Society Together

ROYAL HASKONINGDHV
INDUSTRY, ENERGY & MINING
RIGHTWELL HOUSE
BRETTON
PETERBOROUGH
PE3 8DW
+44 (0)1733 33 44 55
www.royalhaskoningdhv.com





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	4	9Y0989-HF-CTMP-004

Rev:	Date:	Drawn:	Checked:	Size:	Scale:
0	08/12/2014	MCP	SKT	A3	NTS
1	16/03/2015	JPR	SKT	A3	NTS

Co-ordinate system: British National Grid

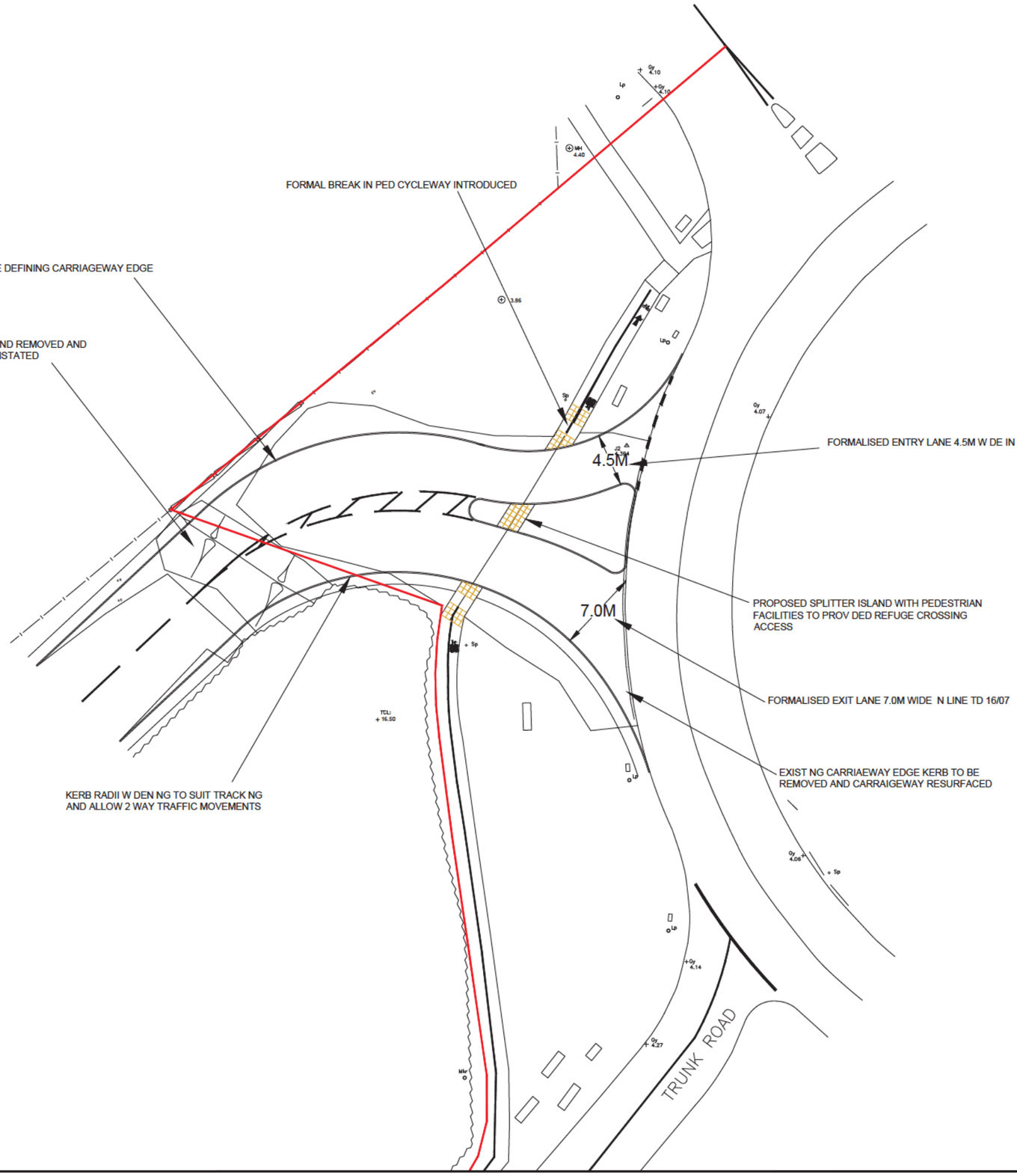
Royal HaskoningDHV
Enhancing Society Together

ROYAL HASKONINGDHV
INDUSTRY, ENERGY & MINING
RIGHTWELL HOUSE
BRETTON
PETERBOROUGH
PE3 8DW
+44 (0)1733 33 44 55
www.royalhaskoningdhv.com

Annex 1

BLANK PAGE

DRG No. 9Y0989_HCA_GA-01



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 DRAW NG

TITLE

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

HASKONINGDHV UK LTD
MARITIME & WATERWAYS
Marlborough House
Marlborough Crescent
Newcastle upon Tyne NE1 EE
(0) 191 211 1300 Telephone
(0) 191 211 1313 Fax
info@newcast e.royalhaskoning.com E-mail
www.royalhaskoningdhv.com Internet

DRAWN	RO	CHECKED DJ	PASSED DJ
DATE	18.11.14	CLIENT'S REF.	
SCALE AT A1	1 200	AUTOCAD REF.	9Y0989_HCA_GA-01

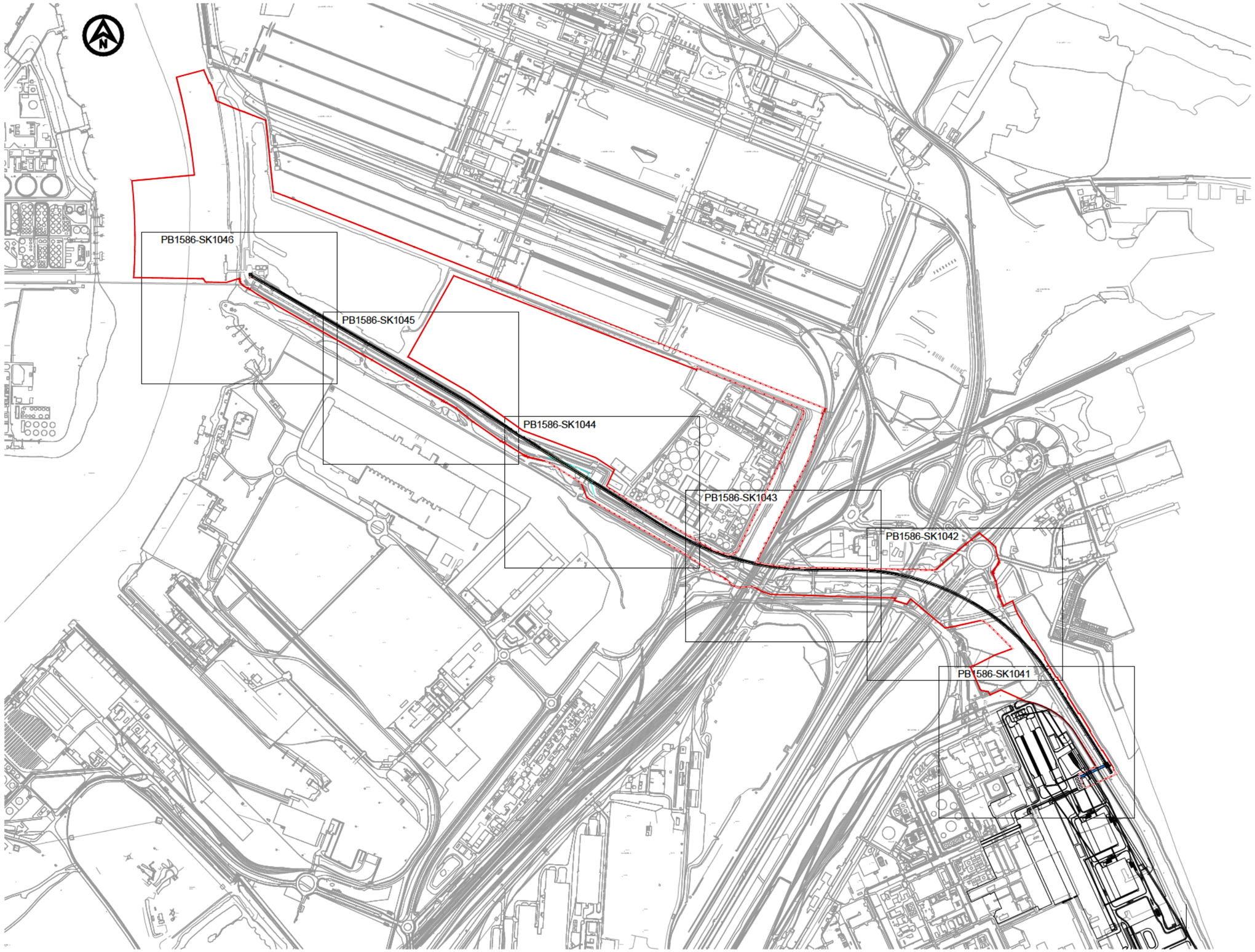
DRAWING No.	REVISION
9Y0989_HCA_GA-01	3

BLANK PAGE

Annex 2

BLANK PAGE

DRG No. PB1586-SK1040



NOTES

REV	DATE	DESCRIPTION	BY	CHK	APP
E	[illegible]	ISSUED FOR INFORMATION	SA	DGB	DGB
D	[illegible]	MINOR REVISIONS	CH	DGB	MH
C	[illegible]	MINOR REVISIONS	LW	DGB	MH
B	[illegible]	ISSUED FOR INFORMATION	TF	DGB	MH
A	[illegible]	ISSUED FOR INFORMATION	LW	DGB	SM

REVISIONS

YORKPOTASH
A Sirius Minerals Project

PROJECT
YORK POTASH

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

HASKONINGDHV UK LTD
MARITIME & WATERWAYS
Marlborough House
Marlborough Crescent
Newcastle upon Tyne NE1 6E
(0) 191 211 1300 Telephone
(0) 191 211 1313 Fax
info@newcastle.royalhaskoning.com E-mail
www.royalhaskoningdhv.com Internet

DRAWN	LW	CHECKED DGB	PASSED SM
DATE	JAN'15	CLIENT'S REF.	
SCALE AT A1	NTS	AUTOCAD REF.	PB1586-SK1040

DRAWING No.
PB1586-SK1040

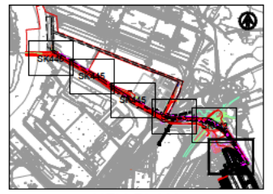
REVISION
E

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	[illegible]	PLANNING ISSUE	LW	DGB	MH
D	[illegible]	MINOR REVISIONS	CH	DGB	MH
C	[illegible]	MINOR REVISIONS	LW	DGB	MH
B	[illegible]	ISSUED FOR INFORMATION	TF	DGB	MH
A	[illegible]	ISSUED FOR INFORMATION	LW	DGB	SM

REVISIONS

YORKPOTASH
A Sirius Minerals Project

PROJECT

YORK POTASH

TITLE

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

Royal HaskoningDHV
HASKONINGDHV UK LTD
MARITIME & WATERWAYS
Marlborough House
Marlborough Crescent
Newcastle upon Tyne NE1 [illegible]
Telephone (0) 191 211 1300
Fax (0) 191 211 1313
E-mail in.ql@newcastle.royalhaskoning.com
Internet www.royalhaskoningdhv.com

DRAWN	LW	CHECKED DGB	PASSED SM
DATE	JAN'15	CLIENT'S REF.	
SCALE AT A1	1 1000	AUTOCAD REF.	PB1586-SK1041

DRAWING No. PB1586-SK1041

REVISION E

DRG No. PB1586-SK1042

MC3

MC2

MC1

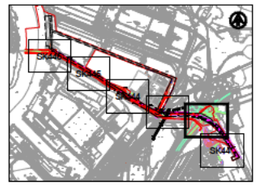
MC0

Wilton Works

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	[illegible]	PLANNING ISSUE	LW	DGB	MH
D	[illegible]	MINOR REVISIONS	CH	DGB	MH
C	[illegible]	MINOR REVISIONS	LW	DGB	MH
B	[illegible]	ISSUED FOR INFORMATION	TF	DGB	MH
A	[illegible]	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 2
REGULATION 5(2)(o) DOCUMENT 3.3C

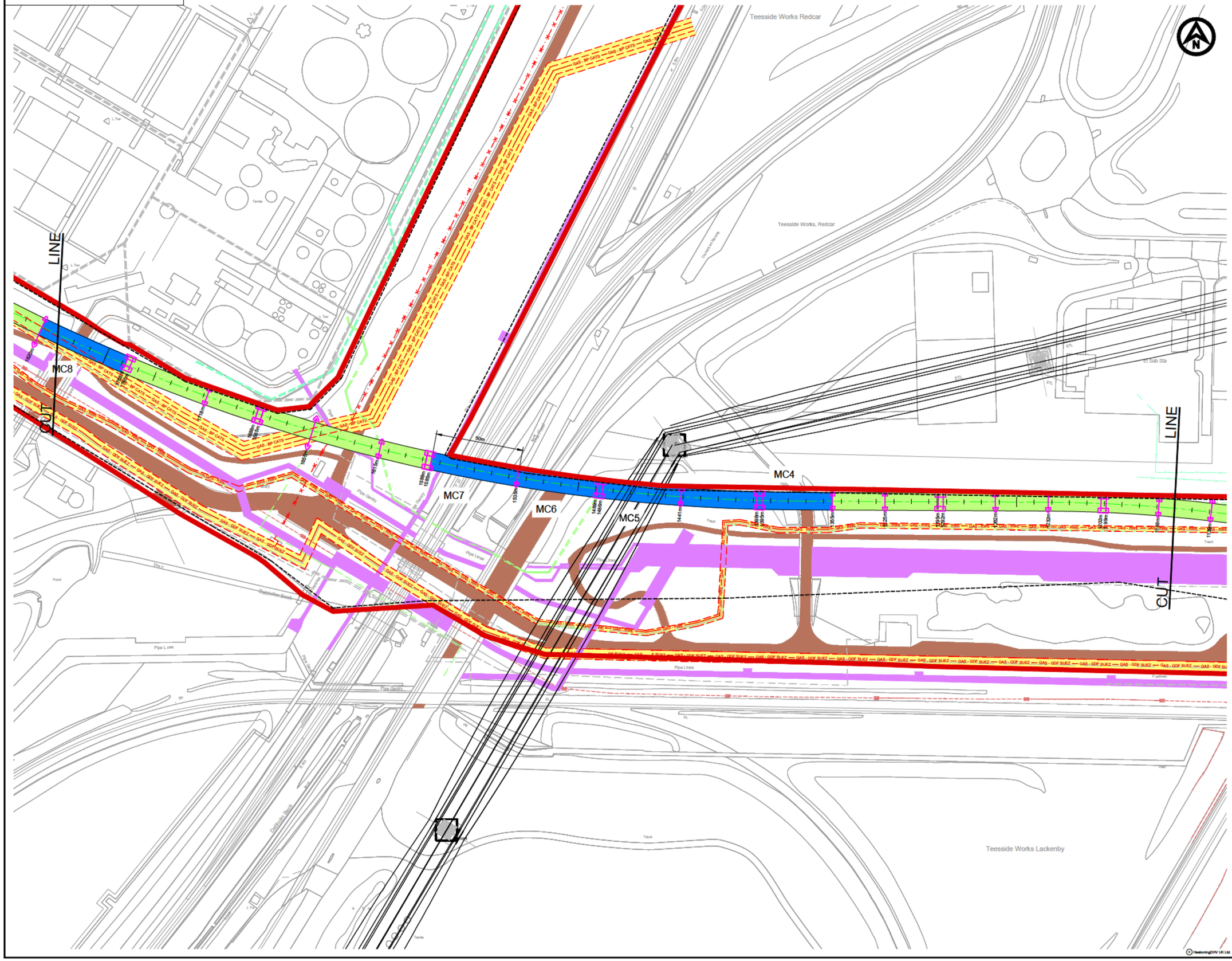
HASKONINGDHV UK LTD
MARITIME & WATERWAYS
Marlborough House
Marlborough Crescent
Newcastle upon Tyne NE1 6E
(0) 191 211 1300 Telephone
(0) 191 211 1313 Fax
info@newcastle.royalhaskoningdhv.com E-mail
www.royalhaskoningdhv.com Internet

DRAWN	LW	CHECKED DGB	PASSED SM
DATE	JAN'15	CLIENT'S REF.	
SCALE AT A1	1:1000	AUTOCAD REF.	PB1586-SK1042

DRAWING No. PB1586-SK1042

REVISION E

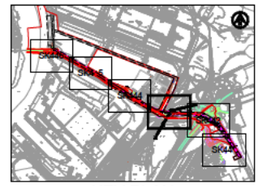
DRG No. PB1586-SK1043



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	[illegible]	PLANNING ISSUE	LW	DGB	MH
D	[illegible]	MINOR REV SIONS	CH	DGB	MH
C	[illegible]	MINOR REV SIONS	LW	DGB	MH
B	[illegible]	ISSUED FOR INFORMATION	TF	DGB	MH
A	[illegible]	ISSUED FOR INFORMATION	LW	DGB	SM

REVISIONS

YORKPOTASH
A Sirius Minerals Project

PROJECT
YORK POTASH

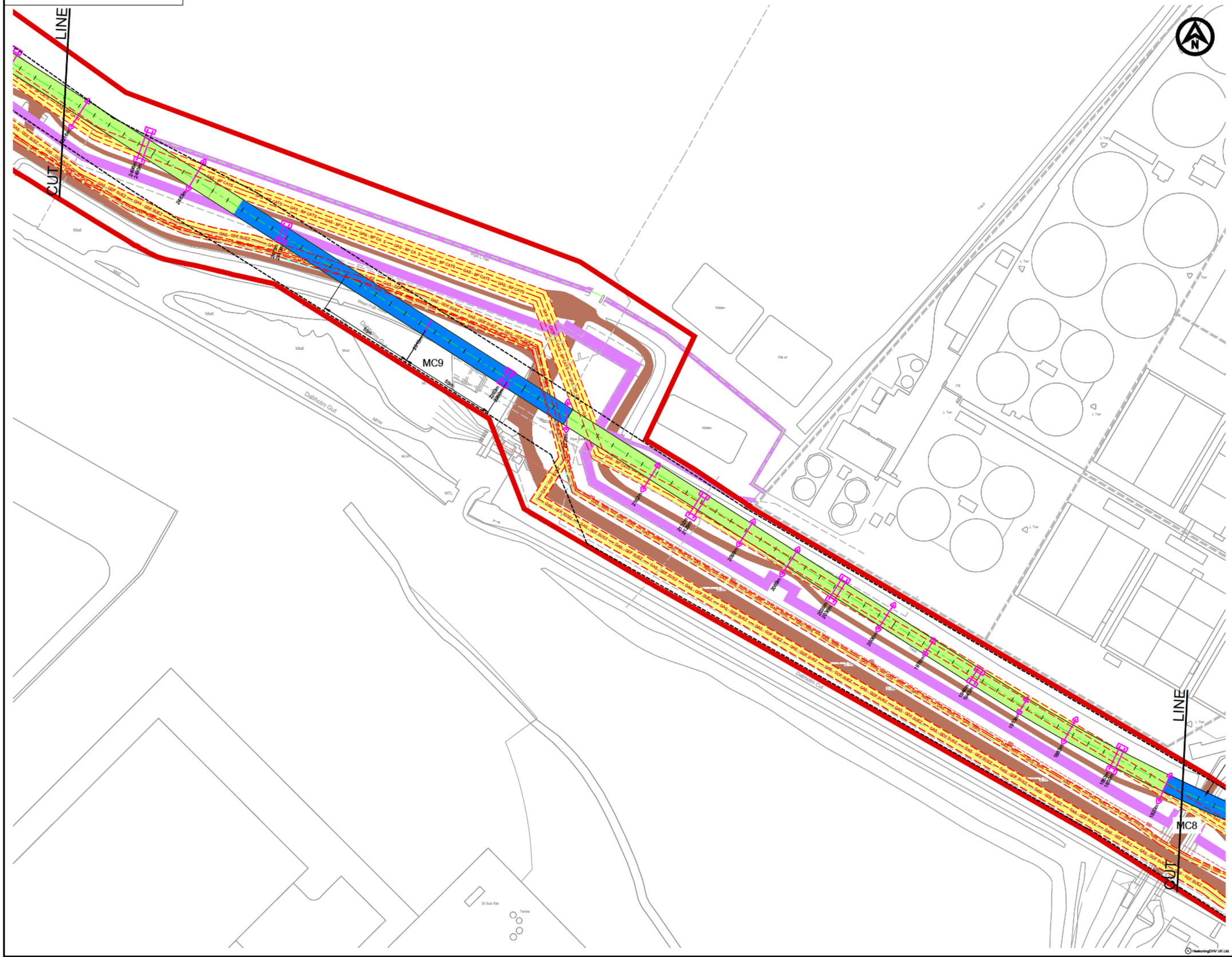
TITLE
THE YORK POTASH
HARBOUR FACILIT ES ORDER 201X
CONVEYOR ROUTE PLANS
SOUTHERN ROUTE - SHEET 3
REGULATION 5(2)(o) DOCUMENT 3.3D

HASKONINGDHV UK LTD
MARITIME & WATERWAYS
Marlborough House
Marlborough Crescent
Newcastle upon Tyne NE1 EE
(0) 191 211 1300 Telephone
(0) 191 211 1313 Fax
info@newcastle.royalhaskoning.com E-mail
www.royalhaskoningdhv.com Internet

DRAWN	LW	CHECKED DGB	PASSED SM
DATE	JAN'15	CLIENT S REF.	
SCALE AT A1	1 1000	AUTOCAD REF.	PB1586-SK1043

DRAWING No. PB1586-SK1043
REVISION E

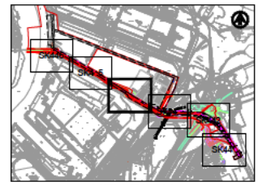
DRG No. PB1586-SK1044



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 - EXIST NG 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	8/09/15	PLANNING ISSUE	LW	DGB	MH
D	8/09/15	MINOR REVISIONS	CH	DGB	MH
C	03/09/15	MINOR REVISIONS	LW	DGB	MH
B	08/08/15	ISSUED FOR INFORMATION	TF	DGB	MH
A	03/03/15	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 4
REGULATION 5(2)(o) DOCUMENT 3 3E

HASKONINGDHV UK LTD
MARITIME & WATERWAYS
Marlborough House
Marlborough Crescent
Newcastle upon Tyne NE1 6E
(0) 191 211 1300 Telephone
(0) 191 211 1313 Fax
info@newcastle.royalhaskoning.com E-mail
www.royalhaskoningdhv.com Internet

DRAWN	LW	CHECKED DGB	PASSED SM
DATE	JAN'15	CLIENT'S REF.	
SCALE AT A1	1 1000	AUTOCAD REF.	PB1586-SK1044

DRAWING No. PB1586-SK1044

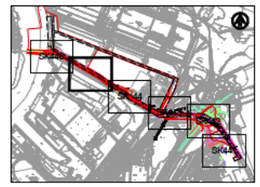
REVISION E

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
E	[illegible]	PLANNING ISSUE	LW	DGB	MH
D	[illegible]	MINOR REVISIONS	CH	DGB	MH
C	[illegible]	MINOR REVISIONS	LW	DGB	MH
B	[illegible]	ISSUED FOR INFORMATION	TF	DGB	MH
A	[illegible]	ISSUED FOR INFORMATION	LW	DGB	SM

REVISIONS

YORKPOTASH
A Sirius Minerals Project

PROJECT

YORK POTASH

TITLE

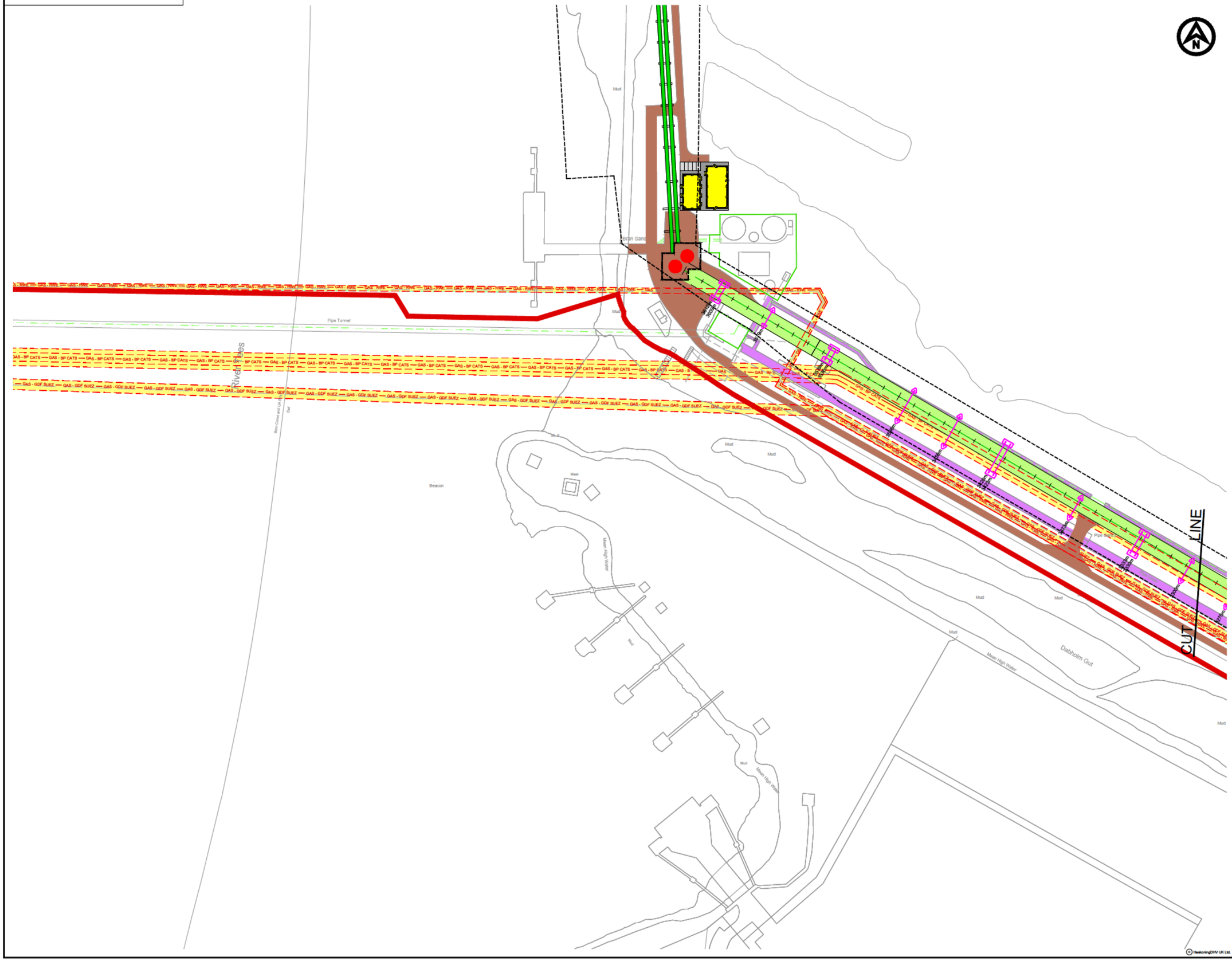
THE YORK POTASH
HARBOUR FACILIT ES ORDER 201X
CONVEYOR ROUTE PLANS
SOUTHERN ROUTE - SHEET 5
REGULATION 5(2)(o) DOCUMENT 3 3F

HASKONINGDHV UK LTD
MARITIME & WATERWAYS
Marlborough House
Marlborough Crescent
Newcastle upon Tyne NE1 EE
(0) 191 211 1300 Telephone
(0) 191 211 1313 Fax
info@newcastle.royalhaskoning.com E-mail
www.royalhaskoningdhv.com Internet

DRAWN	LW	CHECKED DGB	PASSED SM
DATE	JAN'15	CLIENT'S REF.	
SCALE AT A1	1 1000	AUTOCAD REF.	PB1586-SK1045

DRAWING No. PB1586-SK1045

REVISION E



DRG No. PB1586-SK1046

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
●	SURGE BINS
🟫	ACCESS ROADS
☐	EXISTING BUILDING

LEGEND - EXISTING SERVICES

— — —	EASEMENT ZONES
— GAS - BP CATS —	GAS - BP CATS
— GAS - GDF SUEZ —	GAS - GDF SUEZ
— GAS - RWE —	GAS - RWE
— FO — FO —	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	9 03 5	PLANNING ISSUE	LW	DGB	MH
D	6 03 5	MINOR REVISIONS	CH	DGB	MH
C	2 03 5	MINOR REVISIONS	LW	DGB	MH
B	05 03 5	ISSUED FOR INFORMATION	TF	DGB	MH
A	03 03 5	ISSUED FOR INFORMATION	LW	DGB	SM

REVISIONS

YORKPOTASH
A Sirius Minerals Project

PROJECT
YORK POTASH

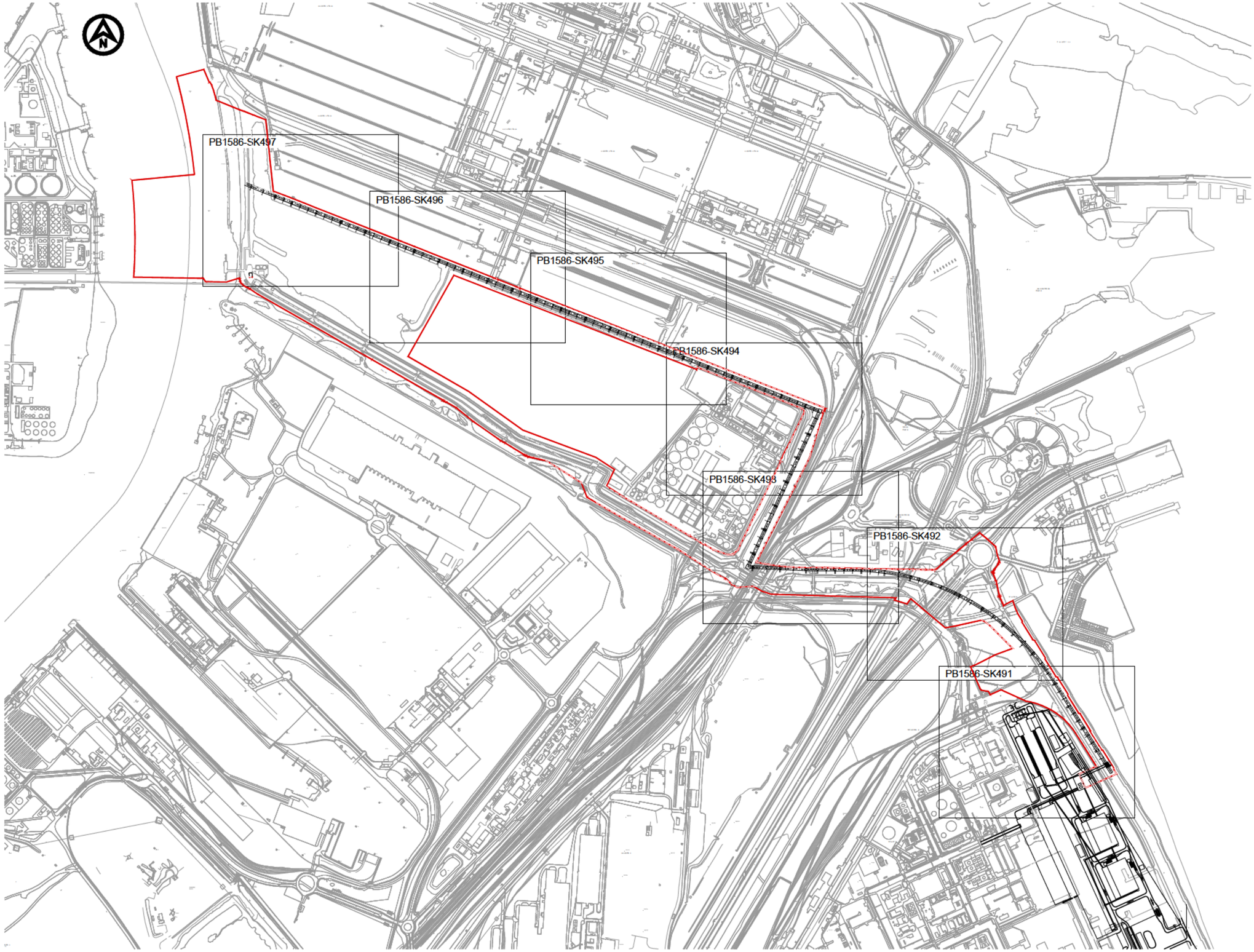
TITLE
THE YORK POTASH
HARBOUR FACILITIES ORDER 201X
CONVEYOR ROUTE PLANS
SOUTHERN ROUTE - SHEET 6
REGULATION 5(2)(o) DOCUMENT 3.3G

Royal HaskoningDHV
HASKONINGDHV UK LTD
MARITIME & WATERWAYS
Marlborough House
Marlborough Crescent
Newcastle upon Tyne NE1 EE
(0) 191 211 1300 Telephone
(0) 191 211 1313 Fax
info@newcastle.royalhaskoning.com E-mail
www.royalhaskoningdhv.com Internet

DRAWN	LW	CHECKED	DGB	PASSED	SM
DATE	JAN'15	CLIENT'S REF.			
SCALE AT A1	1 1000	AUTOCAD REF.	PB1586-SK1046		

DRAWING No. PB1586-SK1046
REVISION E

DRG No. PB1586-SK490



NOTES

REV	DATE	DESCRIPTION	BY	CHK	APP
E	[illegible]	PLANN NG ISSUE	LW	DGB	MH
D	[illegible]	MINOR REVISIONS	CH	DGB	MH
C	[illegible]	MINOR REVISIONS	LW	DGB	MH
B	[illegible]	ISSUED FOR INFORMATION	TF	DGB	MH
A	[illegible]	FIRST ISSUE	LW	DGB	RWP

REVISIONS

YORKPOTASH
A Sirius Minerals Project

PROJECT

YORK POTASH

TITLE

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

HASKONINGDHV UK LTD
MARITIME & WATERWAYS
Marlborough House
Marlborough Crescent
Newcastle upon Tyne NE1 4EE
(0) 191 211 1300 Telephone
(0) 191 211 1313 Fax
info@newcastle.royalhaskoning.com E-mail
www.royalhaskoningdhv.com Internet

DRAWN LW	CHECKED DGB	PASSED RWP	
DATE FEB15	CLIENT'S REF.		
SCALE AT A1 NTS	AUTOCAD REF. PB1586-SK490		

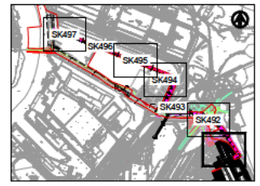
DRAWING No. PB1586-SK490 | REVISION E

DRG No. PB1586-SK491

NOTES

MAJOR CROSSINGS

MC 0	Eastern Boundary Road	- Pass over in bridge
MC 1	Highway A1085	- Pass over in bridge
MC 2	YPL 1st access road	- Pass over in bridge
MC 3	Hot metal ra l	- 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

REV	DATE	DESCRIPTION	BY	CHK	APP
E	9.03.15	PLANN NG ISSUE	LW	DGB	MH
D	6.03.15	MINOR REVISIONS	CH	DGB	MH
C	2.03.15	MINOR REVISIONS	LW	DGB	MH
B	06.03.15	ISSUED FOR APPROVAL	TF	DGB	MH
A	27.02.15	FIRST ISSUE	LW	DGB	RWP

REVISIONS

YORKPOTASH
A Sirius Minerals Project

PROJECT
YORK POTASH

TITLE
THE YORK POTASH
HARBOUR FACILIT ES ORDER 201X
CONVEYOR ROUTE PLANS
NORTHERN ROUTE - SHEET 1
REGULATION 5(2)(o) DOCUMENT 3 3I

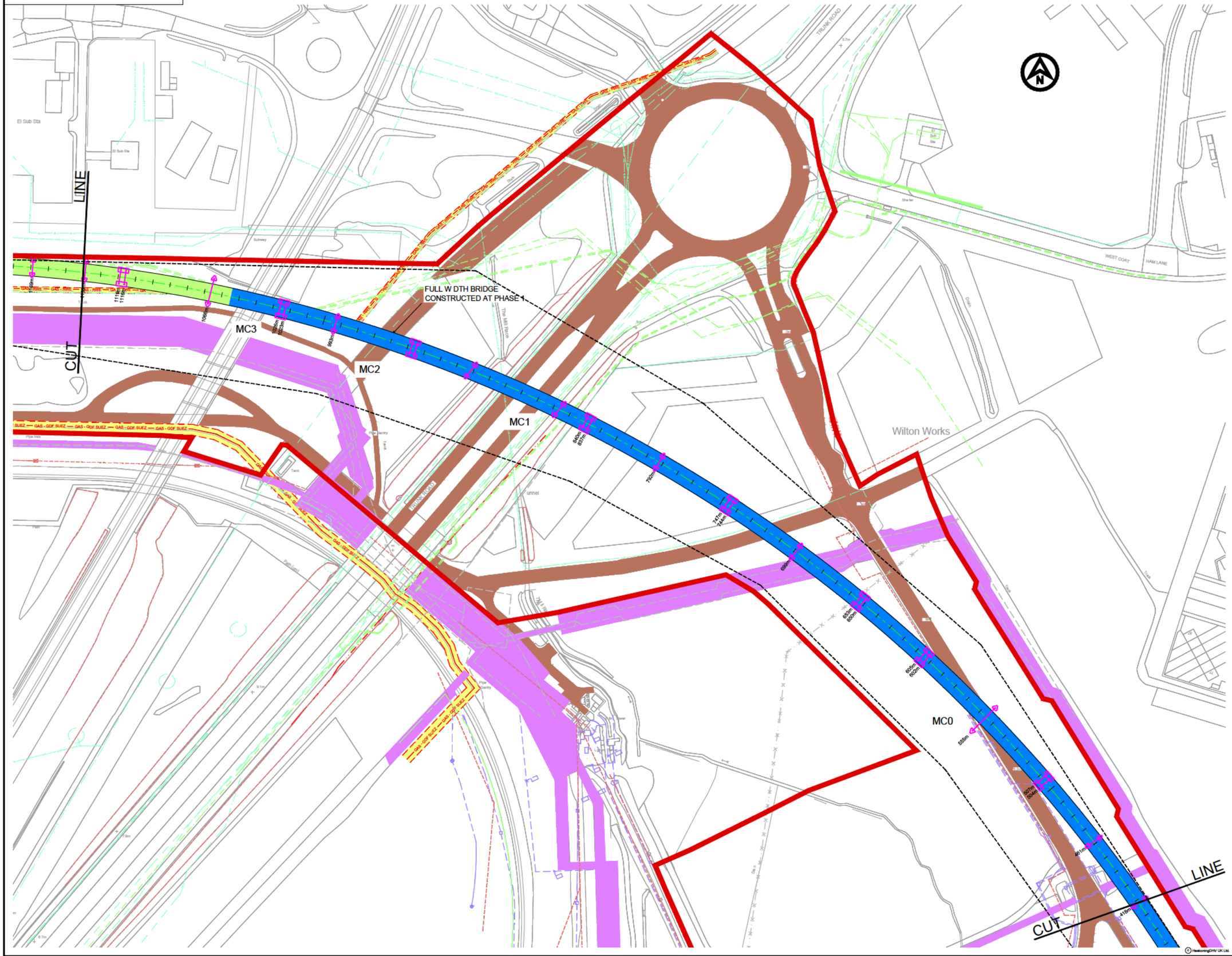
Royal HaskoningDHV
HASKONINGDHV UK LTD
MARITIME & WATERWAYS
Marlborough House
Marlborough Crescent
Newcastle upon Tyne NE1 6E
(0) 191 211 1300 Telephone
(0) 191 211 1313 Fax
info@newcastle.royalhaskoning.com E-mail
www.royalhaskoningdhv.com Internet

DRAWN	LW	CHECKED	DGB
DATE	FEB15	PASSED	RWP
SCALE AT A1	1 1000	CLIENT S REF.	
		AUTOCAD REF.	PB1586-SK491

DRAW NG No. PB1586-SK491

REVISION E

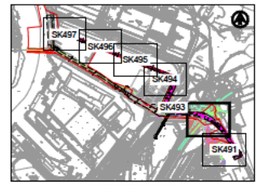
DRG No. PB1586-SK492



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

REV	DATE	DESCRIPTION	BY	CHK	APP
E	[illegible]	PLANNING ISSUE	LW	DGB	MH
D	[illegible]	MINOR REV SIONS	CH	DGB	MH
C	[illegible]	MINOR REV SIONS	LW	DGB	MH
B	[illegible]	ISSUED FOR APPROVAL	TF	DGB	MH
A	[illegible]	F RST ISSUE	LW	DGB	RWP

REVISIONS

YORKPOTASH
A Sirius Minerals Project

PROJECT
YORK POTASH

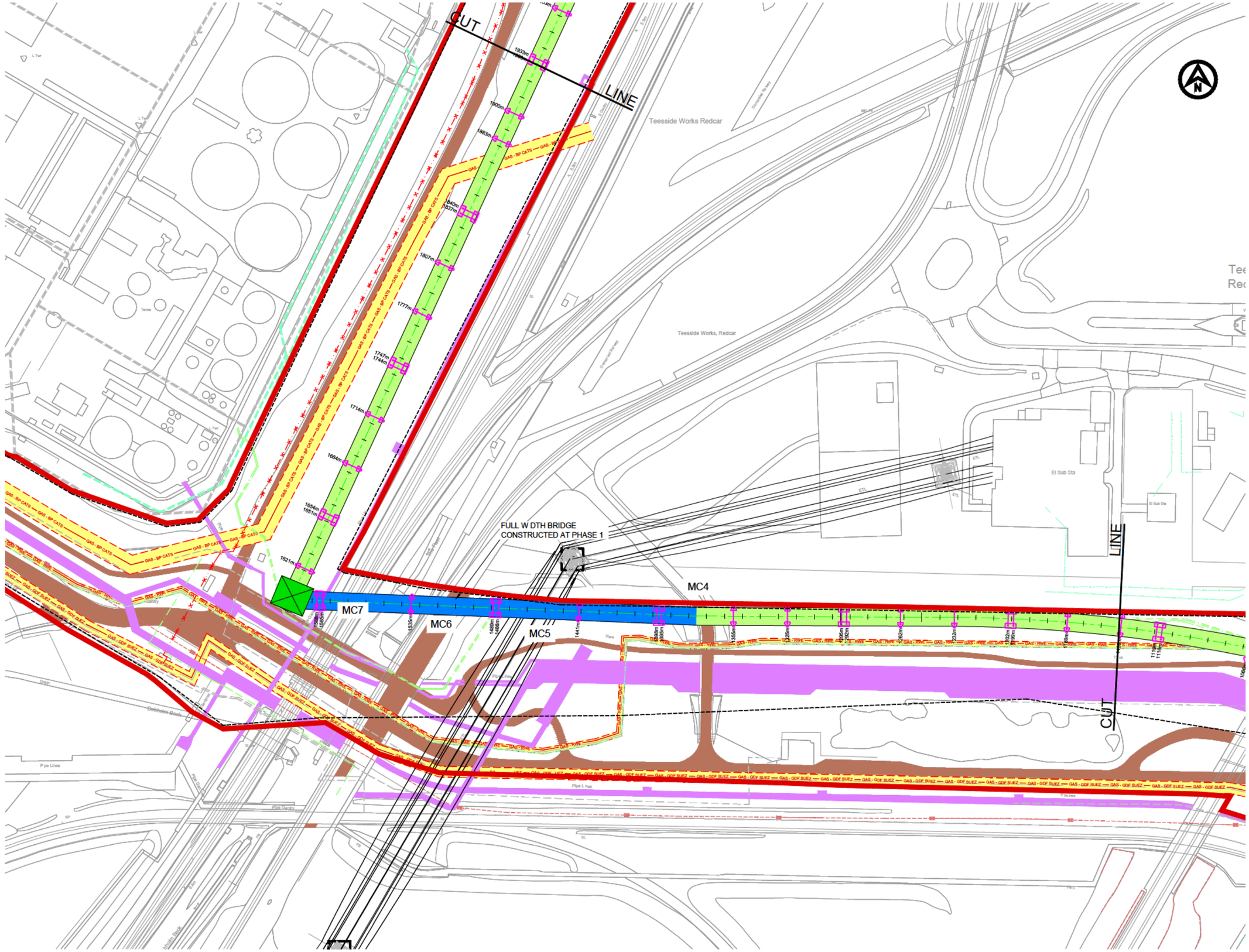
TITLE
THE YORK POTASH
HARBOUR FACILIT ES ORDER 201X
CONVEYOR ROUTE PLANS
NORTHERN ROUTE - SHEET 2
REGULATION 5(2)(o) DOCUMENT 3 3J

Royal HaskoningDHV
HASKONINGDHV UK LTD
MARITIME & WATERWAYS
Marlborough House
Marlborough Crescent
Newcastle upon Tyne NE1 EE
Telephone (0) 191 211 1300
Fax (0) 191 211 1313
E-mail info@newcastle.royalhaskoning.com
Internet www.royalhaskoningdhv.com

DRAWN	LW	CHECKED DGB	PASSED RWP
DATE	FEB'15	CLIENT S REF.	
SCALE AT A1	1 1000	AUTOCAD REF.	PB1586-SK492

DRAWING No. PB1586-SK492
REVISION E

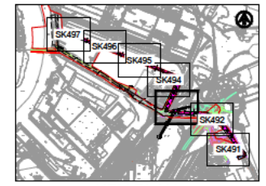
DRG No. PB1586-SK493



NOTES

MAJOR CROSSINGS

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

REV	DATE	DESCRIPTION	BY	CHK	APP
E	[illegible]	PLANNING ISSUE	LW	DGB	MH
D	[illegible]	MINOR REV SIONS	CH	DGB	MH
C	[illegible]	MINOR REV SIONS	LW	DGB	MH
B	[illegible]	ISSUED FOR APPROVAL	TF	DGB	MH
A	[illegible]	F RST ISSUE	LW	DGB	RWP

REVISIONS

YORKPOTASH
A Sirius Minerals Project

PROJECT
YORK POTASH

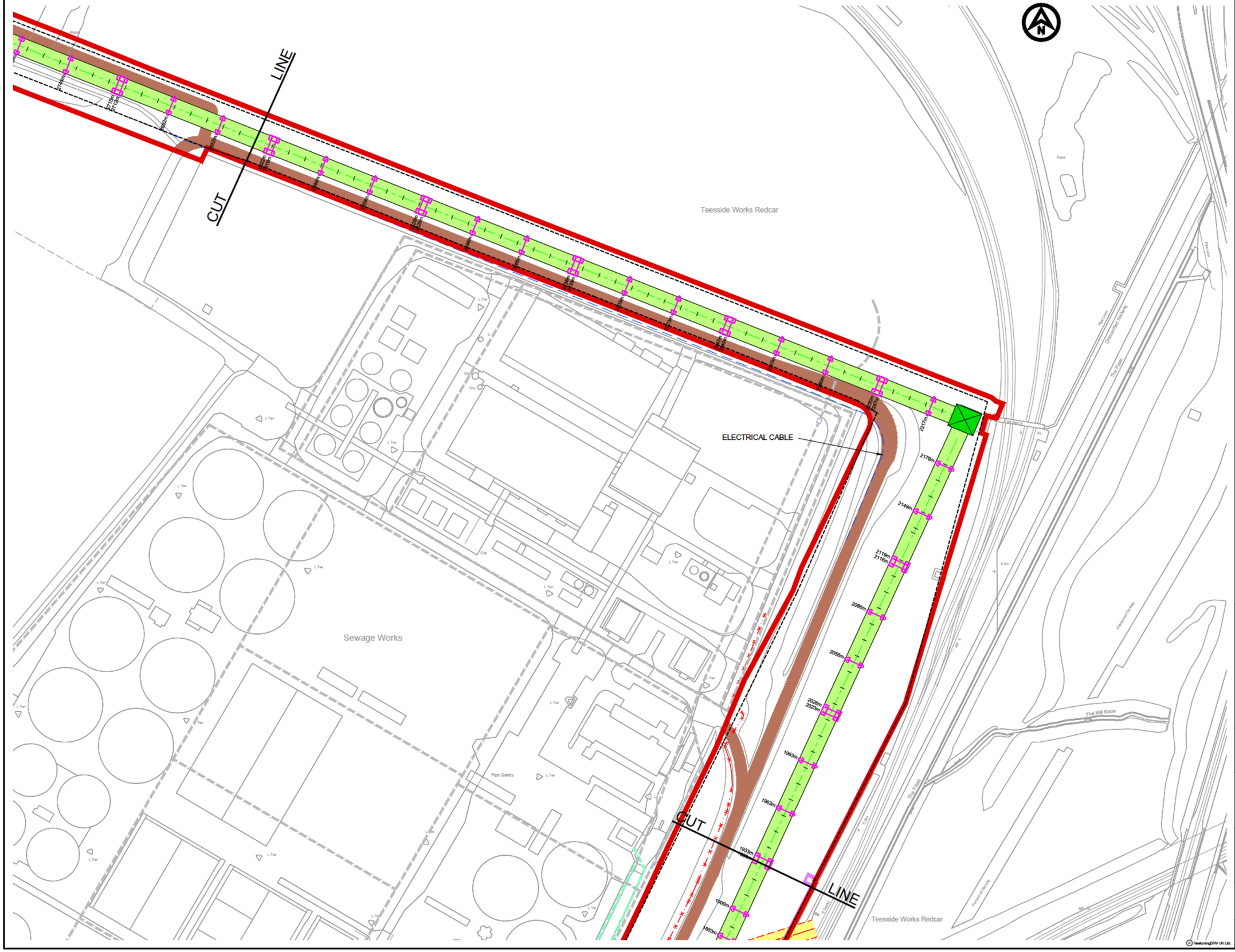
TITLE
THE YORK POTASH
HARBOUR FACILIT ES ORDER 201X
CONVEYOR ROUTE PLANS
NORTHERN ROUTE - SHEET 3
REGULATION 5(2)(o) DOCUMENT 3.3K

Royal HaskoningDHV
HASKONINGDHV UK LTD
MARITIME & WATERWAYS
Marlborough House
Marlborough Crescent
Newcastle upon Tyne NE1 EE
(0) 191 211 1300 Telephone
(0) 191 211 1313 Fax
info@newcastle.royalhaskoning.com E-mail
www.royalhaskoningdhv.com Internet

DRAWN	LW	CHECKED DGB	PASSED RWP
DATE	FEB'15	CLIENT S REF.	
SCALE AT A1	1 1000	AUTOCAD REF.	PB1586-SK493

DRAWING No. PB1586-SK493
REVISION E

DRG No. PB1586-SK494

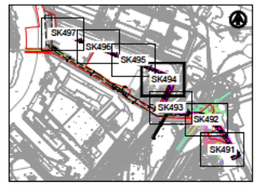


NOTES

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
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
- ELECTRICAL CABLE

REV.	DATE	DESCRIPTION	BY	CHK	APP
E	[illegible]	PLANNING ISSUE	LW	DGB	MH
D	[illegible]	MINOR REVISIONS	CH	DGB	MH
C	[illegible]	MINOR REVISIONS	LW	DGB	MH
B	[illegible]	ISSUED FOR APPROVAL	TF	DGB	MH
A	[illegible]	FIRST ISSUE	LW	DGB	RWP

REVISIONS

YORKPOTASH
A Sirius Minerals Project

PROJECT

YORK POTASH

TITLE

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

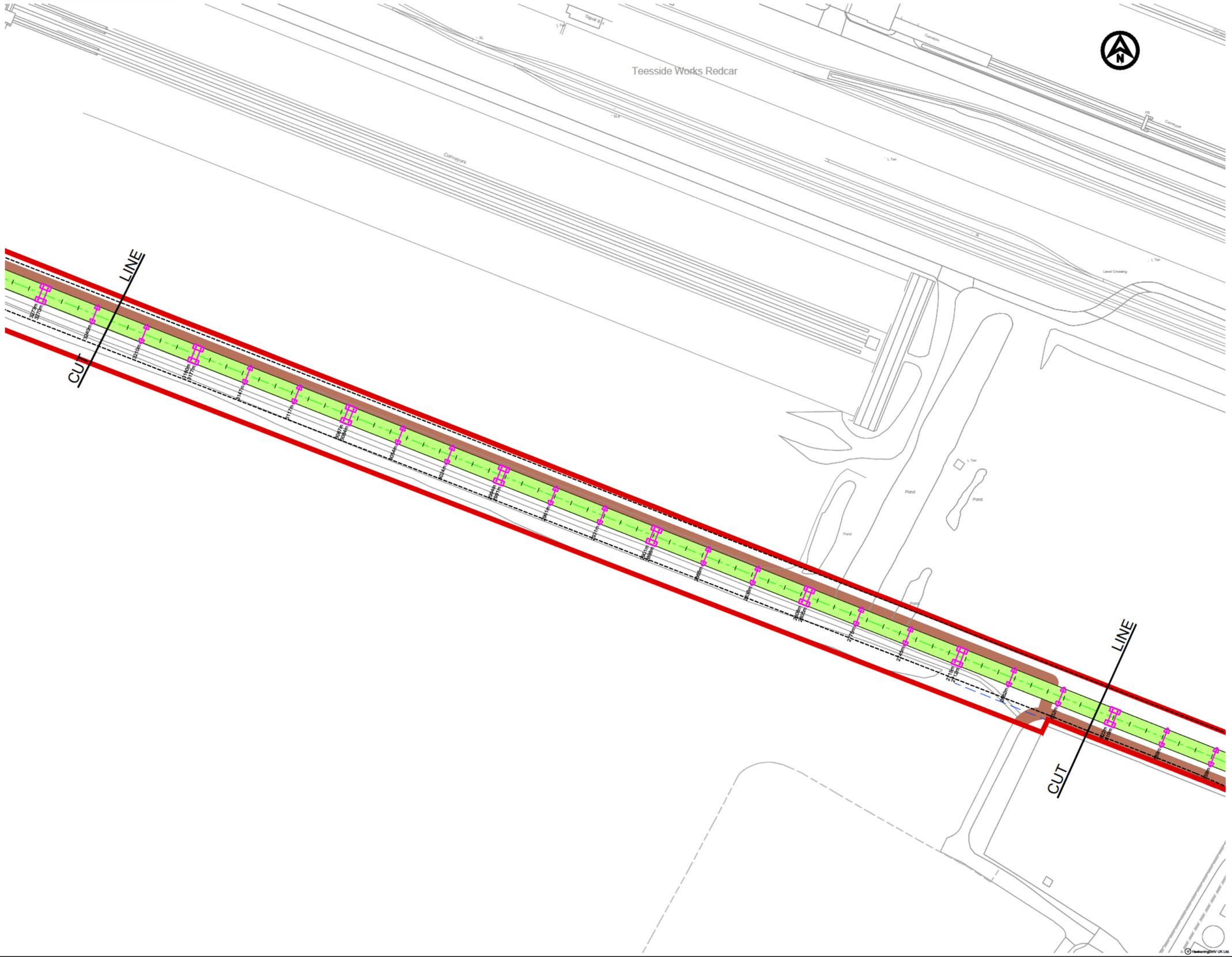
HASKONINGDHV UK LTD
MARITIME & WATERWAYS
Marlborough House
Marlborough Crescent
Newcastle upon Tyne NE1 4EE
(0) 191 211 1300 Telephone
(0) 191 211 1313 Fax
info@newcastle.royalhaskoning.com E-mail
www.royalhaskoningdhv.com Internet

DRAWN	LW	CHECKED DGB	PASSED RWP
DATE	FEB'15	CLIENT'S REF.	
SCALE AT A1	1:1000	AUTOCAD REF.	PB1586-SK494

DRAWING No. PB1586-SK494

REVISION E

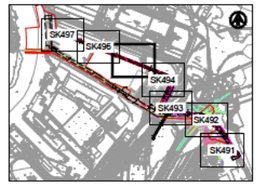
DRG No. PB1586-SK495



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

REV	DATE	DESCRIPTION	BY	CHK	APP
E	6/03/15	PLANNING ISSUE	LW	DGB	MH
D	6/03/15	MINOR REVISIONS	CH	DGB	MH
C	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

REVISIONS

YORKPOTASH
A Sirius Minerals Project

PROJECT

YORK POTASH

TITLE

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

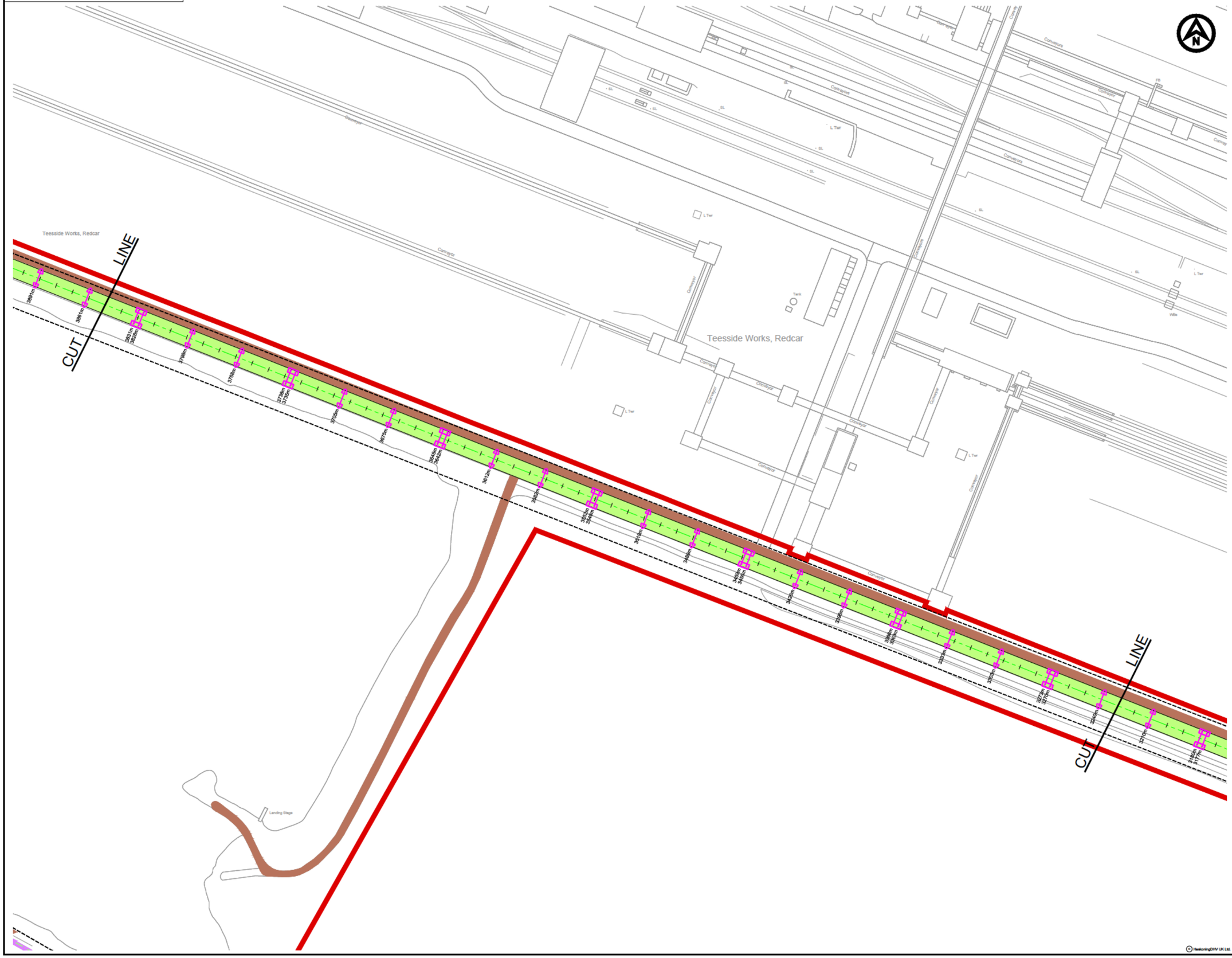
HASKONINGDHV UK LTD
MARITIME & WATERWAYS
Marlborough House
Marlborough Crescent
Newcastle upon Tyne NE1 6E
(0) 191 211 1300 Telephone
(0) 191 211 1313 Fax
info@newcastle.royalhaskoning.com E-mail
www.royalhaskoningdhv.com Internet

DRAWN	LW	CHECKED DGB	PASSED RWP
DATE	FEB'15	CLIENT'S REF.	
SCALE AT A1	1:1000	AUTOCAD REF.	PB1586-SK495

DRAWING No. PB1586-SK495

REVISION E

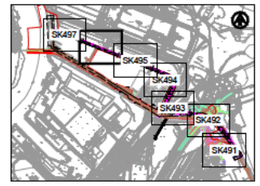
DRG No. PB1586-SK496



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

REV	DATE	DESCRIPTION	BY	CHK	APP
E	[illegible]	PLANNING ISSUE	LW	DGB	MH
D	[illegible]	MINOR REVISIONS	CH	DGB	MH
C	[illegible]	MINOR REVISIONS	LW	DGB	MH
B	[illegible]	ISSUED FOR APPROVAL	TF	DGB	MH
A	[illegible]	FIRST ISSUE	LW	DGB	RWP

REVISIONS

YORKPOTASH
A Sirius Minerals Project

PROJECT

YORK POTASH

TITLE

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

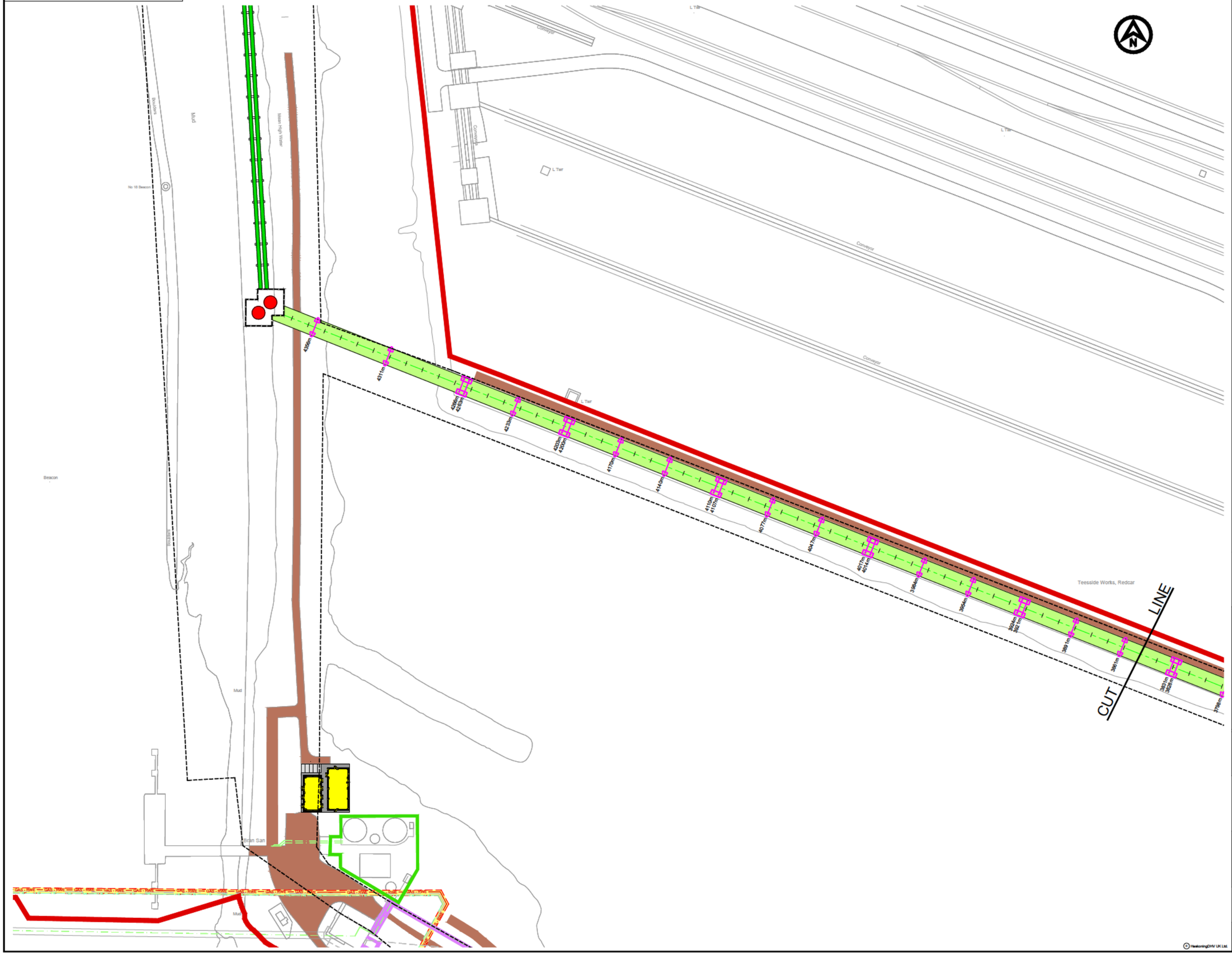
HASKONINGDHV UK LTD
MARITIME & WATERWAYS
Marlborough House
Marlborough Crescent
Newcastle upon Tyne NE1 6E
Telephone (0) 191 211 1300
Fax (0) 191 211 1313
E-mail info@newcastle.royalhaskoning.com
Internet www.royalhaskoningdhv.com

DRAWN	LW	CHECKED DGB	PASSED RWP
DATE	FEB'15	CLIENT'S REF.	
SCALE AT A1	1:1000	AUTOCAD REF.	PB1586-SK496

DRAWING No. PB1586-SK496

REVISION E

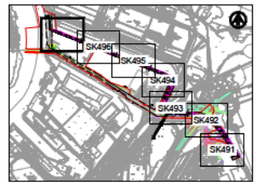
DRG No. PB1586-SK497



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 P PELINE CORRIDOR
- OVERHEAD POWER CABLES
- CONVEYOR LATERAL LIMITS OF DEVIATION

REV	DATE	DESCRIPTION	BY	CHK	APP
E	[illegible]	PLANNING ISSUE	LW	DGB	MH
D	[illegible]	MINOR REV SIONS	CH	DGB	MH
C	[illegible]	MINOR REV SIONS	LW	DGB	MH
B	[illegible]	ISSUED FOR APPROVAL	TF	DGB	MH
A	[illegible]	F RST ISSUE	LW	DGB	RWP

REVISIONS

YORKPOTASH
A Sirius Minerals Project

PROJECT
YORK POTASH

TITLE
THE YORK POTASH
HARBOUR FACILIT ES ORDER 201X
CONVEYOR ROUTE PLANS
NORTHERN ROUTE - SHEET 7
REGULATION 5(2)(o) DOCUMENT 3.3O

HASKONINGDHV UK LTD
MARITIME & WATERWAYS
Marlborough House
Marlborough Crescent
Newcastle upon Tyne NE1 EE
Telephone (0) 191 211 1300
Fax (0) 191 211 1313
E-mail info@newcastle.royalhaskoning.com
Internet www.royalhaskoningdhv.com

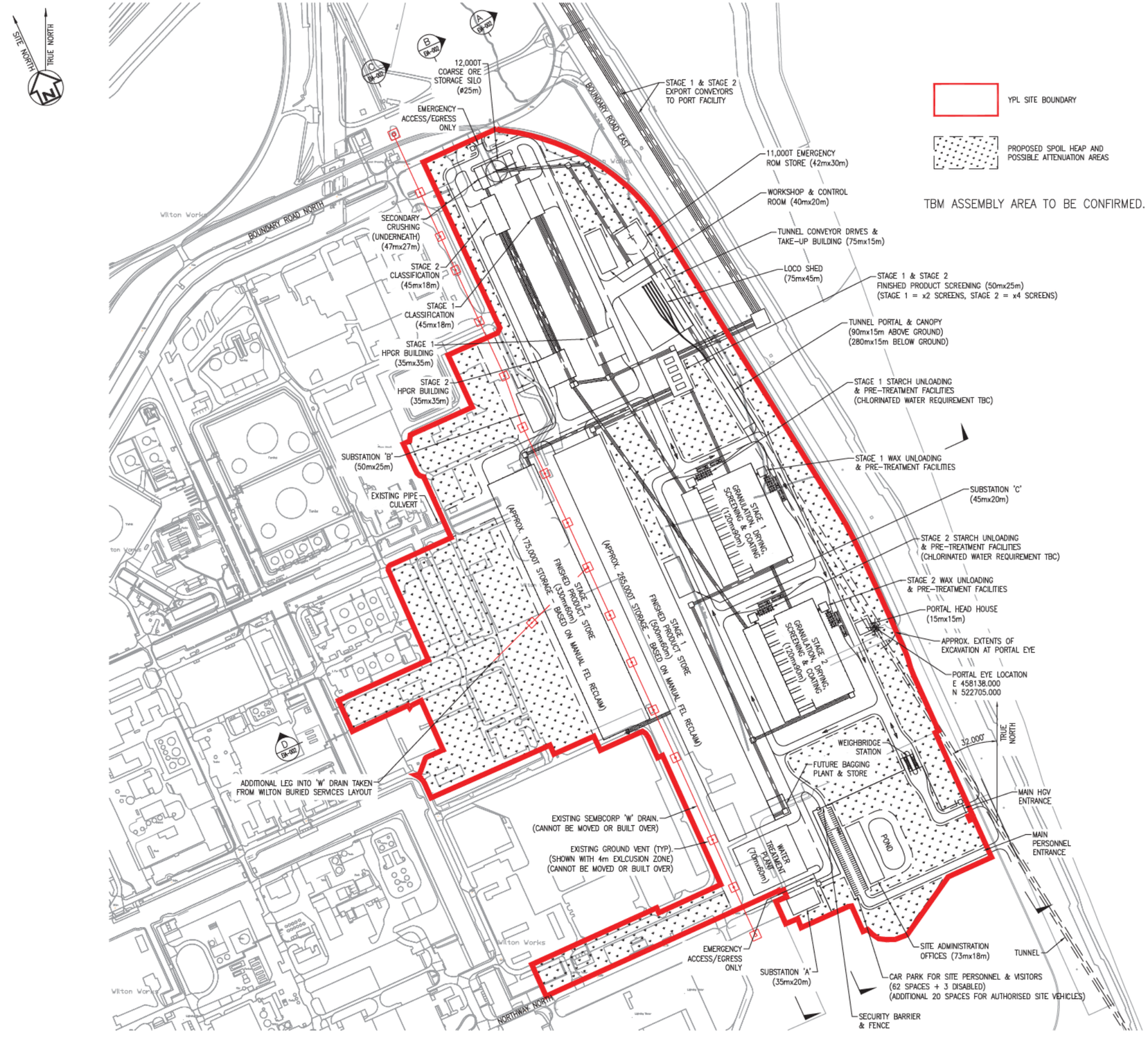
DRAWN	LW	CHECKED DGB	PASSED RWP
DATE	FEB15	CLIENT S REF.	
SCALE AT A1	1 1000	AUTOCAD REF.	PB1586-SK497

DRAWING No. PB1586-SK497
REVISION E

BLANK PAGE

Annex 3

BLANK PAGE



DOCUMENT REVIEW

- ☐ CODE 1: WORK CAN PROCEED
- ☐ CODE 2: REVISE TO ADDRESS COMMENTS
- ☐ CODE 3: REJECTED, WORK NOT TO PROCEED
- ☐ CODE 4: DOCUMENT FOR INFORMATION

SIGNED: DATE:

NOTES:

THIS DRAWING TO BE READ IN CONJUNCTION WITH DRG No: 143022-EIA-002

REV	DATE	ISSUE STATUS DESCRIPTION	PREP	CHECK	PEM	CLIENT APPR
2	24/11/14	RE-ISSUED FOR PLANNING PURPOSES	MAS	AGH	AGH/PW	
1	24/09/14	RE-ISSUED FOR PLANNING PURPOSES	CDC	AGH	AGH/PW	
0	07/08/14	ISSUED FOR PLANNING PURPOSES	MAS	AGH	AGH/PW	TQ

DRG SIZE: A1 SCALE: 1:2500

YORKPOTASH — YORK POTASH LIMITED

HOME INTERNATIONAL
K HOME INTERNATIONAL LTD.
Ingram House, Allensway, Thornaby, Stockton-on-Tees, TS17 9HA.
(t) +44 (0)1642 765421
(e) enquiry@khomeint.com (w) www.khomeint.com

DRAWING TITLE:
OVERALL SITE LAYOUT
THE YORK POTASH HARBOUR FACILITIES ORDER 201X
REGULATION 5 (2) (o)

PROJECT DRAWING No: DOCUMENT 3.7

REVISION: 2

CONSULTANT DRAWING No: 143022-EIA-001

BLANK PAGE

Annex 4

BLANK PAGE

YPP Master - DCO ordinal

YPP - summary construction schedule - DCO

YORKPOTASH
A Sirius Minerals Project

Activity Name

Month

-1 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66

YPP - summary construction schedule - DCO

Mine

- Site preparation commences Month 2 (7 months)
- Chamber construction commences Month 6 (10 months)
- TBM shaft & TBM chamber - Month 8 to Month 23 (16 months)
- Production and Services Shaft winding towers erected- Month 9 (1 month)
- Temporary generator stacks erected - Month 9 (1 month)
- Services shaft winding tower in use - Month 10 to Month 47 (38 months)
- Production shaft winding tower in use - Month 10 to Month 56 (47 months)
- Temporary generator stacks in use - Month 10 to Month 56 (57 months)
- TBM MTS shaft winding towers in use - Month 12 to Month 39 (28 months)
- - 360 level shaft insets - Month 16 to Month 17 (2 months)
- Assemble TBM - Month 24 to Month 25 (2 months)
- Development at the - 360 level - Month 26 to Month 37 (12 months)
- Install & commission temporary mineral clearance system - Month 38 to Month 40 (3 months)
- - 360 level ventilation drift - Month 38 to Month 39 (2 months)
- TBM MTS shaft winding towers dismantled - Month 40 (1 month)
- Services shaft - excavate polyhalite 1510 m level to 1565 m level + drive 50 m roadway - Month 41 to Month 42 (2 Months)
- Production shaft - excavate polyhalite 1510 m level to 1565 m level + drive 50 m roadway Month 41 to Month 42 (2 months)
- Production shaft - excavate polyhalite 1565 m level to 1594 m level - Month 43 (first two weeks only)
- Services shaft fit out - Month 43 to Month 52 (10 months)
- Polyhalite extracted using Production shaft construction kibbles - Month 44 to Month 48 (5 months)
- Services shaft winding towers dismantled - Month 48 (1 month)
- Production shaft fit out - Month 49 to Month 58 (10 months)
- Polyhalite extraction using Service shaft temporary skips - Month 53 to Month 58 (6 months)
- Production shaft winding towers dismantled - Month 57 (1 month)
- Temporary generator stacks dismantled - Month 57 (1 month)

Material Handling Facility

- Site establishment & enabling works
- Infrastructure works
- Building construction
- Mechanical installation
- material handling facility commissioning
- Phase 2 construction works - MHF
- Detailed design - material handling facility
- Procurement of Long Lead Items - material handling facility

Mineral Transport System

- Site preparation
- Temporary generator stacks erected - Month 8 (1 month)
- Temporary generator stacks in use - Month 9 to Month 40 (32 months)
- Construction of shaft uppers - Month 9 (6 months)
- Intermediate access shaft winding towers erected- Month 11 (1 month)
- Intermediate access shaft winding towers in use - Month 12 to Month 39 (28 months)
- MTS tunnel boring Month 17 to Month 38 (22 Months)
- Intermediate access shaft winding towers dismantled – progressively Month 34 (Tocketts Lythe)to Month 40 (Lady Cross)
- Temporary generator stacks dismantled - progressively Month 34 (Tocketts Lythe)to Month 40 (Lady Cross) (1 month each)
- Aggregate removal - Month 35 to Month 48 (14 months)

Remaining Level of Effort
Actual Work
Remaining Work
Milestone

Printed: 17-Mar-15 11:21

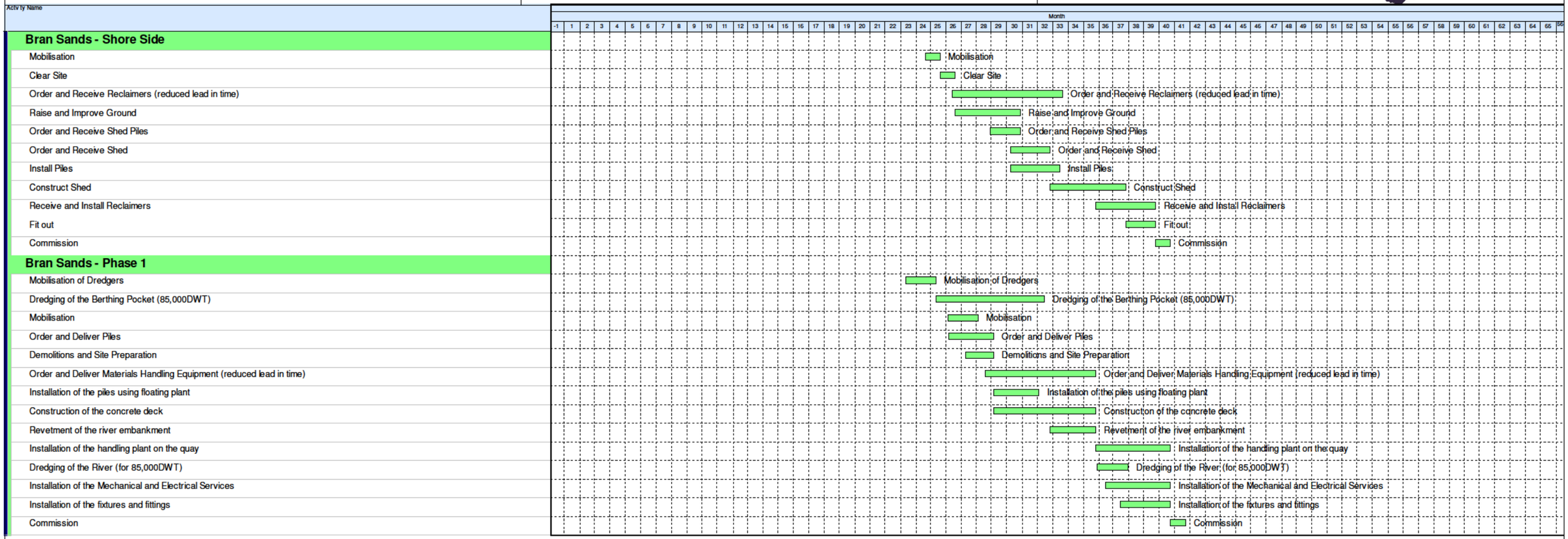
Doc no. 4000-CTL-SCH-PLN-001

Date	Revision	Checked	Approved
17-Mar-15	Rev 1 - for inclusion with DCO submission	GM	

YPP Master - DCO ordinal

YPP - summary construction schedule - DCO

YORKPOTASH
A Sirius Minerals Project



Remaining Level of Effort
Actual Work
Remaining Work
Milestone

Printed: 17-Mar-15 11:21

Doc no. 4000-CTL-SCH-PLN-001

Date	Revision	Checked	Approved
17-Mar-15	Rev 1 - for inclusion with DCO submission	GM	

Annex 5

BLANK PAGE

Traffic Demand

CONSTRUCTION

	Months			Months							Months						Months			
Activities	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
MTS Wilton - HGVs per month	0	120	120	120	604	592	594	18	790	778	791	798	100	72	849	883	1045	1038	1044	1050
MTS Tocketts Lythe - HGVs per month	0	30	753	757	768	779	761	203	199	201	187	187	185	143	141	139	169	224	434	454
MTS Lockwood Beck - HGVs per month	0	38	984	1005	1016	1067	1103	175	350	335	415	352	275	199	206	210	200	204	448	475
MTS Ladycross Plantation - HGVs per month	0	22	786	796	797	856	879	220	346	418	395	260	255	209	205	207	199	204	420	452
MTS Doves Nest - HGVs per month	0	26	14	46	52	46	231	208	197	319	286	195	123	123	131	121	121	151	258	342
Minehead - HGVs per month	66	1673	1661	1667	1665	1686	1682	1684	1198	1401	1424	1207	1218	1235	1203	1170	985	820	792	803
Spoil / polyhalite - HGVs per month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	640	640	640
Harbour Facilities- HGVs per month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Conveyor - HGVs per month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MHF - HGVs per month	0	0	0	0	0	0	0	0	0	0	0	0	624	754	1226	1050	1010	1370	1214	1048
Total daily (two-way) MTS HGV movements + contingency	0	13	146	150	178	184	196	45	104	113	114	99	52	41	84	86	95	100	143	153
Total daily (two-way) mine HGV movement + contingency	4	100	100	100	100	101	101	101	72	84	85	72	73	74	84	82	69	57	55	56
Total daily (two-way) spoil HGV movements + contingency	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	32	32
Total daily (two-way) Harbour HGV movements + contingency	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total daily (two-way) Conveyor Belt movements + contingency	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total daily (two-way) MHF HGV movments + contingency	0	0	0	0	0	0	0	0	0	0	0	0	34	41	66	56	54	74	65	56
Mine, Spoil, MTS - Total (two-way) HGV movements per day	4	113	246	250	278	285	297	146	175	197	200	171	125	115	168	168	164	190	231	241
Mine, Spoil, Doves Nest (two-way) HGV movements per day	4	102	100	103	103	104	114	112	83	102	101	83	80	81	91	89	76	98	102	107
Mine, Spoil - Total (two-way) HGV movements per day	4	100	100	100	100	101	101	101	72	84	85	72	73	74	84	82	69	89	87	88
Mine, Spoil, MTS, Harbour Total (two-way) HGV movements per day	4	113	246	250	278	285	297	146	175	197	200	171	125	115	168	168	164	190	231	241
Mine, Spoil, MTS, MHF, Harbour Total (two-way) HGV movements per day	4	113	246	250	278	285	297	146	175	197	200	171	158	156	234	224	219	263	296	297

		Months						Months							Months					
Activities	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
MTS Wilton - HGVs per month	1046	994	1004	999	1006	988	192	182	36	37	101	126	91	74	38	22	2	2	18	0
MTS Tocketts Lythe - HGVs per month	464	266	502	492	515	538	566	591	607	594	583	553	52	110	169	100	87	47	453	367
MTS Lockwood Beck - HGVs per month	339	226	205	253	543	570	586	623	636	659	660	705	712	454	734	449	750	475	782	498
MTS Ladycross Plantation - HGVs per month	340	364	416	482	455	470	529	566	582	597	605	639	658	678	680	655	661	421	170	338
MTS Doves Nest - HGVs per month	420	336	222	369	351	471	483	486	471	467	483	472	477	459	39	220	143	231	62	28
Minehead - HGVs per month	828	823	846	856	879	870	867	889	898	901	918	922	873	880	877	861	912	879	883	884
Spoil / polyhalite - HGVs per month	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	641	640	640
Harbour Facilities- HGVs per month	0	0	0	0	0	0	0	20	20	80	383	589	589	393	397	181	181	29	29	29
Conveyor - HGVs per month	0	0	0	0	0	113	230	300	300	519	406	406	289	289	289	289	0	0	0	0
MHF - HGVs per month	1024	710	428	908	1068	1184	1060	1078	866	754	444	968	852	1412	1058	748	14	0	0	0
Total daily (two-way) MTS HGV movements + contingency	143	120	129	143	158	167	130	135	128	129	134	137	109	98	91	80	90	65	82	68
Total daily (two-way) mine HGV movement + contingency	58	58	59	60	62	61	61	62	63	63	64	65	61	62	61	60	64	62	62	62
Total daily (two-way) spoil HGV movements + contingency	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Total daily (two-way) Harbour HGV movements + contingency	0	0	0	0	0	0	0	1	1	5	23	35	35	24	24	11	11	2	2	2
Total daily (two-way) Conveyor Belt movements + contingency	0	0	0	0	0	7	14	18	18	31	24	24	17	17	17	17	0	0	0	0
Total daily (two-way) MHF HGV movments + contingency	55	38	23	49	57	64	57	58	47	41	24	52	46	76	57	40	1	0	0	0
Mine, Spoil, MTS - Total (two-way) HGV movements per day	233	210	220	235	251	260	222	229	223	225	230	234	203	191	185	172	186	158	175	162
Mine, Spoil, Doves Nest (two-way) HGV movements per day	113	108	103	112	113	119	119	121	121	121	123	123	119	119	96	104	104	106	97	95
Mine, Spoil - Total (two-way) HGV movements per day	90	90	91	92	94	93	93	94	95	95	96	97	93	94	93	92	96	94	94	94
Mine, Spoil, MTS, Harbour Total (two-way) HGV movements per day	233	210	220	235	251	267	236	248	242	260	277	293	255	232	226	200	197	160	177	163
Mine, Spoil, MTS, MHF, Harbour Total (two-way) HGV movements per day	288	248	243	283	309	330	293	306	289	301	301	346	301	308	283	240	198	160	177	163

	Months																			
Activities	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**	**51**	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**TOTAL**	**MAX**
MTS Wilton - HGVs per month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18364	1050
MTS Tocketts Lythe - HGVs per month	367	367	340	340	340	340	340	342	8	8	0	0	0	0	0	0	0	0	17162	779
MTS Lockwood Beck - HGVs per month	466	441	392	390	390	390	408	390	0	0	0	0	0	0	0	0	0	0	23183	1103
MTS Ladycross Plantation - HGVs per month	98	42	6	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18396	879
MTS Doves Nest - HGVs per month	38	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9720	486
Minehead - HGVs per month	436	442	349	309	336	368	362	257	284	441	183	213	273	182	201	266	273	492	48453	1686
Spoil / polyhalite - HGVs per month	2000	2000	2000	2000	2000	2000	2000	2000	1641	1644	1642	1644	1642	1644	1642	1644	1642	1645	47150	2000
Harbour Facilities- HGVs per month	29	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2966	589
Conveyor - HGVs per month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3430	519
MHF - HGVs per month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22872	1412
Total daily (two-way) MTS HGV movements + contingency	53	47	41	41	40	40	41	40	0	0	0	0	0	0	0	0	0	0		
Total daily (two-way) mine HGV movement + contingency	24	24	19	17	18	20	20	14	16	22	9	11	14	9	10	13	14	25		
Total daily (two-way) spoil HGV movements + contingency	100	100	100	100	100	100	100	100	82	82	82	82	82	82	82	82	82	82		
Total daily (two-way) Harbour HGV movements + contingency	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Total daily (two-way) Conveyor Belt movements + contingency	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Total daily (two-way) MHF HGV movments + contingency	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Mine, Spoil, MTS - Total (two-way) HGV movements per day	177	171	160	158	159	160	161	154	98	105	91	93	96	91	92	96	96	107		
Mine, Spoil, Doves Nest (two-way) HGV movements per day	126	124	119	117	118	120	120	114	98	106	92	94	97	92	93	97	97	109		
Mine, Spoil - Total (two-way) HGV movements per day	124	124	119	117	118	120	120	114	98	104	91	93	96	91	92	96	96	107		
Mine, Spoil, MTS, Harbour Total (two-way) HGV movements per day	179	172	160	158	159	160	161	154	98	105	91	93	96	91	92	96	96	107		
Mine, Spoil, MTS, MHF, Harbour Total (two-way) HGV movements per day	179	172	160	158	159	160	161	154	98	105	91	93	96	91	92	96	96	107		

OPERATION

	Year											
Activities	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
MTS Wilton - HGVs per month												
MTS Tocketts Lythe - HGVs per month												
MTS Lockwood Beck - HGVs per month												
MTS Ladycross Plantation - HGVs per month												
MTS Doves Nest - HGVs per month												
Minehead - HGVs per month	1061	1154	1384	1862	1760	1758	1915	2019	1979	2061	2027	2001
Spoil / polyhalite - HGVs per month												
Harbour Facilities- HGVs per month												
Conveyor - HGVs per month												
MHF - HGVs per month	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
Total daily (two-way) MTS HGV movements + contingency												
Total daily (two-way) mine HGV movement + contingency	4	5	6	8	7	7	8	8	8	9	8	8
Total daily (two-way) spoil HGV movements + contingency												
Total daily (two-way) Harbour HGV movements + contingency												
Total daily (two-way) Conveyor Belt movements + contingency												
Total daily (two-way) MHF HGV movments + contingency	40	40	40	40	40	40	40	40	40	40	40	40
Mine, Spoil, MTS - Total (two-way) HGV movements per day	4	5	6	8	7	7	8	8	8	9	8	8
Mine, Spoil, Doves Nest (two-way) HGV movements per day												
Mine, Spoil - Total (two-way) HGV movements per day												
Mine, Spoil, MTS, Harbour Total (two-way) HGV movements per day												
Mine, Spoil, MTS, MHF, Harbour Total (two-way) HGV movements per day	44	45	46	48	47	47	48	48	48	49	48	48

Days per month	20.0
Minehead contingency (1-14)	1.20
Minehead contingency (15-40)	1.40
Minehead contingency (41-49)	1.10
Spoil contingency	1.00
Polyhalite contingency	1.00
MTS contingency	1.10
MHF contingency	1.075
Harbour contingency (inc. contingency)	1.20

Peak period	🟧

Key

- Peak demand per activity
- Period 1
- Peak demand per activity within Period 1
- Period 2
- Peak demand per activity within Period 2
- Period 3
- Peak demand per activity within Period 3

BLANK PAGE

Annex 6

BLANK PAGE

							Year / Quarter	01 Mar 15	01 Apr 15	01 May 15	01 Jun 15	01 Jul 15	01 Aug 15	01 Sep 15	01 Oct 15	01 Nov 15	01 Dec 15	01 Jan 16	01 Feb 16	01 Mar 16	01 Apr 16	01 May 16	01 Jun 16	01 Jul 16	01 Aug 16	01 Sep 16	01 Oct 16
Resource ID Name	**Maps to Matt Parsons**	**Maps to Matt Parsons**	**Activity Name**	**Start**	**Finish**	**Person Months**	**Workforce Description**	**Month 1**	**Month 2**	**Month 3**	**Month 4**	**Month 5**	**Month 6**	**Month 7**	**Month 8**	**Month 9**	**Month 10**	**Month 11**	**Month 12**	**Month 13**	**Month 14**	**Month 15**	**Month 16**	**Month 17**	**Month 18**	**Month 19**	**Month 20**
GENSS.General Labour Shaft Sinking	**Mine**	**Shaft Sinking**	**Shaft Sinking Summary Labour**			18737	Mine - Shaft Sinking	0	0	0	0	146	156	206	226	286	326	374	374	418	418	418	418	418	418	418	418
GENWLF.General Labour Welfare	**Mine**	**Civils**	**Construct Welfare Buildings Labour**			1060	Mine - Civils	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENSPD.General Labour SitePrep/Drift	**Mine**	**Civils**	**Site Preparation Shaft Pads and Ponds Labour**			240	Mine - Civils	65	41	39	41	55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENSPD.General Labour SitePrep/Drift	**Mine**	**Civils**	**Site Preparation Shaft Pads and Ponds Labour**			160	Mine - Civils	43	39	37	30	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENSPD.General Labour SitePrep/Drift	**Mine**	**Civils**	**Site preparation works MHP Labour**			120	Mine - Civils	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
GENIND.General Labour Indirect	**Mine**	**Site Services**	**Overall Construction Phase Indirect Labour**			5011	Mine - Site Services	27	20	19	18	53	39	52	57	72	82	94	94	105	105	105	105	105	105	105	110
Total Mine						25328		134	99	95	89	265	195	258	283	358	408	468	468	523	523	523	523	523	523	523	548
GENCIV.General Labour Civils	**MHF**	**Civils**	**Construct Port MHF Civils & SMPEI Labour**			0	MHF - Civils	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENMEI.General Labour ME&I	**MHF**	**M&E**	**Construct Port MHF Civils & SMPEI Labour**			0	MHF - M&E	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL MHF						4477		0	0	0	0	0	0	0	0	0	0	0	0	29	38	84	147	189	252	252	252
GENPOR.General Labour Port	**Dredging**	**Civils**	**Construct Port Marine Dredging Labour**			0	Dredging - Civils	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENPOR.General Labour Port	**Port**	**Civils**	**Construct Port Marine Berth + Storage Labour**			0	Port - Civils	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENIND.General Labour Indirect	**Port**	**Site Services**	**Overall Construction Phase Indirect Labour**			0	Port - Site Services	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL PORT						2070		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MTS (Arup estimate 20/02/14)	**MTS**	**Supervisory**	**MTS Supervisory**			3257	MTS - Supervisory	0	0	0	0	0	20	20	20	42	42	54	106	106	106	106	106	125	143	143	143
MTS (Arup estimate 20/02/14)	**MTS**	**Site Support**	**MTS Site Support**			835	MTS - Site Support	0	0	0	0	0	15	15	15	15	15	16	20	20	20	20	20	25	30	30	30
MTS (Arup estimate 20/02/14)	**MTS**	**Operative**	**MTS Operative**			8737	MTS - Operative	10	50	50	50	50	75	75	75	75	75	90	174	174	186	198	198	256	326	326	350
Total MTS						12829		10	50	50	50	50	110	110	110	132	132	160	300	300	312	324	324	406	499	499	523
					Totals	44704	Total Loading per Month	144	149	145	139	315	305	368	393	490	540	628	768	852	872	931	994	1118	1274	1274	1323

KEY

Peak employee numbers per site

				01 Nov 16	01 Dec 16	01 Jan 17	01 Feb 17	01 Mar 17	01 Apr 17	01 May 17	01 Jun 17	01 Jul 17	01 Aug 17	01 Sep 17	01 Oct 17	01 Nov 17	01 Dec 17	01 Jan 18	01 Feb 18	01 Mar 18	01 Apr 18	01 May 18	01 Jun 18	01 Jul 18	01 Aug 18	01 Sep 18	01 Oct 18	01 Nov 18	01 Dec 18	01 Jan 19
Resource ID Name	Maps to Matt Parsons	Maps to Matt Parsons	Activity Name	Month 21	Month 22	Month 23	Month 24	Month 25	Month 26	Month 27	Month 28	Month 29	Month 30	Month 31	Month 32	Month 33	Month 34	Month 35	Month 36	Month 37	Month 38	Month 39	Month 40	Month 41	Month 42	Month 43	Month 44	Month 45	Month 46	Month 47
GENSS.General Labour Shaft Sinking	Mine	Shaft Sinking	Shaft Sinking Summary Labour	418	418	418	418	418	418	418	418	418	418	418	418	418	418	418	418	418	418	421	343	374	374	374	374	373	373	299
GENWLF.General Labour Welfare	Mine	Civils	Construct Welfare Buildings Labour	0	0	7	64	68	87	94	97	98	93	97	95	93	76	51	38	1	0	0	0	0	0	0	0	0	0	0
GENSPD.General Labour SitePrep/Drift	Mine	Civils	Site Preparation Shaft Pads and Ponds Labour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENSPD.General Labour SitePrep/Drift	Mine	Civils	Site Preparation Shaft Pads and Ponds Labour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENSPD.General Labour SitePrep/Drift	Mine	Civils	Site preparation works MHP Labour	20	20	20	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENIND.General Labour Indirect	Mine	Site Services	Overall Construction Phase Indirect Labour	110	110	111	125	127	126	128	129	129	128	129	128	128	123	117	114	105	105	105	86	86	86	86	86	86	86	67
Total Mine				548	548	557	627	633	632	641	644	645	638	643	641	639	617	587	570	523	523	526	429	460	460	460	460	459	459	366
GENCIV.General Labour Civils	MHF	Civils	Construct Port MHF Civils & SMPEI Labour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENMEI.General Labour ME&I	MHF	M&E	Construct Port MHF Civils & SMPEI Labour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL MHF				252	252	252	252	252	252	252	189	189	189	147	147	126	126	126	84	29	29	29	29	29	0	0	0	0	0	0
GENPOR.General Labour Port	Dredging	Civils	Construct Port Marine Dredging Labour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENPOR.General Labour Port	Port	Civils	Construct Port Marine Berth + Storage Labour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENIND.General Labour Indirect	Port	Site Services	Overall Construction Phase Indirect Labour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL PORT				0	0	0	0	20	80	95	145	175	175	150	165	165	165	135	135	135	135	115	60	20	0	0	0	0	0	0
MTS (Arup estimate 20/02/14)	MTS	Supervisory	MTS Supervisory	161	161	197	197	197	167	137	137	136	135	135	83	23	23	18	12	12	12	12	12	8	0	0	0	0	0	0
MTS (Arup estimate 20/02/14)	MTS	Site Support	MTS Site Support	35	35	45	45	45	39	33	33	33	33	33	27	15	15	12	9	9	9	9	9	6	0	0	0	0	0	0
MTS (Arup estimate 20/02/14)	MTS	Operative	MTS Operative	408	408	524	524	524	460	390	390	378	366	366	296	156	156	120	72	72	72	72	72	48	0	0	0	0	0	0
Total MTS				604	604	766	766	766	666	560	560	547	534	534	406	194	194	150	93	93	93	93	93	62	0	0	0	0	0	0
				1404	1404	1575	1645	1671	1630	1548	1538	1556	1536	1474	1359	1124	1102	998	882	781	780	764	611	571	460	460	460	459	459	366

KEY

Peak employee numbers per site

				01 Feb 19	01 Mar 19	01 Apr 19	01 May 19	01 Jun 19	01 Jul 19	01 Aug 19	01 Sep 19	01 Oct 19	01 Nov 19	01 Dec 19
Resource ID Name	Maps to Matt Parsons	Maps to Matt Parsons	Activity Name	Month 48	Month 49	Month 50	Month 51	Month 52	Month 53	Month 54	Month 55	Month 56	Month 57	Month 58
GENSS.General Labour Shaft Sinking	Mine	Shaft Sinking	Shaft Sinking Summary Labour	299	371	200	200	200	200	200	200	200	200	200
GENWLF.General Labour Welfare	Mine	Civils	Construct Welfare Buildings Labour	0	0	0	0	0	0	0	0	0	0	0
GENSPD.General Labour SitePrep/Drift	Mine	Civils	Site Preparation Shaft Pads and Ponds Labour	0	0	0	0	0	0	0	0	0	0	0
GENSPD.General Labour SitePrep/Drift	Mine	Civils	Site Preparation Shaft Pads and Ponds Labour	0	0	0	0	0	0	0	0	0	0	0
GENSPD.General Labour SitePrep/Drift	Mine	Civils	Site preparation works MHP Labour	0	0	0	0	0	0	0	0	0	0	0
GENIND.General Labour Indirect	Mine	Site Services	Overall Construction Phase Indirect Labour	67	85	50	50	50	50	50	50	50	50	50
Total Mine				366	456	250	250	250	250	250	250	250	250	250
GENCIV.General Labour Civils	MHF	Civils	Construct Port MHF Civils & SMPEI Labour	0	0	0	0	0	0	0	0	0	0	0
GENMEI.General Labour ME&I	MHF	M&E	Construct Port MHF Civils & SMPEI Labour	0	0	0	0	0	0	0	0	0	0	0
TOTAL MHF				0	0	0	0	0	0	0	0	0	0	0
GENPOR.General Labour Port	Dredging	Civils	Construct Port Marine Dredging Labour	0	0	0	0	0	0	0	0	0	0	0
GENPOR.General Labour Port	Port	Civils	Construct Port Marine Berth + Storage Labour	0	0	0	0	0	0	0	0	0	0	0
GENIND.General Labour Indirect	Port	Site Services	Overall Construction Phase Indirect Labour	0	0	0	0	0	0	0	0	0	0	0
TOTAL PORT				0	0	0	0	0	0	0	0	0	0	0
MTS (Arup estimate 20/02/14)	MTS	Supervisory	MTS Supervisory	0	0	0	0	0	0	0	0	0	0	0
MTS (Arup estimate 20/02/14)	MTS	Site Support	MTS Site Support	0	0	0	0	0	0	0	0	0	0	0
MTS (Arup estimate 20/02/14)	MTS	Operative	MTS Operative	0	0	0	0	0	0	0	0	0	0	0
Total MTS				0	0	0	0	0	0	0	0	0	0	0
				366	456	250	250	250	250	250	250	250	250	250

KEY

Peak employee numbers per site

BLANK PAGE

Annex 7

BLANK PAGE

Harbour Construction Shift Times

time period		Harbour 175				movements
		arrivals		departures		
00:00	01:00					0
01:00	02:00					0
02:00	03:00					0
03:00	04:00					0
04:00	05:00					0
05:00	06:00					0
06:00	07:00					0
07:00	08:00					0
08:00	09:00	100% in	175			175
09:00	10:00					0
10:00	11:00					0
11:00	12:00					0
12:00	13:00					0
13:00	14:00					0
14:00	15:00					0
15:00	16:00					0
16:00	17:00					0
17:00	18:00			Shift 1 out	175	175
18:00	19:00					0
19:00	20:00					0
20:00	21:00					0
21:00	22:00					0
22:00	23:00					0
23:00	00:00					0

MHF Construction Shift Times

time period		MHF 252				movements
		arrivals		departures		
00:00	01:00					0
01:00	02:00					0
02:00	03:00					0
03:00	04:00					0
04:00	05:00					0
05:00	06:00					0
06:00	07:00					0
07:00	08:00	100% in	252			252
08:00	09:00					0
09:00	10:00					0
10:00	11:00					0
11:00	12:00					0
12:00	13:00					0
13:00	14:00					0
14:00	15:00					0
15:00	16:00					0
16:00	17:00					0
17:00	18:00			Shift 1 out	252	252
18:00	19:00					0
19:00	20:00					0
20:00	21:00					0
21:00	22:00					0
22:00	23:00					0
23:00	00:00					0

Wilton MTS Construction Employee Shifts

		Wilton		
Morning shift		06:00	14:00	42
Day shift		06:00	19:00	24
Back shift		14:00	22:00	40
Night shift		22:00	06:00	40
		arrivals	**departures**	
00:00	01:00			
01:00	02:00			
02:00	03:00			
03:00	04:00			
04:00	05:00			
05:00	06:00			
06:00	07:00	66	40	
07:00	08:00			
08:00	09:00			
09:00	10:00			
10:00	11:00			
11:00	12:00			
12:00	13:00			
13:00	14:00			
14:00	15:00	40	42	
15:00	16:00			
16:00	17:00			
17:00	18:00			
18:00	19:00			
19:00	20:00		24	
20:00	21:00			
21:00	22:00			
22:00	23:00	40	40	
23:00	00:00			
Total		146	146	

BLANK PAGE

Annex 8

BLANK PAGE

York Potash Project. Abnormal Indivisible Load Access Study

Prepared for

(York Potash Limited)

7-10 Manor Court
Manor Garth
Scarborough
Y011 3TU

Shaftsbury House, High Street,
Eccleshall, Staffs ST21 6BZ, UK

Tel: +44 (0)1785 850411
Fax: +44 (0)1785 851866

Name		Signature	Date
Pr ep	P		2014
Chec	y W		2014
Approv	r Wy		2014

Disclaimer

This rep bee ared vorki een finalised or formally reviewed. As such it should be taken as an indication only of t ıe nd on fo ns, calcula ind en ma uld not be taken to reflect Wynns Ltd opinio s or conclusions.

Copyright and N n-Disclosure Notice

The co d layout of thi report re subject to copyright owned by ynns Ltd save exte copy s be d nother party or d by Ltd licen n the copyright in thi report, it may not be copied or used without our prior written agr en ny oth e p

The methodolo y (if any) contained in t his report is provided to you in confidence and mus e di or to th t written agr eme Wynn Dis of t n te an acti onable breach of confidence or may otherwise prejudice our commercial inte es ird ho cce ill, in any ev bj Th Dis

Third Party Disclaimer

Any d of rt p The rep ort are nns e i client na ıed on the front of the report. It does not in any way constitute advice to any thir l par is ab cces any to the fullest e wfully tted lity v amage howsoever arisi ng from reliance on the ontents of t his report. We do not ho vever exclud bil y) ona our negli fra y o er egally exclude liability.

Doc ıment Revisions

No.	Date	Details
0	15.09. 2014	Final Version 1
1	18.09. 2014	Final Version 2
2		

Contents

Executive Summary

The contents of this report include a review of the works undertaken by Wynns Ltd. on behalf of Royal Haskoning in respect to confirming suitable heavy load routes to five (5) locations where there is a requirement for the delivery of Tunnel Boring Machines (TBMs). The work has included a visual route inspection, swept path assessments of specific pinch points and a review of the structural status of the proposed routes to the delivery locations.

The routes detailed within the report are considered negotiable for the proposed trailers although the exact requirements for street furniture removal, police escorts and movement timings will be agreed by the appointed haulage contractor. Two specific transport arrangements have been produced which are indicative of available equipment to carry the largest TBM component, the Main Drive. It is advisable that for access to the Lady Cross Plantation at Egton Moor that the smaller 8 axle transport configuration proposed is utilised as this would be able to negotiate the turn from the A171 whereas the larger 3 bed 5 trailer would require remedial works to negotiate the turn. Both trailers are determined to be able to negotiate the routes to the other 4 sites investigated.

In terms of the structural status of the routes, Scarborough Borough Council have advised that they require the A171 Prospect Hill Bridge to be assessed before they can approve the loads. This is due to the bridge not having been assessed for heavy loads in the past.

North Yorkshire County Council has advised that upon formal notification of the movements any loads in excess of 100te will be referred to the council's structural engineers. Although no specific problems are expected on these structures it is necessary for engineers to review proposed access before movements can be permitted.

Redcar and Cleveland Council have not provided a written response to the structural enquiry to date. No specific problems have been identified but written confirmation is still being sought and will be forwarded when it is received.

The report is intended to be a summary of the Abnormal Indivisible Load (AIL) route access at the time of writing (September 2014) and is not a guarantee that the route will be cleared in the future and specific movements will need to be assessed at the time on an individual basis.

1. Introduction

1.1. The contents of this report include a review of the works undertaken by Wynns Ltd. on behalf of York Potash Ltd. in respect to confirming suitable heavy load routes to five (5) locations where there is a requirement for the delivery of Tunnel Boring Machines (TBMs). The five locations are detailed below and their locations are shown on Map 1 Sheets 1-4 attached at the rear of this report.

1. Wilton (Approximate site access location OS Reference NZ 5758 2379)
2. Tocketts Lyth (Approximate site access location OS Reference NZ 6267 1769)
3. Lockwood Beck (Approximate site access location OS Reference OS Ref NZ 6746 1397)
4. Lady Cross Plantation (Approximate site access location OS Reference NZ 8172 0745)
5. Minehead (Approximate site access location OS Reference either OS Ref NZ 8963 0443 or OS Ref NZ 8922 0547)

1.2. It is expected that the loads proposed will be able to be moved at Special Types General Order (STGO) Categories 2 and 3 and are able to be transported at a gross weight of less than 150te and as such will not require formal Special Order movement permissions as the gross vehicle weight will be less than 150te. Further information on the legislative requirements for AILs can be made available if required.

1.3. As the load is expected to be carried at STGO it is not specifically required that it is transported to the nearest available port of access. However, it is presently expected that TBM components will be delivered to Teesport Docks from Europe due to Teesport's proximity to the development area. It is reasonable to assume that access via the UK motorway and trunk road network at STGO Category 3 to the general Teesside area can also be achieved, although this would be subject to formal notifications at the time of requirement. Access to the 5 potential site locations is considered from Teesport Docks.

1.4. Marine access at Teesport is not considered as the port is well established for heavy lift deliveries and no problems are anticipated with regard to access within the port.

1.5. This document does not constitute a formal agreement for movement. Any future movement to the tunnelling sites within STGO Regulations will require the appointed haulage contractor to notify the relevant statutory authorities.

1.6. The report is intended to be a summary of the Abnormal Indivisible Load (AIL) route access at the time of writing (September 2014) and is not a guarantee that the route will be cleared in the future and specific movements will need to be assessed at the time on an individual basis.

2. Transport Configurations

2.1. It is understood that the TBMs are to be stripped down to their minimum component size without undue expense or damage prior to delivery and the various components are advised as being as shown in Table 1.

Table 1. TBM Components to be considered.

Designation	Weight (te)	Length (m)	Width (m)	Height (m)
1.Cutter Head (inner part)	42.90	3.90	1.75	3.90
2.Main Drive	90.00	3.70	3.70	3.70
3.Swischenrohr (main Part)	35.00	8.00	2.40	2.40
4.Guide Tube	40.00	11.00	3.00	3.40
5.Gripper shoe (Part 1)	30.00	3.00	2.50	1.60
6.Gripper shoe (Part 2)	30.00	3.00	2.50	1.60

2.2. Due to the size of the items detailed in Table 1 it is possible to transport within the Special Types General Order (STGO) regulations as the gross load will be less than 150te. It will therefore not be necessary to comply with legislation regarding Special Order movements, unless structural limitations on any route identified in the future require larger trailer arrangements (for example to reduce axle loadings) to deliver to site. The loads, although still categorised as an AIL, and therefore are not in need of Special Order permissions and therefore is not directed by the HA to be delivered via the nearest port of delivery. Further information on the legislative requirements for AIL notifications can be made available if required.

2.3. It is reasonable to expect that the TBMs could be delivered to any suitable east coast from mainland Europe via conventional ferry services, potentially to established locations such as Immingham or Hull Docks, from which point the UK motorway and trunk road network would be used to access the general Teeside area. However, this study considers Teesport due to its proximity. Notwithstanding other ports may be equally applicable.

2.4. There are numerous haulage contractors with equipment able to carry the loads within STGO Category 3. Two transport drawings have been produced by Wynns which are representative of potential carrying arrangements that could be used have been produced in consideration of the most onerous component which is considered to be the Main Drive at 90te nett weight. These arrangements are:

- Drawing Number RH-YPP-TC01 3 bed 5 trailer at 144te gross.
- Drawing Number RH-YPP-TC02 8 axle goose neck trailer at 132te gross

2.5. The 3 bed 5 trailer has the ability of keeping the loaded travelling height to a minimum, and with a longer wheelbase, can be preferred by structure engineers should this become necessary due to route constraints. The disadvantage of the 3 bed 5 is it is less negotiable than a straight multi axle bogie, as is shown with the neck 8 arrangement, which has a smaller overall length. The neck 8 arrangement is that which is selected as appropriate to negotiate the routes considered.

2.6. In addition to the Main Drive, the other items will be AILs, although of smaller requirements. All other items will fall into STGO categories 2 and 3 and as such, all fall within the envelope of the Main Drive which is specifically discussed within this report. In terms of the other components, the potential loading arrangements detailed in Table 2 could be considered as appropriate delivery vehicles.

Table 2. TBM Components Typical Transport Arrangements

Designation	Typical Vehicle Required for delivery
Cutter Head (inner part)	3 or 4 axle low loading trailer
Main Drive	3 bed 5 trailer or 8 axle goose neck
Swischenrohr (main Part)	3 or 4 axle semi low loading trailer
Guide Tube	3 or 4 axle semi trailer
Gripper shoe (Part 1)	2 or 3 axle semi trailer
Gripper shoe (Part 2)	2 or 3 axle semi trailer

3. Route Negotiability Information

3.1. *Proposed Common Route from Teesport*

3.1.1. The exit from Teesport is negotiable for all of the proposed loads. There will be a need to arrange for access within the port and of the port exit but this is not expected to be restrictive as the port is well established for handling project cargo.

3.1.2. The A171 from the A174 to the south of Middlesbrough is required to access all of the sites, with the exception of the Wilton Materials handling site which is adjacent to Teesport. The following notes and photographs show the routes and any specific areas of concern to each of the 5 delivery locations. The proposed routes considered are based on the need to access 5 potential locations by road at STGO Categories 2 and 3 from Teesport Docks and these options are reflected in the routes detailed on the following pages.

3.1.3. The report highlights the areas of concern within Sections 3.2 to 3.7. Any areas not specifically mentioned are assessed to be accessible by Wynns for the proposed loads.

3.1.4. It should be noted that as the loads considered in these investigations are to be delivered at Special Types General Order (STGO), it is possible that the police will allow private self-escorts to be arranged by the appointed haulier. This will only be acceptable where the load can traverse the highway in the conventional fashion. If any areas require traffic regulations to be violated to enable access, it is expected that a police escort will be required. The exact requirements for movement of the load will be in need of confirmation as part of the legal STGO notification process prior to delivery by the appointed haulage contractor but we would recommend a police escort be present.

3.1.5. Cleveland Police and North Yorkshire Police have been consulted as to the suitability of the proposed routes. Cleveland Police have advised (email 27.08.14) that they do not have any concerns in respect to the proposed routes but have offered no specific comment on escorting requirements.

3.1.6. North Yorkshire Police have advised (emails 18.08.14 & 19.08.14) that they do not have any objections to these loads travelling along any of these proposed routes and they have also provided an automatic response to our enquiry which details their standard escort requirements for AILs. This is included within the correspondence section of this report. The main points to note are that Self Escorting is required for loads in excess of 80te gross and that

a Police Escort will be provided if the size of the load, or the route to be taken, determine that it requires a police escort (e.g. where traffic control or closure of roads will be required). Wynns would recommend that the Main Drive is moved under Police escort as there will be sections where the whole road width is utilised by the AIL vehicle.

3.2. *Proposed Route to Wilton Materials Handling Site*

Route 1 (Refer to Map 1 Sheet 1 of 4)
Exit Teesport Docks via A1053 Tees Dock Road
Turn left A1085 Trunk Road
Turn right at roundabout and enter Wilton site at OS Ref NZ 5758 2379

Photograph 1. Exit from A1085 roundabout to Wilton site.

3.2.1. Access to the Wilton site is negotiable for the proposed loads without difficulty.

3.3. *Proposed Route to Tocketts Lyth*

Route 2 (Refer to Map 1 Sheet 1 of 4)
As Route 1 to A1053
Continue A1053 Greystones Road
Turn right A174
Turn left A171 Ormesby Bank
Turn left A171 Middlesbrough Road
Turn left A173
Turn right to potential site access at OS Ref NZ 6267 1769

Photograph 2. Exit slip from A174 to A171. Negotiable.

3.3.1. The turn from the A174 onto the A171 shown above is negotiable for the TBM. The A171 then climbs uphill and although there are no problems for the TBMs. Wynns considers this incline accessible for the proposed transport arrangements. In the event that weather conditions were poor then additional tractor units could be utilised to assist.

3.3.2. The left turn at the A171/A1043 roundabout shown in photograph 3 is negotiable with the removal of centre island street furniture prior to the roundabout approach.

Photograph 3. A171/A1043 roundabout. Load moves away from camera and turns left. Low level kerb and removeable street furniture enable use of full road width.

3.3.3. The roundabouts on the A171 in the vicinity of the Guisborough bypass are all negotiable for the proposed loads.

3.3.4. The left turn from the A171 onto the A173 is negotiable for the proposed loads.

Photograph 4. A171/A173 roundabout. Left for Tocketts Mill. Straight on for other sites. Negotiable.

Photograph 5. A173/B1269 Tocketts Mill straight on. Caution camber to be noted by haulier. Could be contraflowed if required to avoid camber.

Photograph 6. Tocketts Mill site access looking east. Load moves away from camera. New access road to be constructed on the right.

3.3.5. The proposed new access road will need to be designed to be considerate of the proposed loads but in general access to the Tocketts site is negotiable for the proposed loads without difficulty.

3.4. *Proposed Route to Lockwood Beck*

Route 3 (Refer to Map 1 Sheet 2 of 4)
As Route 2 to A171/A173 roundabout
Continue A171 via Whitby Road, Fancy Bank, Brick Brow Road
Turn left Swindale Lane to potential site access at OS Ref NZ 6746 1397

Photograph 7. A171 approach to Aysdale Gate. Steep gradient.

Photograph 8. A171 approach to Aysdale Gate. Load moves away from camera on a steep gradient. Wynns considers this incline accessible for the proposed transport arrangements. In the event that weather conditions were poor then additional tractor units could be utilised to assist. Load would be taking up full width of carriageway at slow speed.

Photograph 9. View looking south on A171 at existing road layout. Load moves away from camera. New access road to be constructed on the left.

Photograph 10. Proposed site access to Lockwood Beck. New road proposed to enter from left.

3.4.1. The proposed new access road will need to be designed to be considerate of the proposed loads. In general access to the Lockwoods Beck site area is negotiable for the proposed loads without difficulty subject to the new access road construction layout being confirmed.

3.5. *Proposed Route to Lady Cross Plantation*

Route 4 (Refer to Map 1 Sheet 3 of 4)
As Route 3 to Swindale Lane
Continue A171 to Egton Low Moor
Turn right at OS Ref NZ 8231 0834 signed to Egton
Turn right to potential site access at OS Ref NZ 8172 0745

Photograph 11. A171 Blind summit before B1266. Load moves away from camera. Caution required.

3.5.1. The A171 is otherwise negotiable for the loads although there are sections where the entire road width will be required and therefore it is recommended that a police escort is utilised.

3.5.2. The right turn at Egton Moor (OS Ref NZ 8231 0833) for access to the Lady Cross Plantation (Photograph's 12-14) has been shown in Swept Path Assessment Drawing Numbers RH-YPP-SP01a and RH-YPP-SP01b. These show that the larger 3 bed 5 transport arrangement is not able to negotiate the turn within the existing highway. Remedial works would be necessary for this larger transport configuration to access the turn which for a one off AIL could be of a temporary nature, such as plating the inside or outside of the turn to enable overrun by the vehicle. However, the smaller 8 axle transport arrangement is shown as able to negotiate the turn within the existing carriageway without remedial works.

3.5.3. Should the turn be upgraded as part of any wider improvement scheme associated with general construction traffic access then the access would be improved on its current situation but if it is not improved, the smaller 8 axle arrangement is shown as being able to negotiate the turn with full occupation of the highway in its current alignment.

Photograph 12. A171/Egton Low Moor junction for access to Lady Cross Plantation. Load moves away from camera and turns right.

Photograph 13. A171/Egton Low Moor junction for access to Lady Cross Plantation. Load approaches from left and turns right towards camera.

Photograph 14. A171/Egton Low Moor junction for access to Lady Cross Plantation. Load approaches camera and turns right.

Photograph 15. Approach to Lady Cross Plantation prior to right bend. Full road width required.

Photograph 16. Lady Cross Plantation access looking west. The proposed new access road will need to be designed to be considerate of the proposed loads.

3.6. *Proposed Route to Minehead*

Route 5 (Refer to Map 1 Sheet 4 of 4)
As Route 4 to Egton Low Moor
Continue A171 via Whitby, Hawsker and Normanby
Turn right B1416
Turn right to potential site access at either OS Ref NZ 8963 0443 or OS Ref NZ 8922 0547

3.6.1. The A171 is negotiable for the loads to Whitby although there are sections where the entire road width will be utilised and therefore it is recommended that a police escort is used.

3.6.2. There is a new roundabout on A171 at the approach to Whitby adjacent to a new Park and Ride facility. The alignment of this roundabout leads itself to the proposed loads contra flowing the roundabout to assist access. This would require to be undertaken under police escort.

Photograph 17. New Roundabout on A171 at north entry to Whitby adjacent to new Park and Ride facility. Load approaches camera. Possible contra flow suggested.

Photograph 18. Roundabout on A171 at B1416 junction. Load moves away from camera.

Photograph 19. Roundabout on A171 at B1416 junction reverse angle. Load approaches camera. Drawing Number RH-YPP-SP02 refers.

3.6.3. The swept path assessment drawing RH-YPP-SP02 shows that the Main Drive is able to negotiate the A171/B1416 roundabout shown in photographs 19 and 20 within the existing highway without remedial works.

3.6.4. The A171/A714 junction at Prospect Hill would require street furniture removal if accessed in the conventional fashion for the Main Drive TBM. It is recommended that the junction is contraflowed via the northbound slip road to assist with access and avoid the need for any street furniture removal.

Photograph 20. A171/A174 Prospect Hill junction in Whitby. Contraflow recommended on the northbound slip road to avoid removal of street furniture if the load was to travel in a conventional fashion.

Photograph 21. A171/A174 junction in Whitby. Contraflow recommended on the northbound slip road. Load moves away from camera in contraflow via slip road to right of photograph.

Photograph 22. A171/A174 junction in Whitby looking north. Contraflow recommended on the northbound slip road. Load approaches camera in contraflow.

Photograph 23. Airy Hill Footbridge on A171 looking south shows signs of previous bridge strikes.

3.6.5. North Yorkshire County Council have highlighted (email dated 18.08.14) that Airy Hill footbridge has an advised headroom of 5.2m. However they have advised caution with regard to access as the road slopes downhill after the bridge. Following the route survey the bridge is not expected to be restrictive to the proposed loads. For the highest component (Cutter Head at 3.9m) the loads would be transported on low loader arrangements and the Main Drive could be carried on the 3 bed 5 transport configuration for travel south to the Minhead site.

Photograph 24. A171 Whitby New Bridge at OS Reference NZ 101 899 over the River Esk looking south.

Photograph 25. A171 Helredale Road looking south leaving Whitby. Load moves away from camera. 5m clearance between lights and railings. Negotiable.

3.6.6. There are other areas on the exit from Whitby where street furniture is within the centre of the road. These are not restrictive to the proposed loads and are considered to be negotiable.

Photograph 26. The series of bends known as Normanby Bends are all negotiable for the proposed loads. Load moves away from camera.

Photograph 27. The series of bends known as Normanby Bends are all negotiable for the proposed loads.

3.6.7. Full occupation of the road throughout the section of road at Normanby Bends will be required and it is recommended that this is undertaken with a police escort to assist with traffic management. The exact requirements for this would be arranged upon formal notification of movement by the appointed haulage contractor. It should be noted that as discussed in Section 4, North Yorkshire Police have made no specific observations on the route and are in principle happy that it is accessible for the proposed loads. However, the exact escort requirements and movement timings will need to be discussed with the police in more detail prior to delivery. No specific swept path assessment drawings have been constructed of this section of bends on the A171 as they are considered to be negotiable for the proposed loads.

Photograph 28. A171/B1416 junction looking south. Load comes from behind camera and turns right.

Photograph 29. A171/B1416 junction reverse angle.

3.6.8. The swept path assessment drawing RH-YPP-SP03 shows that the Main Drive component on the larger 3 bed 5 transport configuration is able to negotiate the A171/B1416 junction within the existing carriageway alignment. It is understood that the junction may be widened to accommodate general construction traffic and this would further assist with AIL access but is not specifically necessary for the AILs.

Photograph 30. Minehead site access 1. Load comes from behind camera and turns right into site via new access road to be developed.

Photograph 31. Bend between the two Minehead access points. Load moves away from camera. Negotiable.

Photograph 32. Minehead access 2. Load comes from behind camera and turns right into site via new access road to be developed.

3.6.9. It is understood that two potential locations remain under consideration as the potential TBM entry point at Minehead. Access to both is feasible for the proposed loads subject to the final new access design being constructed to enable access.

3.6.10. Oakley Bank makes the route from the north via the B1416 and Ruswarp unsuitable and not worthy of further consideration. There are issues with gradients and also negotiability and structural capacity over the rail and river crossing.

3.7. *Alternative Routes Considered*

3.7.1. An alternative to the use of the A171 on the route detailed within 4.1 was initially proposed and has been inspected. This is as described below:

Route 6 (alternative access to A171 from A174)
As route 2 to A174 then continue west to A172 junction
Turn left A172 Stokesley Road
Continue A172 Dixons Bank
Continue A1043
Turn right A171 and continue as per other routes

3.7.2. Although this route could be accessible if required it is less preferable to the route previously highlighted in terms of physically negotiability and also a longer distance through urban areas and as such would be more disruptive to other road users. Although further information can be provided on this route if necessary, it is not recommended for TBM delivery at this stage and therefore is not considered further within this report.

4. Road Route Structural Information

4.1. The proposed routes considered to each site detailed in Section 3 were also submitted to all statutory highway and structural authorities for consideration in terms of their structural capacity to accommodate the largest AIL associated with the development, the Main Drive. The responses of these agencies are summarised below.

4.2. The routes have been cleared by the following structural authorities.

- The Highways Agency Historical Railways Estate
- The Canal & Rivers Trust
- Network Rail
- A19 Dishworth to Tyne tunnel DBFO (Area 26)

4.3. Redcar and Cleveland Council have not provided a written response that the route is acceptable to date. Although no major concerns are envisaged, confirmation of this is still being sought and will be forwarded as and when it is received.

4.4. North Yorkshire County Council have advised (emails 18.08.14) on the structural status of the routes to the Lady Cross Plantation and Minehead sites.

4.5. Route 4 crosses Scaling Dam Bridge on the A171 at OS Reference NZ 754 129 (Map 1 Sheet and 3 of 4) which is a 4.5m single span masonry arch/concrete portal frame structure. This will need to be assessed at the time of movement, particularly for the 13t axles on the 144t vehicle but is expected to be acceptable.

4.6. Route 5 requires the loads to cross Scaling Dam Bridge as described above and also Whitby New Bridge at OS Reference NZ 899 101 (Map 1 Sheet 4 of 4). This is a 7 span bridge which is expected to be feasible for the proposed loads but again this will need to be confirmed by council engineers at the time of movement.

4.7. Clarification has been sought from Jacobs, who manage the initial AIL notification process on behalf of North Yorkshire County Council, as to what is meant by the possible need for assessment of the identified structures and whether it is necessary for detailed load assessments and inspections to be undertaken. Jacobs has verbally advised that the standard procedure is for any load in excess of 100te to be referred to North Yorkshire County Council's structural engineers for comment. In the case of the bridges on the A171 no restrictions to movement are expected but this would only be confirmed upon formal application for movement.

4.8. In addition to the two North Yorkshire County Council structures discussed above, the council have advised that Prospect Hill Bridge located at OS Reference NZ 893 103 in Whitby (Map 1 Sheet 4 of 4) is unusually owned by, and therefore the responsibility of, Scarborough Borough Council rather than North Yorkshire County Council as the highway authority. This structure is a large masonry arch bridge over a redundant railway, now a cycle route. The proposed loaded trailer configurations have been forwarded to Scarborough Borough Council and they have advised (various emails attached) that it will be necessary for an assessment to be undertaken to confirm the loads proposed are able to cross the bridge.

4.9. Scarborough Borough Council have advised (email 02.09.14) that they require a third party assessment to be undertaken to confirm whether the bridge is able to accommodate the proposed loads. The bridge has never to our knowledge been assessed beyond Construction & Use (44te) and therefore has never been assessed for Abnormal Indivisible Loads (AIL) and the council wishes for this to be undertaken before they confirm it is acceptable.

4.10. The council have provided the most recent (December 2013) Principle Inspection of the bridge for information and reference and this is attached at the rear of the report as Appendix 1.

4.11. No specific concerns have been highlighted in respect to the bridge but it is not possible to confirm its suitability for the loads without the assessment.

4.12. Should an assessment of Prospect Hill Bridge find that the structure is not capable of supporting the loads as here presented, there are several alternatives available to minimise or obviate loading into the structure, including the use of a larger trailer or possibly temporary strengthening through plating or over bridging. Wynns have much experience of engineering different solutions and in the event of any problem with existing capacity are confident that an appropriate temporary measure can be employed.

5. Summary and Conclusions

5.1. It is expected that the TBM loads proposed will be able to be moved at Special Types General Order (STGO) Category and be transported at a gross load of less than 150te and as such will not require formal Special Order movement permissions. It is therefore possible that potential delivery would be from any east coast port, although at present it is understood Teesport is the preferred entry point to the UK.

5.2. The main arterial routes to all general site areas are considered negotiable for the proposed loads.

5.3. Access to the Wilton Materials Handling site is negotiable for the proposed loads.

5.4. The Tockets Lyth and Lockwood Beck sites are to have new access road layouts constructed from the A173 and A171 respectively. The new layouts should be considerate of AIL access requirements. Access to these locations is achievable via the existing public road network.

5.5. Access to the Ladywood Plantation will require that the smaller of the 2 potential configurations is utilised which is the 8 axle trailer due to the alignment of the turn of the A171 at Egton. Alternatively, if remedial works are made to the turn, the larger 3 bed 5 axle trailer would also be able to negotiate to this site.

5.6. Access to the Minehead site has considered the turn from the A171 to the B1416. The swept path assessment drawing produced of this location shows that the turn is negotiable for the proposed loads.

5.7. Minehead has two potential access locations under consideration and both are accessible for the proposed loads in terms of the approach via the public highway.

5.8. North Yorkshire County Council has advised that upon formal notification of the movements any loads in excess of 100te will be referred to the council's structural engineers but no specific problems are expected.

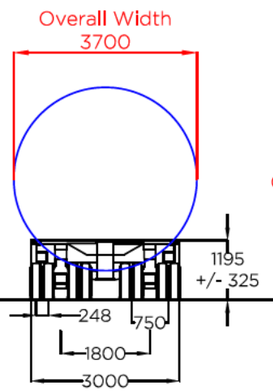
5.9. It should be noted that the Prospect Hill Bridge in Whitby is under the ownership of Scarborough Council which is unusual in that they are not the highway authority and are not a statutory consultee for AIL notifications. Therefore it is advisable that upon formal notification that Scarborough Council are approached separately to confirm the loads are acceptable on Prospect Hill Bridge.

5.10. Scarborough Borough Council have advised as part of these investigations that they require the A171 Prospect Hill Bridge to be assessed before they can approve the loads. This is due to the bridge not having been assessed for heavy loads in the past. An estimated cost of £4,000 has been provided from Scarborough Borough Council's structural engineers for this work. Scarborough Borough Council have advised that they would be willing to accept structural assessments undertaken by suitably qualified third party consulting engineers.

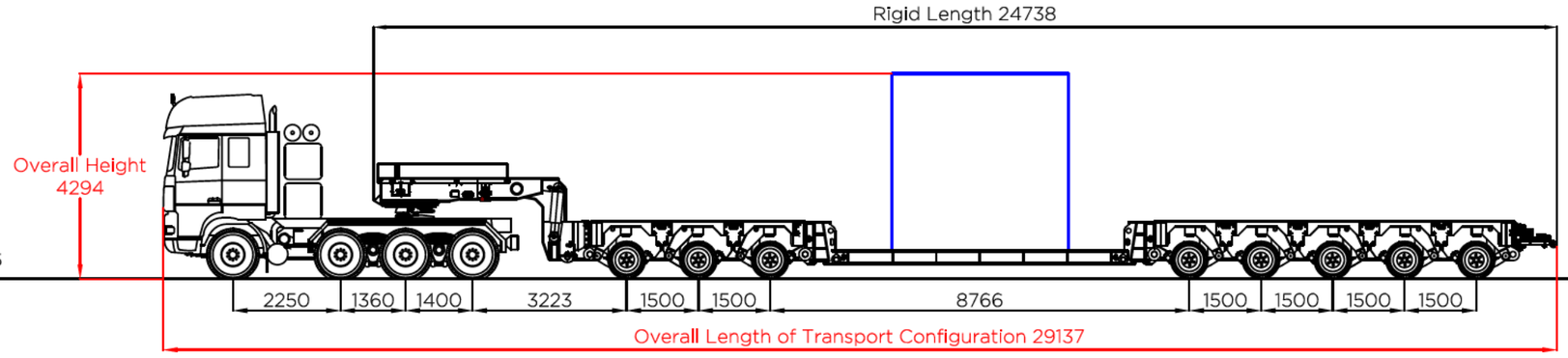
5.11. Prior to delivery it will be necessary for the appointed haulage contractor to confirm the route by way of the standard STGO Category notification process.

6. Drawings

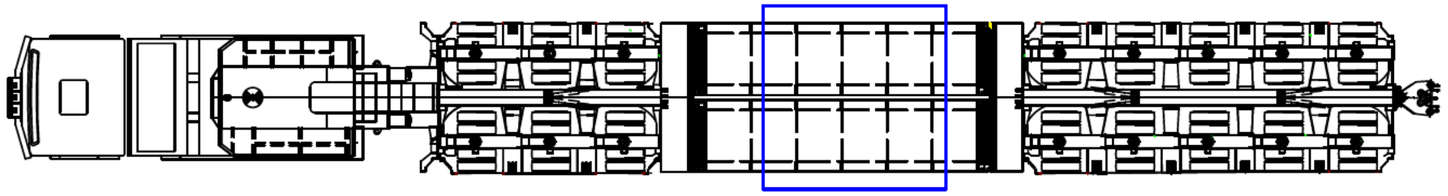
BLANK PAGE



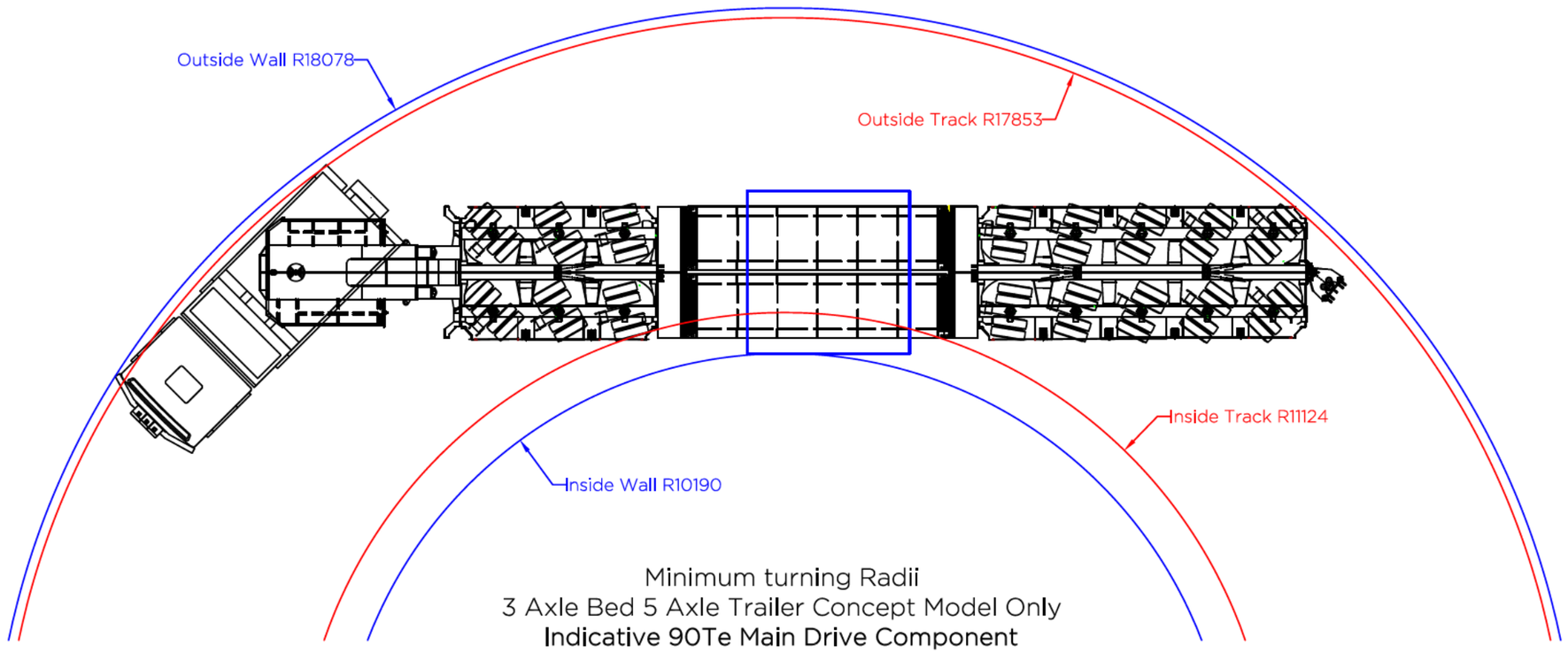
End Elevation



Side Elevation - 3 Axle Bed 5 Axle Trailer - Concept Model Only
Indicative 90Te Main Drive Component



Plan View - 3 Axle Bed 5 Axle Trailer - Concept Model Only
Indicative 90Te Main Drive Component



Minimum turning Radii
3 Axle Bed 5 Axle Trailer Concept Model Only
Indicative 90Te Main Drive Component

Load Table	
3 Axle Bed 5 Axle Trailer	
Self Weight of Load	90.0 Te
Self Weight of Trailer	Say 36.0 Te
Self Weight of Tractor(s)	14.0 Te
Self Weight of Aux. Steelwork	Say 4.0 Te
Total Combined Weight	144.0 Te
Load Per Axle Line	13.0 Te
Load Per Wheel	1.63 Te
Overall Ground Bearing Pressure	3.61 Te/m²
Tyre Contact Patch (say)	300mm x 180mm
Tyre Pressure	140psi / 9bar
Tractor (14Te)	
Front Axle	6.0 Te
Second Steer	8.0 Te
Rear Axle	13.0 Te
Rear Axle	13.0 Te

Actual dimensions, including axle spacing and mean running height, may vary slightly depending on manufacturer of trailer deployed.

All linear measures in millimetres unless stated otherwise.

Indicative TBM Component drawing shown only.

Rev.	Date	Ammendments
B		
A		
0	15/08/14	Issued for comment
		Revisions

Prepared by:
Wynns LTD
Independent Transportation Consultants
Shaftesbury House, 2 High Street, Eccleshall,
Stafford, ST21 6BZ
Tel: (01785) 850411 Fax: (01785) 851886

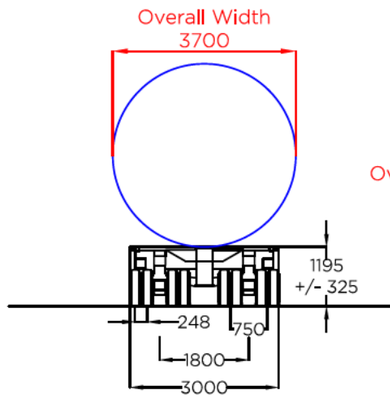
Client:
Royal HaskoningDHV
Enhancing Society Together
Royal HaskoningDHV
Rightwell House
Bretton
Peterborough
PE3 8DW

Project:
Main Drive Transportation

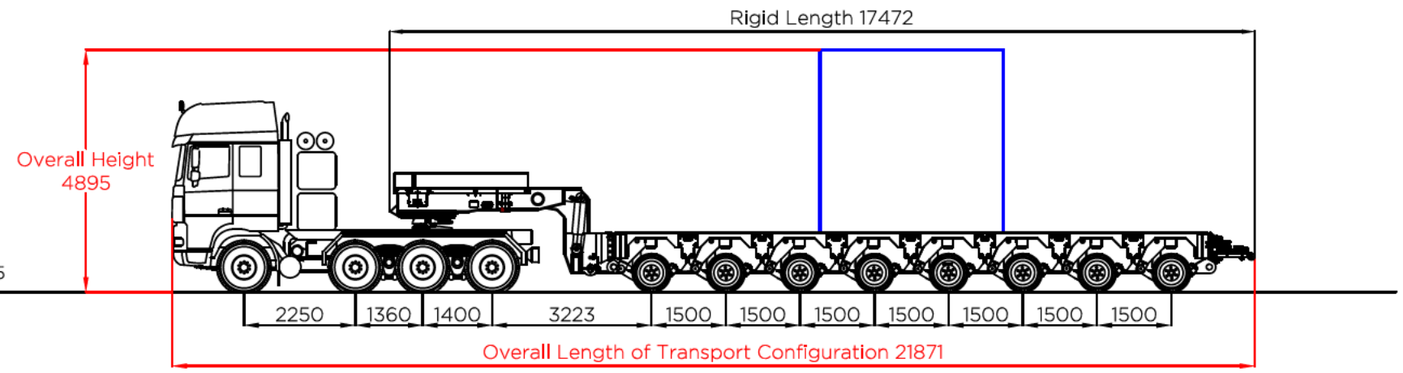
Title:
Main Drive
Indicative Transport Configuration
3 Axle Bed 5 Axle Trailer
Showing Minimum Turning Radii

Drawing status:		
Final Report		
Scale (A3):	Drawn by:	Checked by:
1:125	DJT	MJC
Dwg. No:	Sheet:	Rev:
RH-YPP-TC01	1 of 1	0

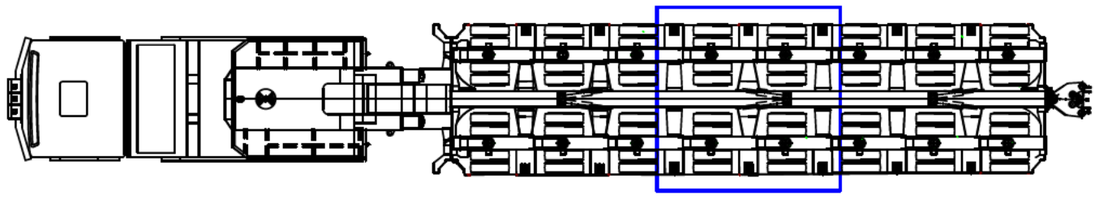
P:\Clients\Existing Clients\Royal Haskoning\14-798 York Potash Project\TC01.dwg



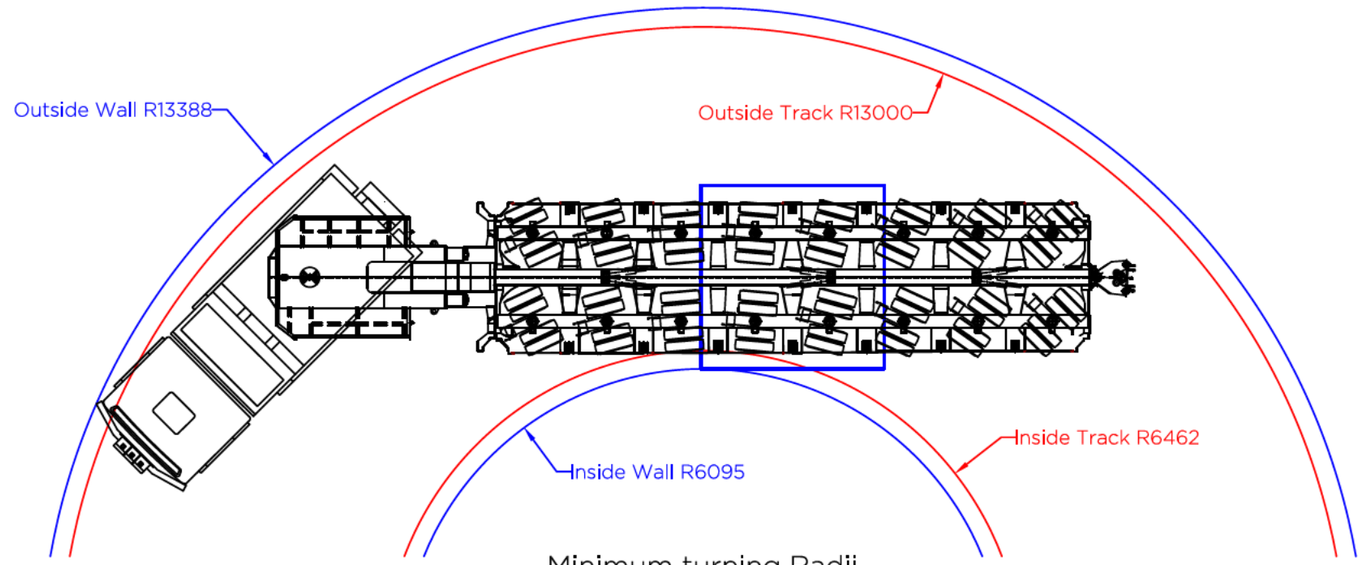
End Elevation



Side Elevation - 8 Axle Goose Neck Trailer - Concept Model Only
Indicative 90Te Main Drive Component



Plan View - 8 Axle Goose Neck Trailer - Concept Model Only
Indicative 90Te Main Drive Component



Minimum turning Radii
8 Axle Goose Neck Trailer Concept Model Only
Indicative 90Te Main Drive Component

Load Table	
8 Axle Goose Neck Trailer	
Self Weight of Load	90.0 Te
Self Weight of Trailer	Say 24.0 Te
Self Weight of Tractor(s)	14.0 Te
Self Weight of Aux. Steelwork	Say 4.0 Te
Total Combined Weight	132.0 Te
Load Per Axle Line	11.8 Te
Load Per Wheel	1.48 Te
Overall Ground Bearing Pressure	3.0 Te/m²
Tyre Contact Patch (say)	300mm x 180mm
Tyre Pressure	140psi / 9bar
Tractor (14Te)	
Front Axle	6.0 Te
Second Steer	8.0 Te
Rear Axle	11.8 Te
Rear Axle	11.8 Te

Actual dimensions, including axle spacing and mean running height, may vary slightly depending on manufacturer of trailer deployed.

All linear measures in millimetres unless stated otherwise.

Indicative TBM Component drawing shown only.

Rev.	Date	Ammendments
B		
A		
0	15/08/14	Issued for comment
		Revisions

Prepared by:
Wynns LTD
Independent Transportation Consultants
Shaftesbury House, 2 High Street, Eccleshall, Stafford, ST21 6BZ
Tel: (01785) 850411 Fax: (01785) 851886

Client:
Royal HaskoningDHV
Enhancing Society Together
Royal Haskoning DHV
Rightwell House
Bretton
Peterborough
PE3 8DW

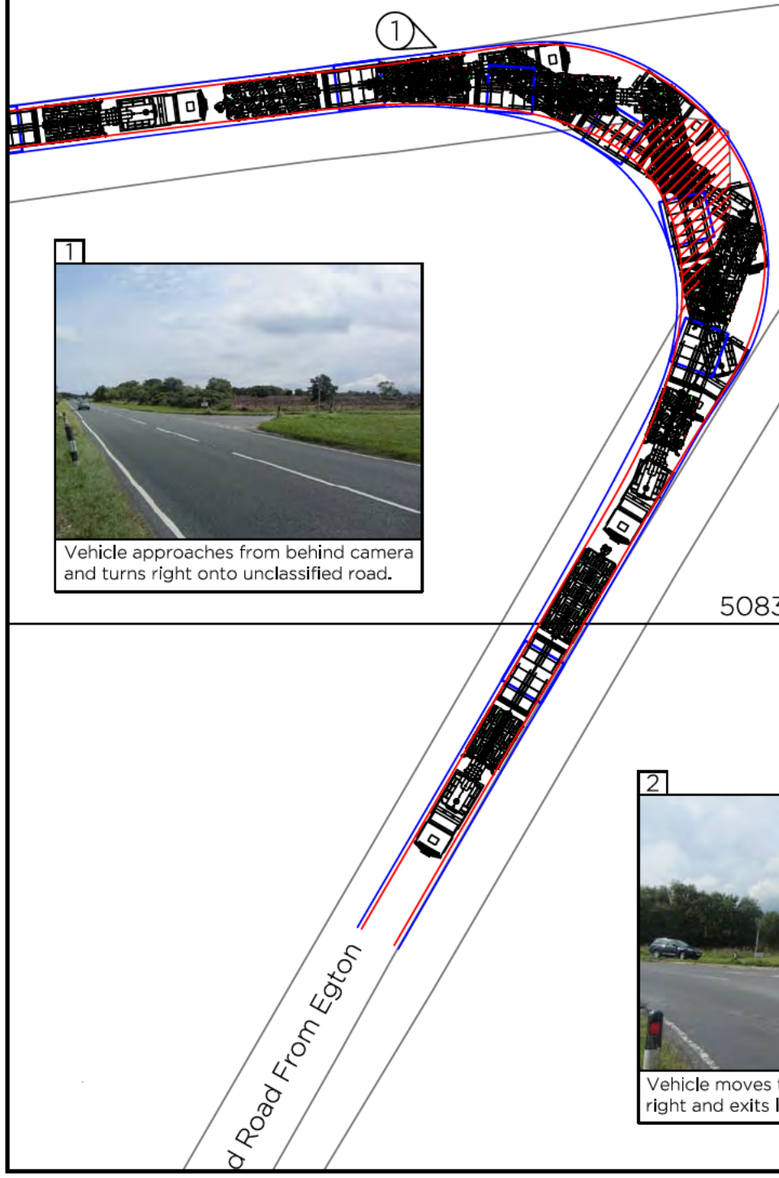
Project:
York Potash Project

Title:
Tunnel Boring Machine Main Drive
Indicative Transport Configuration
8 Axle Goose Neck Trailer
Showing Minimum Turning Radii

Drawing status:		
Final Report		
Scale (A3): 1:125	Drawn by: DJT	Checked by: MJC
Dwg. No: RH-YPP-TC02	Sheet: 1 of 1	Rev: 0

P:\Clients\Existing Clients\Royal Haskoning\14-798 York Potash Project\TC02.dwg

Swept Path Assessment
Main Drive Component Transport Configuration
Constructed from OS Mastermap data
Scale: 1/500



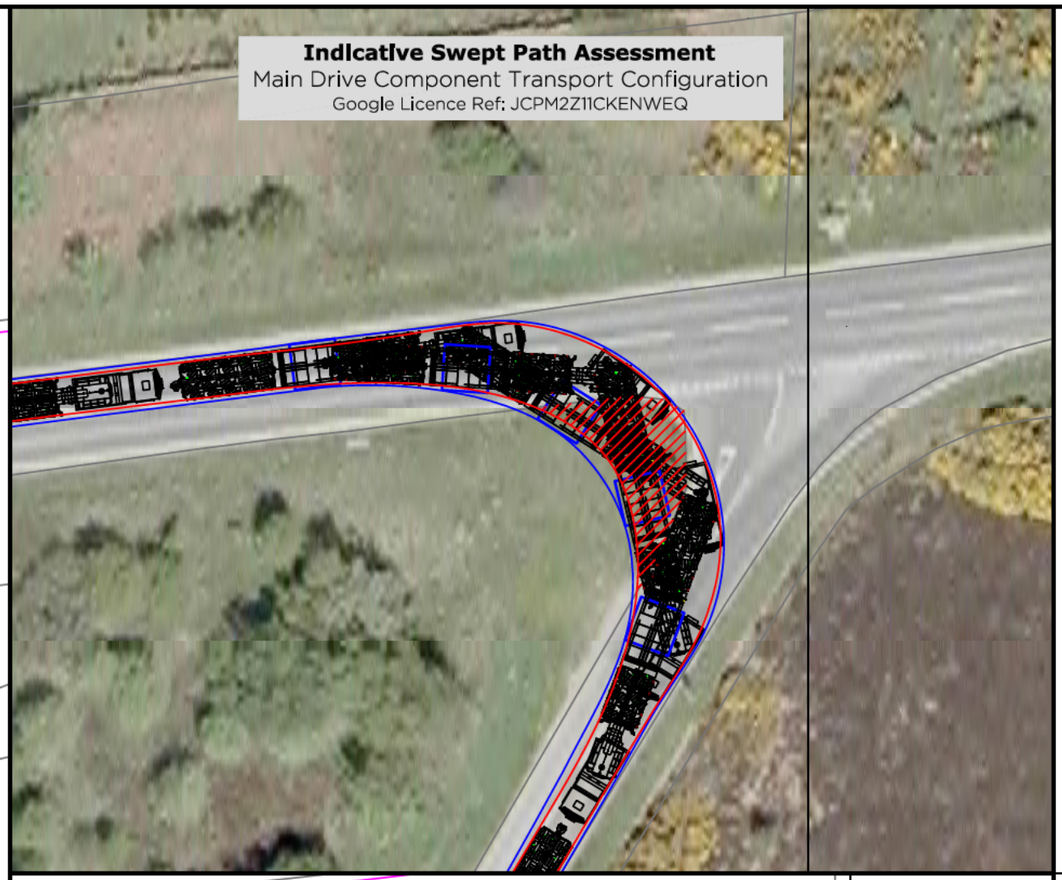
1

Vehicle approaches from behind camera and turns right onto unclassified road.

2

Vehicle moves towards camera, turns right and exits left of shot.

Indicative Swept Path Assessment
Main Drive Component Transport Configuration
Google Licence Ref: JCPM2Z11CKENWEQ



Swept Path Assessment
FW Main Drive Component Transport Configuration
Vehicle removed for clarity
Scale: 1/500

GP

Mastermap data indicates that overrun of the inside verge is necessary.
Ground strengthening and temporary removal/repositioning of the bollards and road sign to the inside of the turn would be required.
Prior to any ground strengthening remedial works, underground service checks would be required.
Note. Assessment carried out using automatic steering. Maneuverability can be improved with the application of manual steering.

Location Plan

Legend:

- TBM Main Drive Component Transport Configuration. Minimum turning arrangements. See Drawing Ref. RH-YPP-TC01
- Extent of Vehicle Track
- Extent of Over-sail
- Vehicle Track outside of carriageway
- Over-sail outside of Highway
- Vehicle track outside of Highway

Rev.	Date	Ammendments
B		
A		
0	11/09/14	Issued for comment
		Revisions

Prepared by:
Wynns LTD
Independent Transportation Consultants
Shaftesbury House, 2 High Street, Eccleshall,
Stafford, ST21 6BZ
Tel: (01785) 850411 Fax: (01785) 851886

Client:
Royal HaskoningDHV
Enhancing Society Together
Royal Haskoning DHV
Rightwell House
Bretton
Peterborough
PE3 8DW

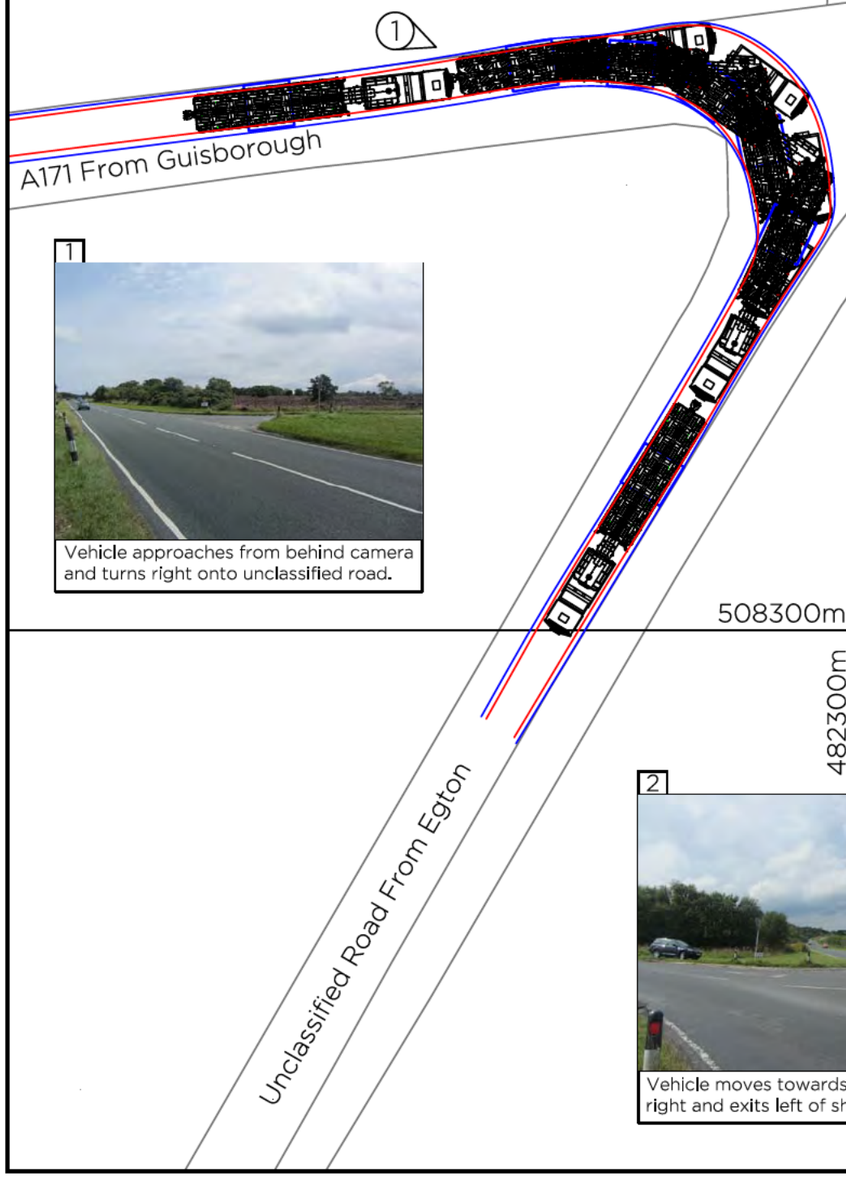
Project:
York Potash Project

Title:
Swept Path Assessment
Right Turn from A171 onto Unclassified Road towards Egton
Considerate of TBM Main Drive Component Transported on 3 Bed 5 Axle Trailer
Approximate OS Grid Reference: NZ 8229 0835

Drawing status:		
Final Report		
Scale (A3):	Drawn by:	Checked by:
1:500	DJT	MJC
Dwg. No:	Sheet:	Rev:
RH-YPP-SP01	1 of 1	0

P:\Clients\Existing Clients\Royal Haskoning\14-798 York Potash Project\Egton.dwg

Swept Path Assessment
Main Drive Component Transport Configuration
Constructed from OS Mastermap data
Scale: 1/500



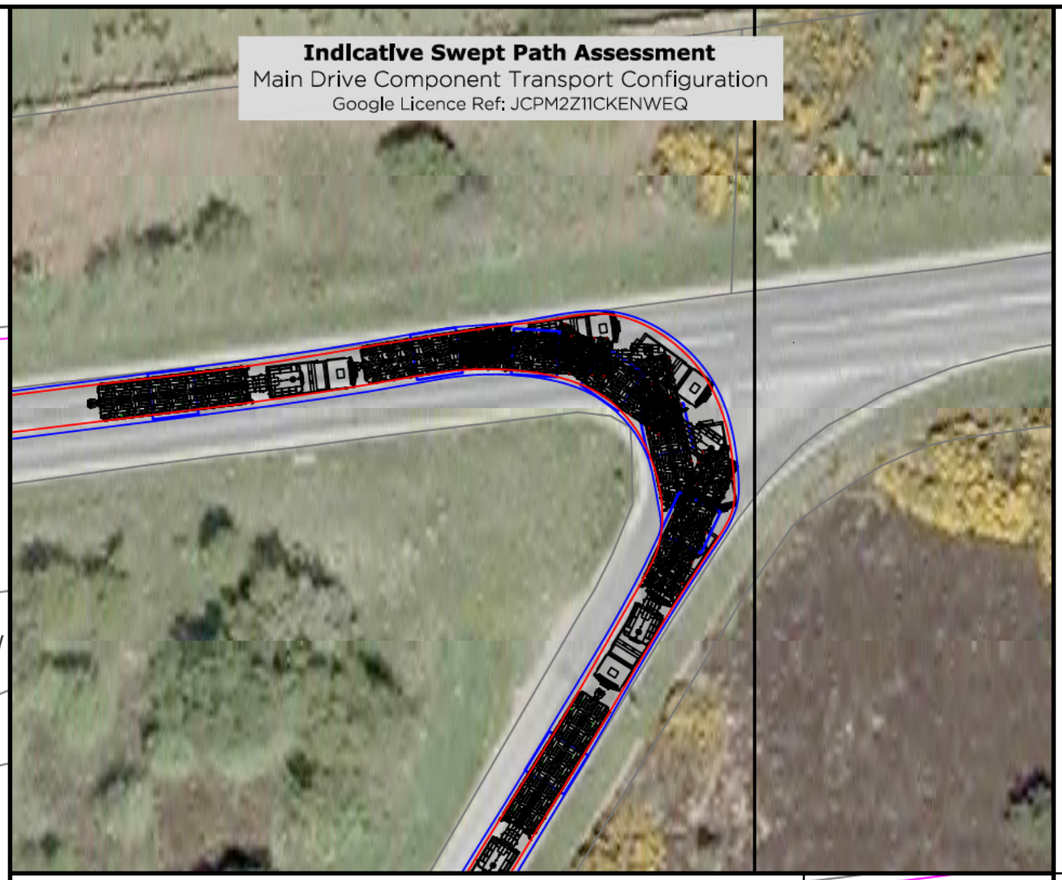
1

Vehicle approaches from behind camera and turns right onto unclassified road.

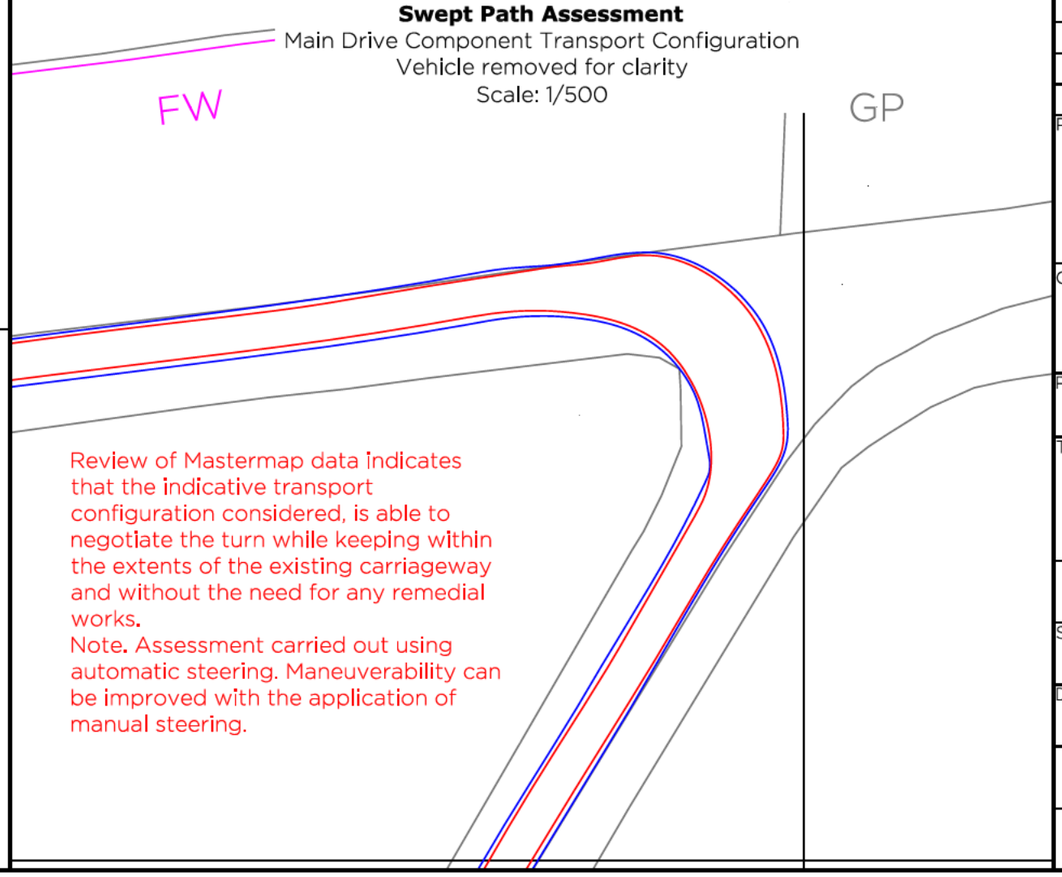
2

Vehicle moves towards camera, turns right and exits left of shot.

Indicative Swept Path Assessment
Main Drive Component Transport Configuration
Google Licence Ref: JCPM2Z11CKENWEQ



Swept Path Assessment
Main Drive Component Transport Configuration
Vehicle removed for clarity
Scale: 1/500



Review of Mastermap data indicates that the indicative transport configuration considered, is able to negotiate the turn while keeping within the extents of the existing carriageway and without the need for any remedial works.
Note. Assessment carried out using automatic steering. Maneuverability can be improved with the application of manual steering.

Location Plan

Legend:

- TBM Main Drive Component Transport Configuration. Minimum turning arrangements. See Drawing Ref. RH-YPP-TC02
- Extent of Vehicle Track
- Extent of Over-sail
- Vehicle Track outside of carriageway
- Over-sail outside of Highway
- Vehicle track outside of Highway

Rev.	Date	Ammendments
B		
A		
0	11/09/14	Issued for comment
		Revisions

Prepared by:
Wynns LTD
Independent Transportation Consultants
Shaftesbury House, 2 High Street, Eccleshall,
Stafford, ST21 6BZ
Tel: (01785) 850411 Fax: (01785) 851886

Client:
Royal HaskoningDHV
Enhancing Society Together
Royal Haskoning DHV
Rightwell House
Bretton
Peterborough
PE3 8DW

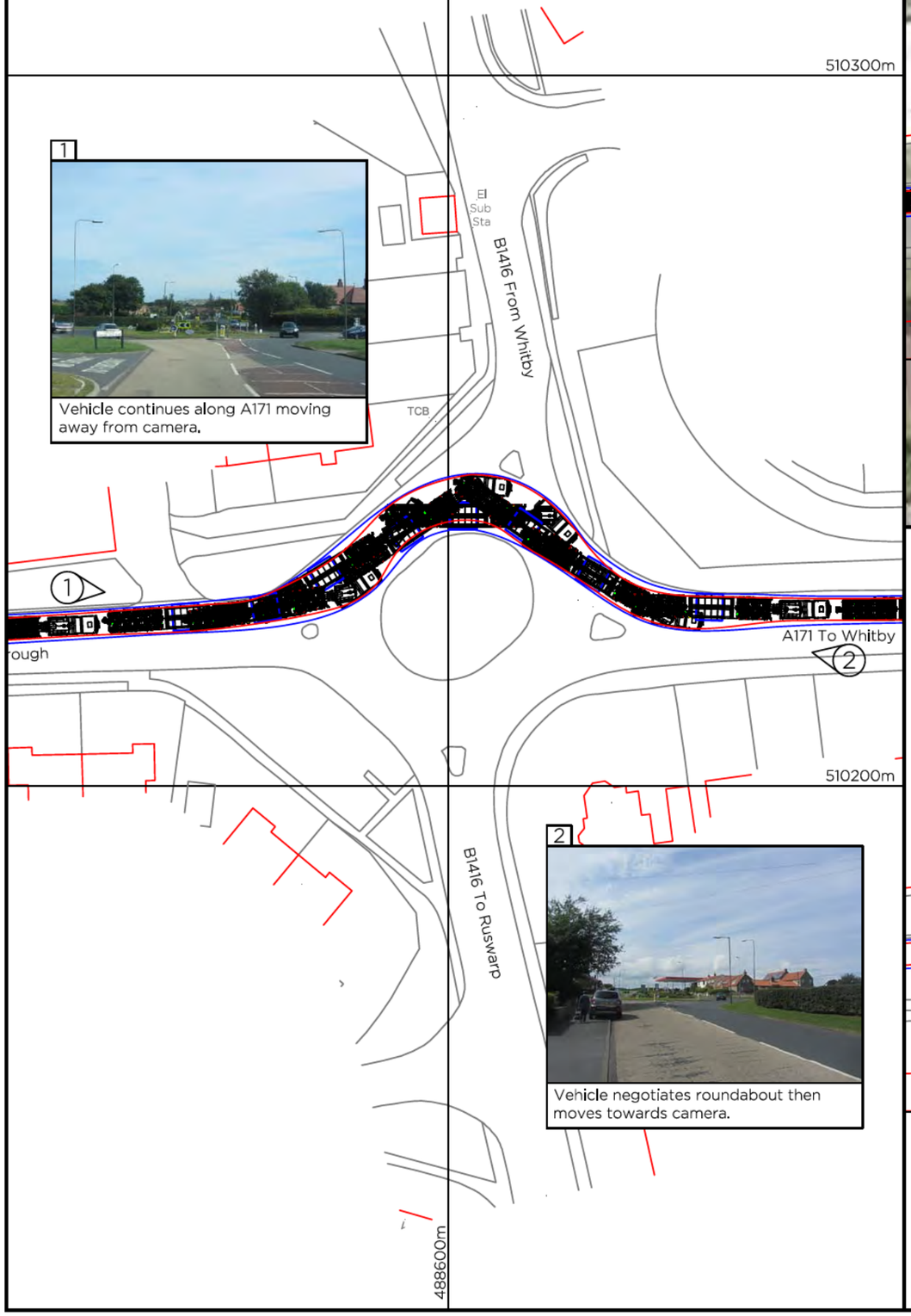
Project:
York Potash Project

Title:
Swept Path Assessment
Right Turn from A171 onto Unclassified Road towards Egton
Considerate of TBM Main Drive Component Transported on 8 Axle Goose Neck Trailer
Approximate OS Grid Reference: NZ 8229 0835

Drawing status:		
Final Report		
Scale (A3):	Drawn by:	Checked by:
1:500	DJT	MJC
Dwg. No:	Sheet:	Rev:
RH-YPP-SP01a	1 of 1	0

P:\Clients\Existing Clients\Royal Haskoning\14-798 York Potash Project\Egton.dwg

Swept Path Assessment
Main Drive Component Transport Configuration
Constructed from OS Mastermap data
Scale: 1/750



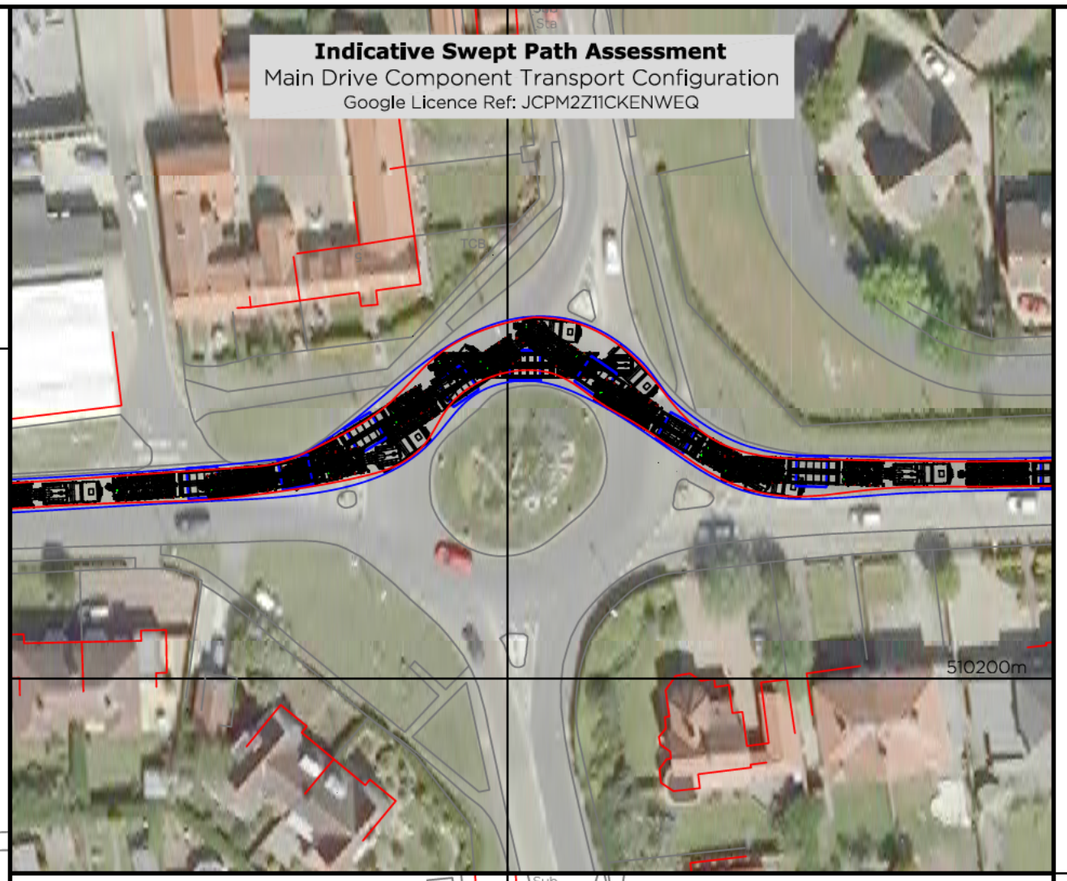
1

Vehicle continues along A171 moving away from camera.

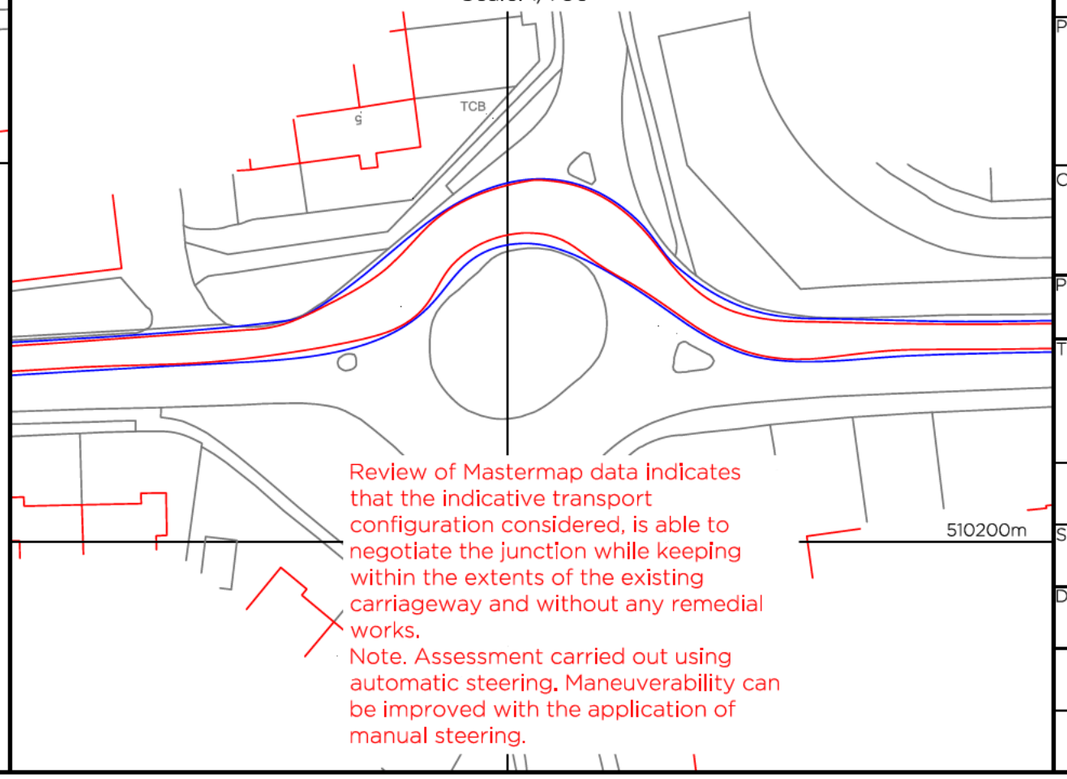
2

Vehicle negotiates roundabout then moves towards camera.

Indicative Swept Path Assessment
Main Drive Component Transport Configuration
Google Licence Ref: JCPM2Z11CKENWEQ

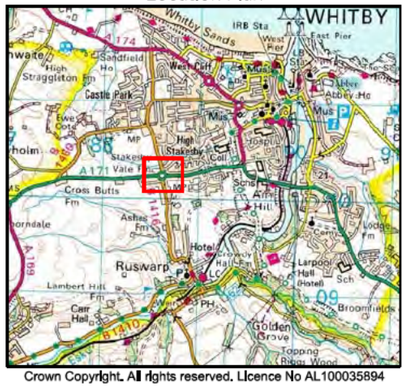


Swept Path Assessment
Main Drive Component Transport Configuration
Vehicle removed for clarity
Scale: 1/750



Review of Mastermap data indicates that the indicative transport configuration considered, is able to negotiate the junction while keeping within the extents of the existing carriageway and without any remedial works.
Note. Assessment carried out using automatic steering. Maneuverability can be improved with the application of manual steering.

Location Plan



Legend:

- TBM Main Drive Component Transport Configuration. Minimum turning arrangements. See Drawing Ref. RH-YPP-TC01
- Extent of Vehicle Track
- Extent of Over-sail
- Vehicle Track outside of carriageway
- Over-sail outside of Highway
- Vehicle track outside of Highway

Rev.	Date	Ammendments
B		
A		
0	11/09/14	Issued for comment
		Revisions

Prepared by:
Wynns LTD
Independent Transportation Consultants
Shaftesbury House, 2 High Street, Eccleshall, Stafford, ST21 6BZ
Tel: (01785) 850411 Fax: (01785) 851886

Client:
Royal HaskoningDHV
Enhancing Society Together
Royal Haskoning DHV
Rightwell House
Bretton
Peterborough
PE3 8DW

Project:
York Potash Project

Title:
Swept Path Assessment
Negotiability of A171 & B1416 Roundabout
Considerate of TBM Main Drive Transported on 3 Axle Bed 5 Axle Trailer
Approximate OS Grid Reference: NZ 8860 1023

Drawing status:		
	Final Report	
Scale (A3):	Drawn by:	Checked by:
1:750	DJT	MJC

Dwg. No:	Sheet:	Rev:
RH-YPP-SP02	1 of 1	0

P:\Clients\Existing Clients\Royal Haskoning\14-798 York Potash Project\A171 B1416 Roundabout.dwg

Swept Path Assessment
Main Drive Component Transport Configuration
Constructed from OS Mastermap data
Scale: 1/750

503800m
491600m

N

1

Vehicle approaches from behind camera and turns right onto B1416.

Sneaton Corner

A171 To Whitby

B1416 From Sneaton

Lay-by

503700m

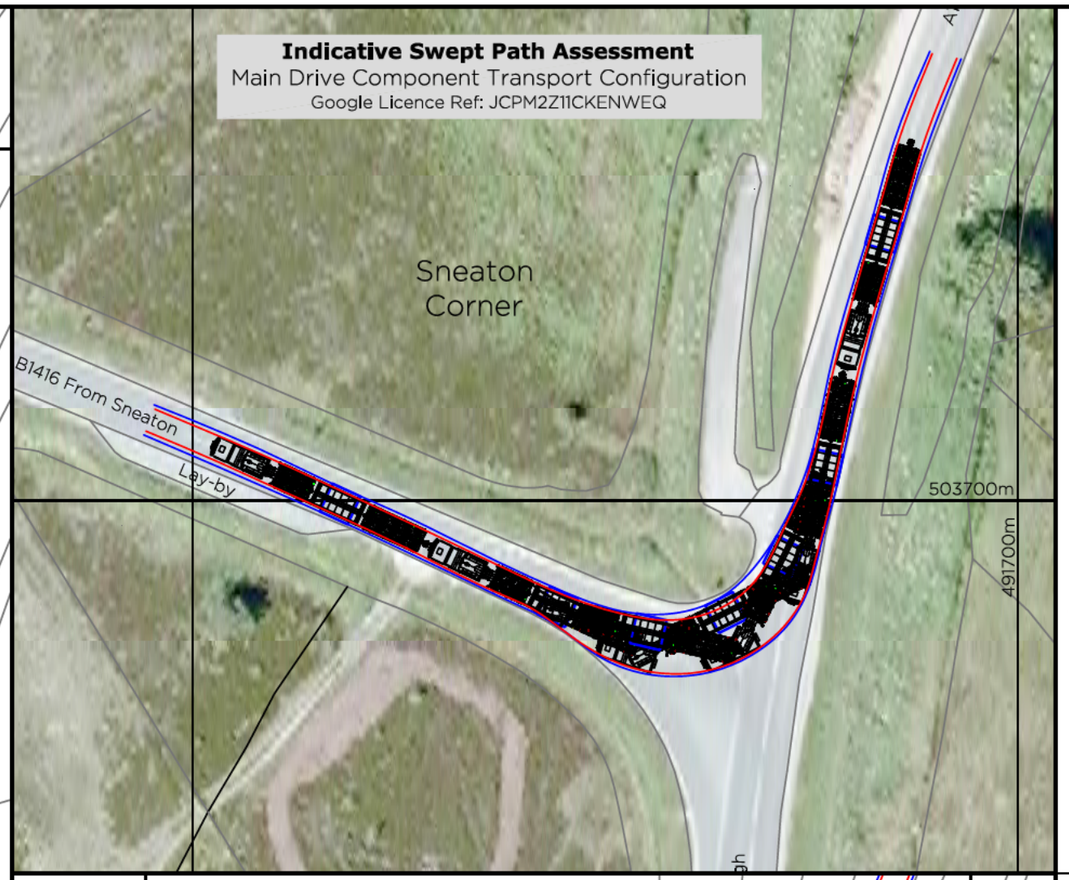
491700m

2

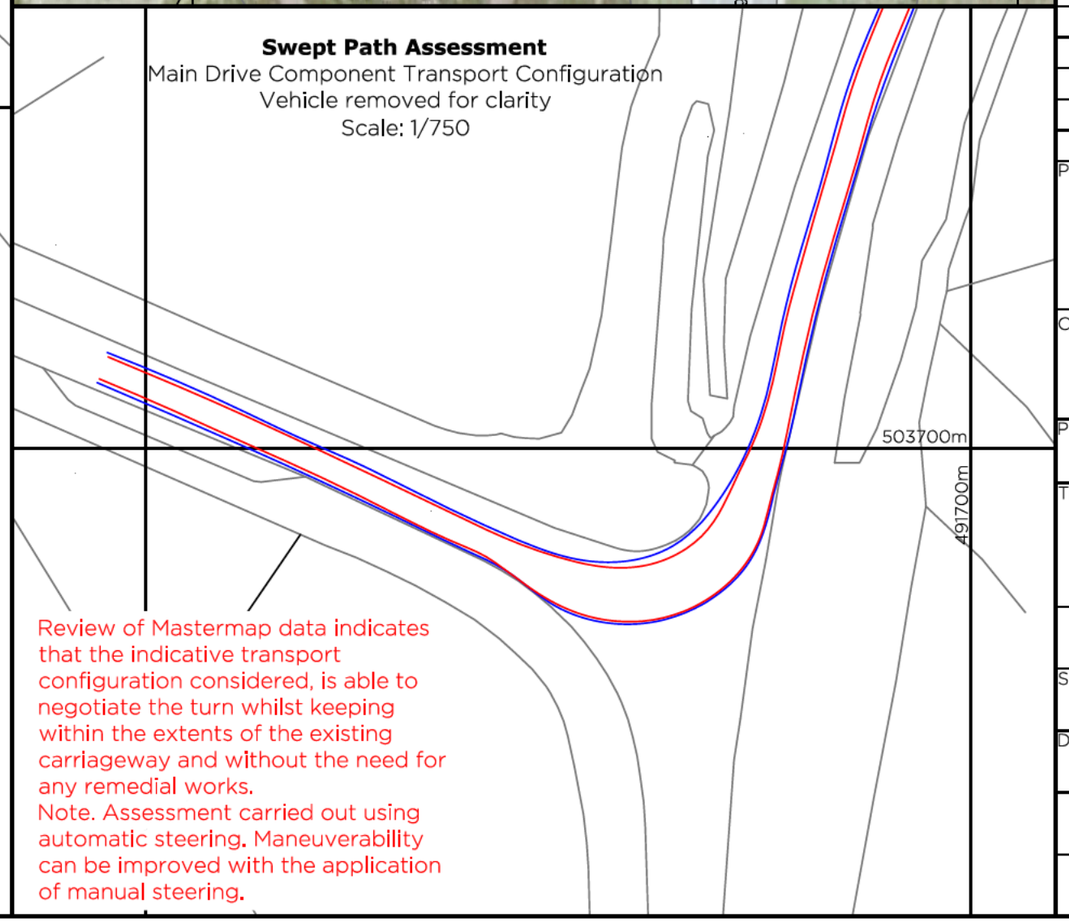
Vehicle approaches along A171 from left, turns right and moves towards camera.

A171 From Scarborough

Indicative Swept Path Assessment
Main Drive Component Transport Configuration
Google Licence Ref: JCPM2Z11CKENWEQ

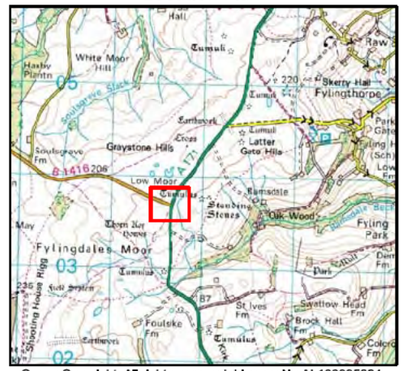


Swept Path Assessment
Main Drive Component Transport Configuration
Vehicle removed for clarity
Scale: 1/750



Review of Mastermap data indicates that the indicative transport configuration considered, is able to negotiate the turn whilst keeping within the extents of the existing carriageway and without the need for any remedial works.
Note. Assessment carried out using automatic steering. Maneuverability can be improved with the application of manual steering.

Location Plan



Legend:

- TBM Main Drive Component Transport Configuration. Minimum turning arrangements. See Drawing Ref. RH-YPP-TC01
- Extent of Vehicle Track
- Extent of Over-sail
- Vehicle Track outside of carriageway
- Over-sail outside of Highway
- Vehicle track outside of Highway

Rev.	Date	Revisions
B		
A		
0	11/09/14	Issued for comment

Prepared by:
Wynns LTD
Independent Transportation Consultants
Shaftesbury House, 2 High Street, Eccleshall,
Stafford, ST21 6BZ
Tel: (01785) 850411 Fax: (01785) 851886

Client:
Royal HaskoningDHV
Enhancing Society Together
Royal Haskoning DHV
Rightwell House
Bretton
Peterborough
PE3 8DW

Project:
York Potash Project

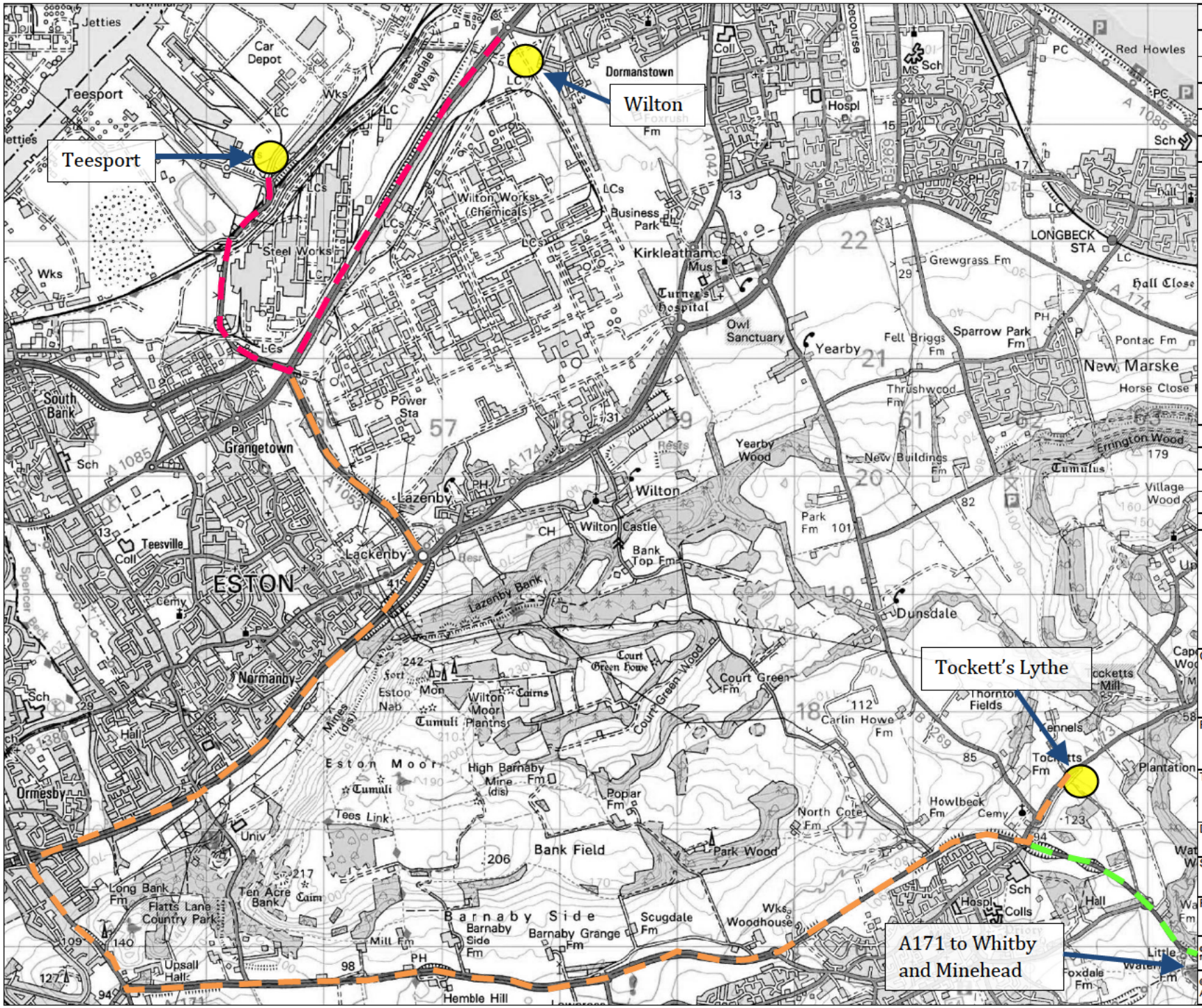
Title:
Swept Path Assessment
Right Turn from A171 to B1416
Considerate of TBM Main Drive Transported on 3 Axle Bed 5 Axle Trailer
Approximate OS Grid Reference: NZ 9166 0368

Drawing status:		
Final Report		
Scale (A3):	Drawn by:	Checked by:
1:750	DJT	MJC
Dwg. No:	Sheet:	Rev:
RH-YPP-SP03	1 of 1	0

P:\Clients\Existing Clients\Royal Haskoning\14-798 York Potash Project\A171 B1416 Turn.dwg

7. Maps

BLANK PAGE



Rev	Date	Amendments:
B		
A		
0	01.09.14	First Issue

Revisions

Wynns Ltd.
Independent Transportation Consultants.

Shaftesbury House, 2 High Street, Eccleshall, Stafford, ST21 6BZ. Tel: (01785) 850411

Client: Royal HaskoningDHV
Enhancing Society Together
Royal Haskoning
Rightwell House
Bretton
Peterborough
PE3 8DW

Project: York Potash AIL Access

Title: Map 1 – Proposed Route to Site.

Drawing Status: Final Report

Scale (A4):	Drawn by:	Checked by:
NTS	DMW	ARP

Ref No.:	Sheet:	Rev.:
RH-YP-Map1	1 of 4	0

Rev	Date	Amendments:
B		
A		
0	01.09.14	First Issue

Revisions

Wynns Ltd.
Independent Transportation Consultants.

Shaftesbury House, 2 High Street, Eccleshall, Stafford, ST21 6BZ. Tel: (01785) 850411

Client: Royal HaskoningDHV
Enhancing Society Together

Royal Haskoning
Rightwell House
Bretton
Peterborough
PE3 8DW

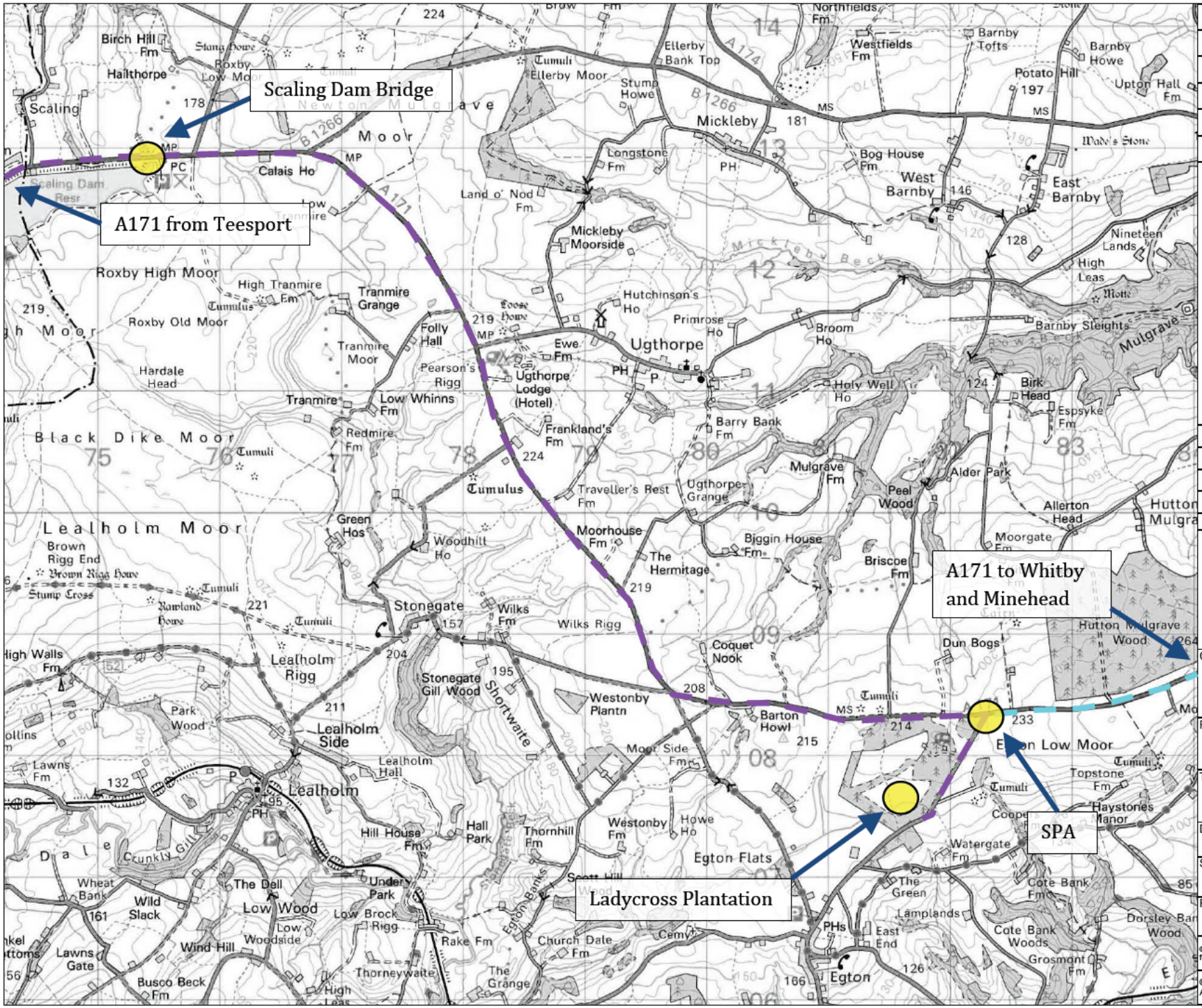
Project: York Potash AIL Access

Title: Map 1 – Proposed Route to Site.

Drawing Status: Final Report

Scale (A4):	Drawn by:	Checked by:
NTS	DMW	ARP

Ref No.:	Sheet:	Rev.:
RH-YP-Map1	2 of 4	0



Rev	Date	Amendments:
B		
A		
0	01 09.14	First Issue

Revisions

Wynns Ltd.
Independent Transportation Consultants.

Shaftesbury House, 2 High Street, Eccleshall, Stafford, ST21 6BZ. Tel: (01785) 850411

Client:
Royal HaskoningDHV
Enhancing Society Together
Royal Haskoning
Rightwell House
Bretton
Peterborough
PE3 8DW

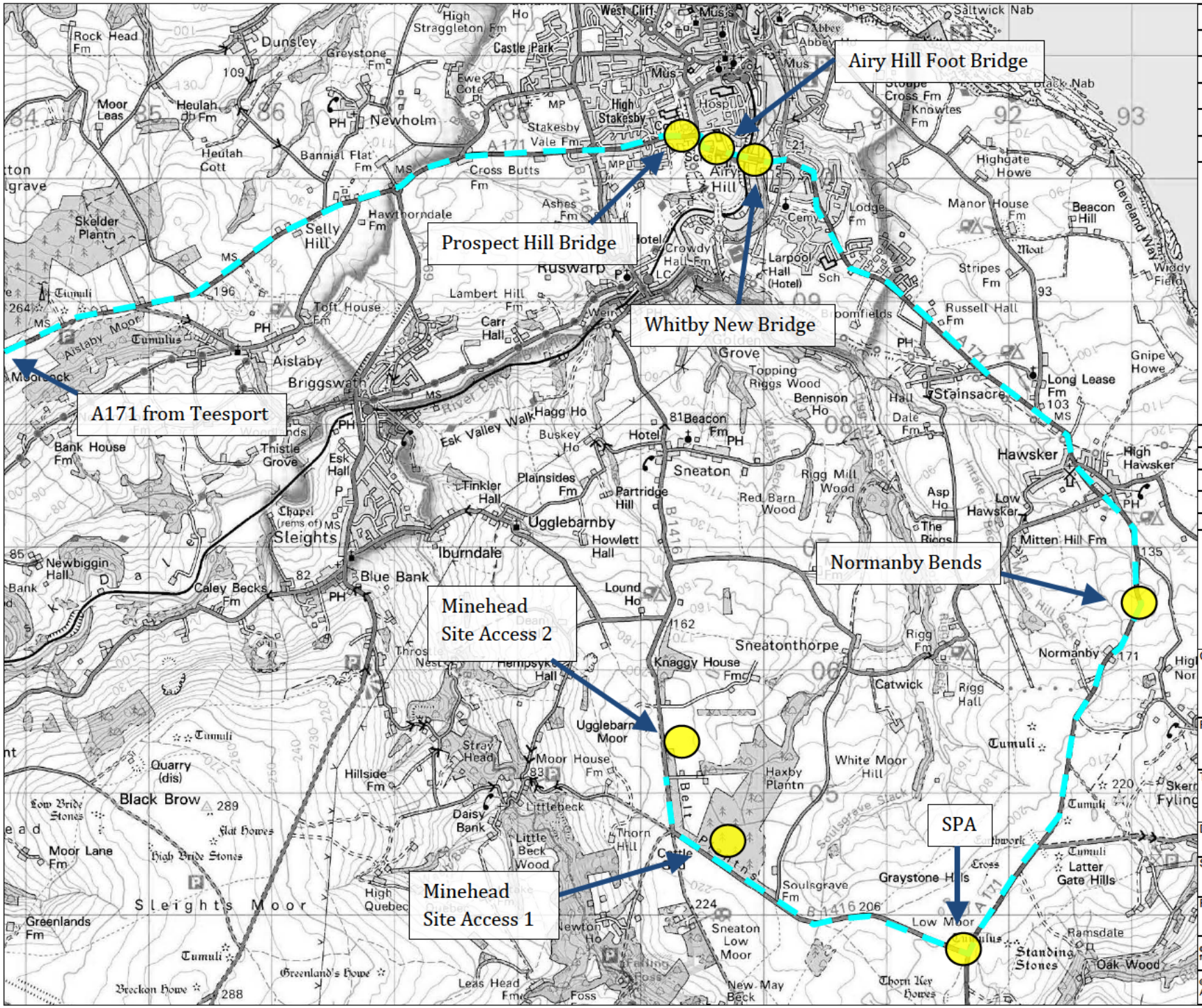
Project:
York Potash AIL Access

Title:
Map 1 – Proposed Route to Site.

Drawing Status:
Final Report

Scale (A4):	Drawn by:	Checked by:
NTS	DMW	ARP

Ref No.:	Sheet:	Rev.:
RH-YP-Map1	3 of 4	0



Key

	Route 5
	Point of Interest

Rev	Date	Amendments:
B		
A		
0	01 09.14	First Issue

Revisions

Wynns Ltd.
Independent Transportation Consultants.

Shaftesbury House, 2 High Street, Eccleshall, Stafford, ST21 6BZ. Tel: (01785) 850411

Client: Royal HaskoningDHV
Enhancing Society Together
Royal Haskoning
Rightwell House
Bretton
Peterborough
PE3 8DW

Project: York Potash AIL Access

Title: Map 1 – Proposed Route to Site.

Drawing Status: Final Report

Scale (A4):	Drawn by:	Checked by:
NTS	DMW	ARP

Ref No.:	Sheet:	Rev.:
RH-YP-Map1	4 of 4	0

8. Appendices

Appendix 1 - Principle Inspection of Prospect Hill Bridge as provided by Scarborough Borough Council

BLANK PAGE

Prospect Hill (Ref No: 19), Whitby

Principal Inspection and Assessment Report

Scarborough Borough Council

2 December 2013

ATKINS

Plan Design Enable

Notice

This document and its contents have been prepared and are intended solely for Scarborough Borough Council's information and use in relation to the Principal Inspection and Assessment of Prospect Hill Bridge.

Atkins Ltd. assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

This document has 52 pages including the cover.

Document history

Job number: 5123276			**Document ref: 5123276_06_05_001**			
Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
Rev A	First Issue	S. Oxley	M. Gosnay	N. McKay	N. McKay	22/08/13
Rev B	Final Issue	S. Oxley	M. Gosnay	N. Smith	N. McKay	02/12/13

Client signoff

Client	Scarborough Borough Council
Project	Prospect Hill (Ref No: 19), Whitby
Document title	Prospect Hill Bridge PI and Assessment Report
Job no.	5123276
Copy no.	
Document reference	5123276_06_05_001

Table of contents

1. Location and Function of Structure

Prospect Hill Bridge is located in Whitby, North Yorkshire at GB Grid Reference NZ 894 103. The structure carries the A171 single lane carriageway road across a disused railway line.

A Location Plan is provided in Appendix A.

2. Details of Structure

General photographs of the structure are provided in Appendix B.

2.1. Superstructure

Deck: The superstructure consists of a brick arch with stone voussoirs and stone spandrel walls. Concrete retaining walls above the arch retain the road over the arch and provide a foundation for the parapets.

Parapets: Steel safety barrier

2.2. Substructure

Abutments: Coursed stonework.

Wingwalls: Coursed stonework.

3. Structure History

3.1. Inspection History

A Principal Inspection was carried out on the structure in 1995. The bridge was found to be generally in good condition. The 1995 Principal Inspection is detailed in the 'Prospect Hill Bridge Whitby Stage 2 Report'. Ref: N3118/MBO/13.

3.2. Assessment History

A strength assessment was carried out in 1995 using the modified MEXE method in accordance with BA16/93. The results of the assessment found the arch was capable of supporting 40 Tonnes Assessment Live Loading.

The original reinforced concrete post and timber rail parapets did not comply with BD 52/93.

The 1995 Assessment is detailed in the 'Prospect Hill Bridge Whitby Stage 2 Report'. Ref: N3118/MBO/13.

3.3. Maintenance History

In circa 2011, the original parapets were replaced with steel 4 rail vehicle parapets capable of withstanding vehicle impact.

4. Details of Inspection

Date of Inspection	08/07/2013
Name of inspecting engineers	M. Gosnay, D. Chantrell
Weather conditions	Sunny, clear
Access methods used	Ladders where required
Areas inspected	All visible areas of the superstructure and substructure.

5. Inspection Findings

5.1. Inspection Results

5.1.1. Invert / Footway

The footway passage beneath the structure is generally clear. There is some hanging vegetation at both ends of the structure, which is more pronounced on the south elevation **(Photograph 1**, **Photograph 2)**.

5.1.2. Arch Barrel

The arch barrel is constructed from brick with stone voussiors on the outer edges. Hanging vegetation over the south elevation restricted the inspection but condition of the arch ring was generally good with no significant defects observed. The north elevation was also in good condition with no significant defects.

The soffit has areas of algal staining **(Photograph 9**,**Photograph 10)**, efflorescence **(Photograph 11)** and water staining, which is noticeable at the interface between the brick arch and the elevation stonework.

There is sporadic spalling of the brickwork surface across most of the soffit **(Photograph 12)**.

There is a longitudinal joint at the centre of the arch barrel.

5.1.3. Abutments

There are salt and damp stains to many areas of the abutments **(Photograph 13, Photograph 14**,**Photograph 15**,**Photograph 16**,**Photograph 17)**.

There are areas of spalling stonework to both abutments **(Photograph 18**,**Photograph 19)**.

There are two gaps in the stonework on the west abutment, one at the top of the abutment **(Photograph 20)** and one towards the bottom of the abutment.

There is a vertical crack (maximum 2mm width) which extends through the top four courses of stonework on the east abutment adjacent to the south elevation **(Photograph 21)**.

5.1.4. Foundations

The foundations are buried and therefore were not inspected.

5.1.5. Wing Walls

Heavy and extensive vegetation is present to all four wing walls preventing close inspection to many areas. **(Photograph 5**,**Photograph 6**,**Photograph 7**,**Photograph 8)**

There are damp patches and lichen growth to the bottom of the north east wing wall **(Photograph 22)**.

There is damp visible to the bottom of the north west wing wall **(Photograph 23**, **Photograph 24)** and a gap in the stonework from which damp is emanating.

There is a gap approximately 50mm wide in the stonework of the south east wing wall **(Photograph 25)**.

The south west wing wall is fully covered in vegetation.

5.1.6. Spandrels

The south elevation spandrel wall is largely covered in hanging vegetation **(Photograph 1)**. The vegetation originates from the top of the spandrel wall. The visible areas of stonework are in good condition with no significant defects.

The north elevation spandrel wall is in good condition with no significant defects to the stonework. There is significant vegetation growth including tree growth to the top of the spandrel wall. **(Photograph 2)**

5.1.7. Retaining Walls

The concrete retaining walls supporting the carriageway over the bridge are hidden by heavy vegetation preventing thorough inspection. **(Photograph 26)**

5.1.8. Parapets

The parapets are screened by wooden fencing on the carriageway side preventing close inspection of this area of steelwork.

5.1.9. Carriageway fences

Vegetation growth behind the fences is making its way through the wooden lats. This is visible to both the north and south fences **(Photograph 27**,**Photograph 28)**.

5.1.10. Road Surfacing

The road surfacing is in good condition with no defects.

5.1.11. Waterproofing

There was no evidence of water leakage through the arch barrel on the day of inspection.

6. Assessment Method

In accordance with BD 21/01 an assessment and check of the masonry arch was carried out using the modified MEXE method to BA 16/97.

7. Assessment Results

A strength assessment of the arch barrel was carried out based on measurements obtained during the bridge inspection.

Data used in the assessment is recorded on the field sheet provided in Appendix F and the subsequent calculations are provided in Appendix G.

7.1. Dimensions

Span, L	7.903m
Rise at crown, r_c	2.028m
Rise at quarters, r_q	1.681m
Thickness of the arch barrel, d	0.800m
Depth of fill, h	0.800m (limited to barrel thickness)

7.2. Modifying Factors

Modifying factors have been obtained during the inspection in accordance with BA16/97. The modifying factors used in the MEXE assessment are as follows.

7.2.1. Barrel Factor F_b

A barrel factor of 1.0 was used (BA 16/97 Table 3/1).

7.2.2. Fill Factor F_f

It has been assumed that the fill over the arch is well compacted material. A fill factor of 0.7 was used (BA 16/97 Table 3/2).

7.2.3. Width Factor F_w

A width factor of 0.9 was used for joint widths between 6mm and 12.5mm (BA 16/97 Table 3/3).

7.2.4. Mortar Factor F_{mo}

A mortar factor of 1.0 was used for mortar in good condition (BA 16/97 Table 3/4).

7.2.5. Depth Factor F_d

A depth factor of 0.95 was used (conservative) (BA 16/97 Table 3/5).

7.2.6. Condition Factor F_{CM}

A condition factor of 0.8 was used to allow for the combined effect of all minor defects present. The condition factor has been disassociated from the material factor and the joint factor as this is dealt with separately.

7.3. Results

The MEXE strength analysis of the arch showed that a maximum gross vehicle weight of 40 tonnes was achievable and therefore, no weight restriction is required.

8. Conclusions & Recommendations

The bridge is generally in good condition with no major defects.

There is heavy vegetation over the spandrel walls and wing walls, which prevents close inspection of large parts of the structure. Vegetation growth is likely to be having a damaging effect on the joints to the masonry.

It is likely that the mortar gaps visible in the north west and south east wing walls are intentional for drainage purposes. The nature and size of the gaps do not resemble those of deteriorated mortar joints.

The vertical crack to the east abutment could be the result of differential settlement.

The carriageway retaining walls are stepped in from each elevation. The embankments in front of the retaining walls have heavy vegetation growth.

The following recommendations will aim to improve the durability and overall serviceability of the structure:

1. Remove vegetation from all elements of the structure. Vegetation should be removed such that a 2.0m clearance zone is provided around the structure.

2. Re-point the crack to the east abutment and monitor for further movement using Demec points or tell tales.

3. Monitor the gaps in wing walls for further deterioration.

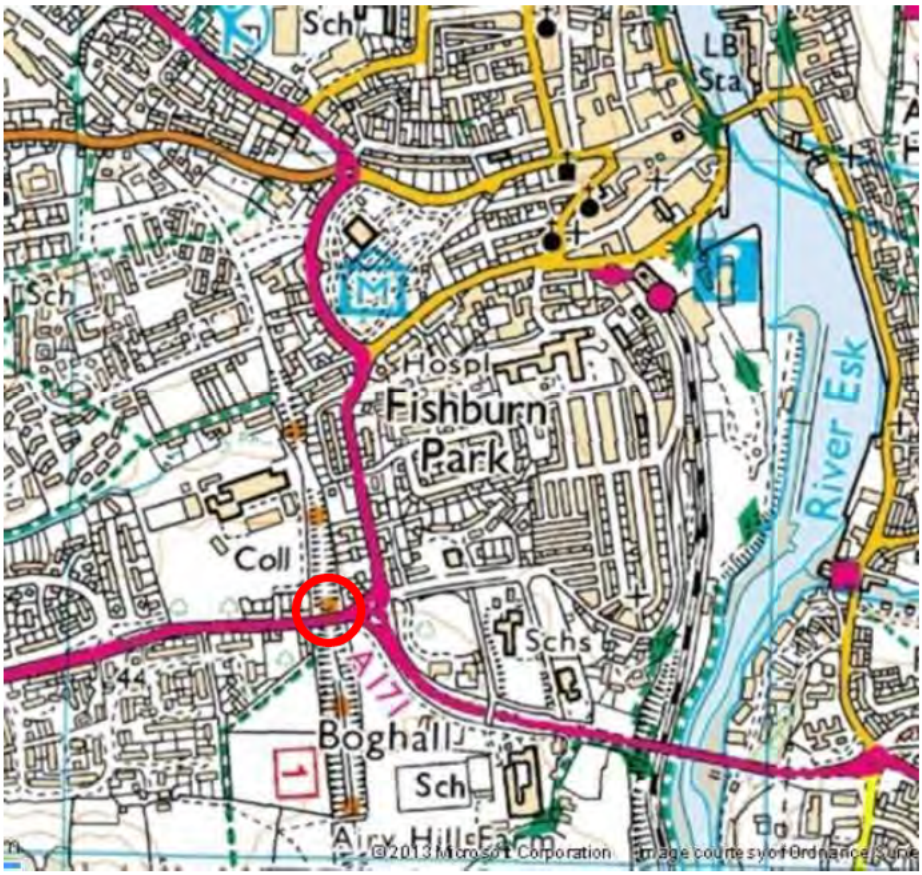
4. Monitor damp, algal staining and salt staining on abutments and soffit.

The results of assessment are summarised as follows:

In its current condition the structure does not require a weight restriction.

Appendices

Appendix A. **Location Plan**



Appendix B. **General Photographs**

Photograph 1 (P1) – South elevation

Photograph 2 (P19) - North elevation

Photograph 3 (P26) - West approach

Photograph 4 (P27) - East approach

Photograph 5 (P3) - South east wing wall

Photograph 6 (P4) - South west wing wall

Photograph 7 (P21) - North west wing wall

Photograph 8 (P22) - North east wing wall

Appendix C. **Defects Photographs**

Photograph 9 (P15) - Algal staining to soffit

Photograph 10 (P16) - Algal staining to soffit (east abutment side)

Photograph 11 (P18) - Efflorescence to soffit (east abutment side)

Photograph 12 (P17) - Spalling of brickwork surface and salt staining (soffit)

Photograph 13 (P6) - Salt and damp staining (west abutment, south end)

Photograph 14 (P7) - Salt and damp staining (west abutment centre)

Photograph 15 (P10) - Salt and damp staining (west abutment, north end)

Photograph 16 (P11) - Salt and damp staining (east abutment, north end)

Photograph 17 (P14) - Salt staining (east abutment, south end)

Photograph 18 (P8) - Spalling stonework surface (centre of west abutment)

Photograph 19 (P12) - Spalling stonework surface (east abutment)

Photograph 20 (P9) - Gap in stonework (west abutment)

Photograph 21 (P13) – Vertical crack maximum 2mm width (east abutment, south side)

Photograph 22 (P23) - Damp and lichen growth (north east wing wall)

Photograph 23 (P24) - Damp (north west wing wall)

Photograph 24 (P25) - Gap in stonework and damp emanating (north west wing wall)

Photograph 25 (P5) - Gap in stonework (south east wing wall)

Photograph 26 (P31) - Vegetation covering carriageway retaining walls

Photograph 27 (P28) - Vegetation coming through wooden fence (south fence)

Photograph 28 (P30) - Vegetation coming through wooden fence (north fence)

Appendix D. **County Surveyors Society Inspection Forms**

BLANK PAGE

Bridge Inspection Pro Forma Version: Nov. 2008

☐ Safety	☐ General	☒ Principal	☐ Special	**Form 1 of 1 for this bridge**

Inspector: M Gosnay/D Chantrell	Date: 8th July 2013	Next Inspection Type/Date: GI/July 2015

Bridge Name: : Prospect Hill Bridge		Bridge Ref/No: 19	Road Ref/No: A171
Map Ref: NZ894103	O.S.E 489377	O.S.N 510337	
Spans: 1	Span Width (m): 20	Span Length (m): 7.8	
All above ground elements inspected: YES ☒ NO ☐		Photographs? YES ☒ NO ☐	
Number of construction forms in bridge / ~~span~~*: 1 ☒ 2 ☐ 3 ☐ more ☐ (*delete as appropriate)			

Bridge Code		
	Primary deck form Table 2	01
	Primary deck material Table 4	K
	Secondary deck form Table 3	20
	Secondary deck material Table 4	P

Set	No	Element Description		S	Ex	Def	W	P	Cost	Comments/Remarks
Deck Elements	1	Primary deck element (Table 2)		2	D	3.6	N	-	-	Minor surface weathering. Algal, efflorescence and water staining.
	2	Secondary deck element/s	Transverse beams	-	-	-	-	-	-	
	3		Element from Table 3	-	-	-	-	-	-	
	4	Half joints		-	-	-	-	-	-	
	5	Tie beam/rod		-	-	-	-	-	-	
	6	Parapet beam or cantilever		-	-	-	-	-	-	
	7	Deck bracing		-	-	-	-	-	-	
Load-bearing Substructure	8	Foundations		-	-	-	-	-	-	No signs of deformation
	9	Abutments (incl. arch springing)		3	B	M	R	L	£300	See Multiple Defects Section. Re-point crack and install demec points or tell tales to monitor crack for progressive movement. See Work Ref No. 2. Monitor damp and staining to abutment walls.
	10	Spandrel wall/head wall		3	D	5.2	R	L	-	Hanging vegetation growth. See Work Ref No.1.
	11	Pier/column		-	-	-	-	-	-	
	12	Cross-head/capping beam		-	-	-	-	-	-	
	13	Bearings		-	-	-	-	-	-	
	14	Bearing plinth/shelf		-	-	-	-	-	-	
Durability Elements	15	Superstructure drainage		-	-	-	-	-	-	
	16	Substructure drainage		-	-	-	-	-	-	
	17	Waterproofing		-	-	-	-	-	-	No visible signs of seepage on day of inspection.
	18	Movement/expansion joints		-	-	-	-	-	-	
	19	Finishes: deck elements		-	-	-	-	-	-	
	20	Finishes: substructure elements		-	-	-	-	-	-	
	21	Finishes: parapets/safety fences		-	-	-	-	-	-	
Safety Elements	22	Access/wa kways/gantries		-	-	-	-	-	-	
	23	Handrail/parapets/safety fences		-	-	-	-	-	-	Covered by wooden fencing, preventing inspection.
	24	Carriageway surfacing		1	A	9.4	N	-	-	No defects.
	25	Footway/verge/footbridge surfacing		1	A	9.4	N	-	-	No defects.
Other Bridge Elements	26	Invert/river bed		1	A	7.2	N	-	-	Invert / footway beneath structure generally clear.
	27	Aprons		-	-	-	-	-	-	
	28	Fenders/cutwaters/collision prot.		-	-	-	-	-	-	
	29	River training works		-	-	-	-	-	-	
	30	Revetment/batter paving		-	-	-	-	-	-	
	31	Wing walls		4	D	M	R	L	-	See Multiple Defects Section. See Work Ref No.1. Monitor leakage through gaps in stonework.
	32	Retaining walls		-	-	-	-	-	-	Hidden by vegetation.
	33	Embankments		1	A	11.1	N	-	-	No defects.
	34	Machinery		-	-	-	-	-	-	
Ancillary Elements	35	Approach rails/barriers/walls		2	C	5.2	R	L	-	Vegetation growth behind carriageway fences making its way through the wooden lats. See Work Ref No.1.
	36	Signs		-	-	-	-	-	-	
	37	Lighting		-	-	-	-	-	-	
	38	Services		-	-	-	-	-	-	

S – severity, **Ex** – extent, **Def** – defect, **W** – work required, **P** – work priority, **Cost** – Cost of work

MULTIPLE DEFECTS

Element No.	Defect 1			Defect 2			Defect 3			Comments
	S	Ex	Def	S	Ex	Def	S	Ex	Def	
9	2	B	3.5	1	D	3.6				D1 - Spalling of stonework, vertical crack to top of east abutment D2 - Damp and salt staining.
31	4	D	5.2	2	B	3.2				D1 - Heavy vegetation cover. Damp and lichen growth. D2 - Gaps that appear to be deliberate drainage holes.

INSPECTOR'S COMMENTS

Prospect Hill Bridge is generally in good condition. Heavy vegetation covers large areas of the structure making inspection difficult. Vegetation in close proximity to structural elements can cause problems and this should be removed to create an exclusion zone of at least 2.0m around the structure. The crack in the east abutment could be an early indicator of differential settlement but this is unlikely given the age of the structure. However, the crack should be monitored for progressive movement over the next maintenance period.

Name: Michael Gosnay	Signed: [redacted]	Date: 06/08/2013

ENGINEER'S COMMENTS

The contents of the report and subsequent recommendations are an accurate record of the inspection. It is noted that the vehicle restraint system is positioned behind the environmental barrier but is fit for purpose.

Name: Niall McKay	Signed: [redacted]	Date: 20/08/13

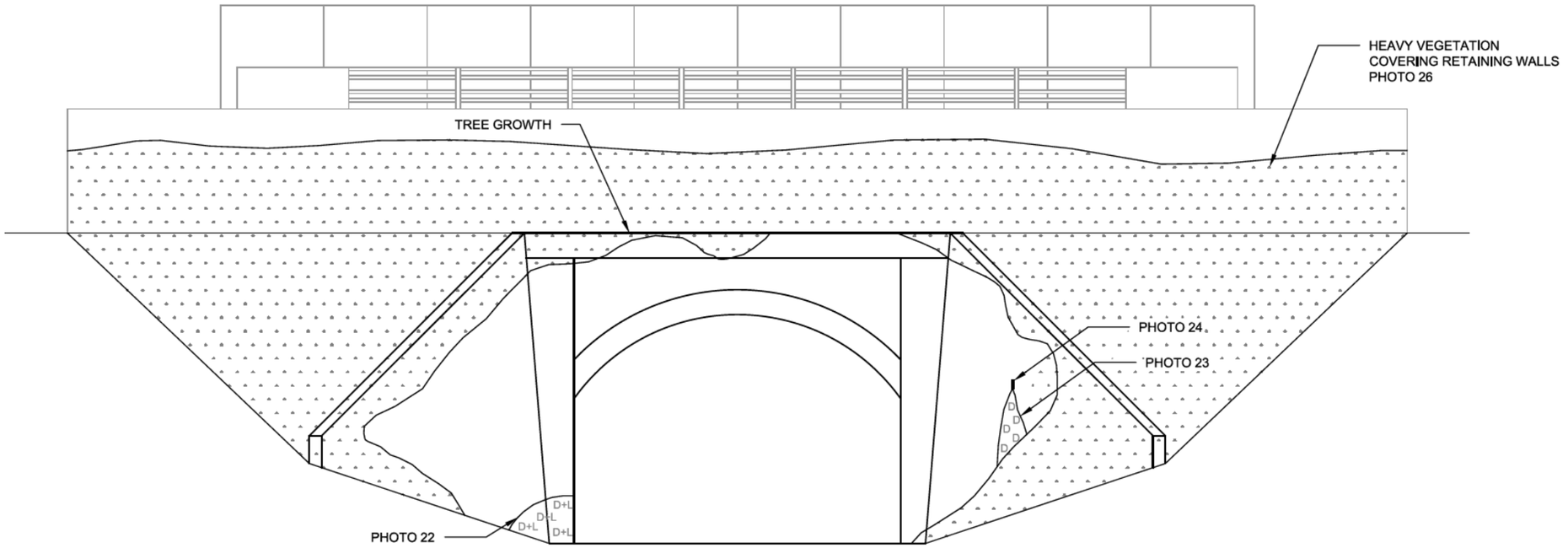
WORK REQUIRED

Ref. No	No	Location/ Reference	W	P	Description	Estimated Cost
1	-	All elements of the structure	R	L	Remove vegetation growth.	£1500
2	9	East abutment	R	L	Re-point the crack and monitor for further movement.	£300

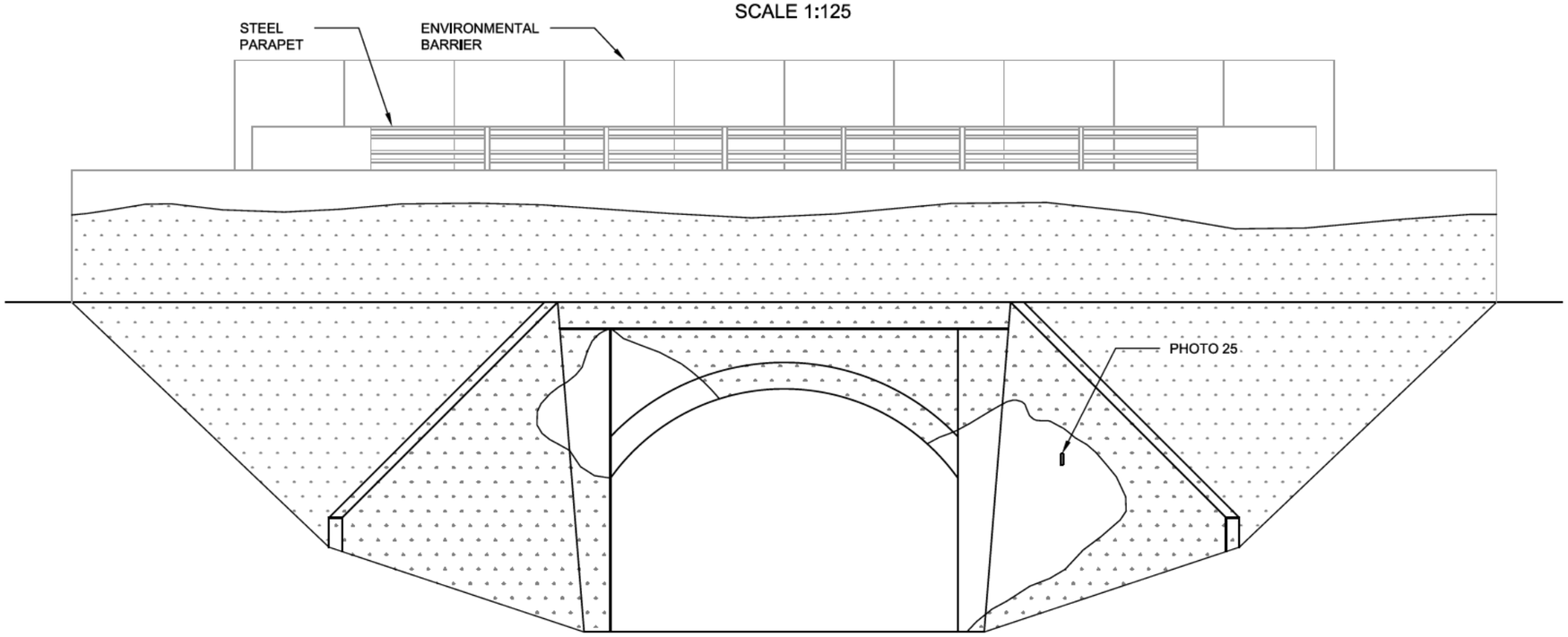
Name: Michael Gosnay	Signed: [redacted]	Date: 06/08/2013

Appendix E. **Defects Sketch**

BLANK PAGE



NORTH ELEVATION
SCALE 1:125



SOUTH ELEVATION
SCALE 1:125

KEY:

D+A	DAMP AND ALGAE STAINING
SS+E	SOOT STAINING AND EFFLORESCENCE
	WEATHERING
D	DAMP
	VEGETATION
D+L	DAMP AND LICHEN GROWTH
S+D	SALT AND DAMP STAINING
S	SALT STAINING
A	ALGAL STAINING
	GAP/HOLLOW AREA
	SPALLING
W	WATER STAINING

NOTES:

1. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE PRINCIPAL INSPECTION REPORT (REF NO. 5123276-06-05-001).

Stat	Purpose of Issue	Date	Auth	Rev	Description	By	Date	Chk'd	Auth
R	RECORD	20/08/13	NM	A	FIRST ISSUE	DC	20/08/13	MG	NM

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING SIGNIFICANT RESIDUAL RISKS

CONSTRUCTION
NONE
MAINTENANCE/CLEANING
NONE
USE
NONE
DECOMMISSIONING/DEMOLITION
NONE

ATKINS™
Atkins Limited
Consulting Engineers,
Dunedin House, Riverside
Columbia Drive
Stockton-on-Tees, England
TS17 6BJ
Tel: (01642) 525200
Fax: (01642) 525201
www.atkinsglobal.com

Client: North Yorkshire County Council — A great place to live, work & play

Project: PRINCIPAL BRIDGE INSPECTIONS AND ASSESSMENTS 2013

Title: PROSPECT HILL BRIDGE REF. 19
DEFECTS DRAWING
SHEET 1 OF 3

Sheet Size	Original Scale	Designed/Drawn	Checked	Authorised
A3	As Shown	DC Date 28/06/13	MG Date 20/08/13	NM Date 20/08/13

Status	Drawing Number	Rev
R	5123276-ATK-ST2400-ZZ-DR-S-0001	A

Rev A
Drawing Number 5123276-ATK-ST2400-ZZ-DR-S-0001
Status R

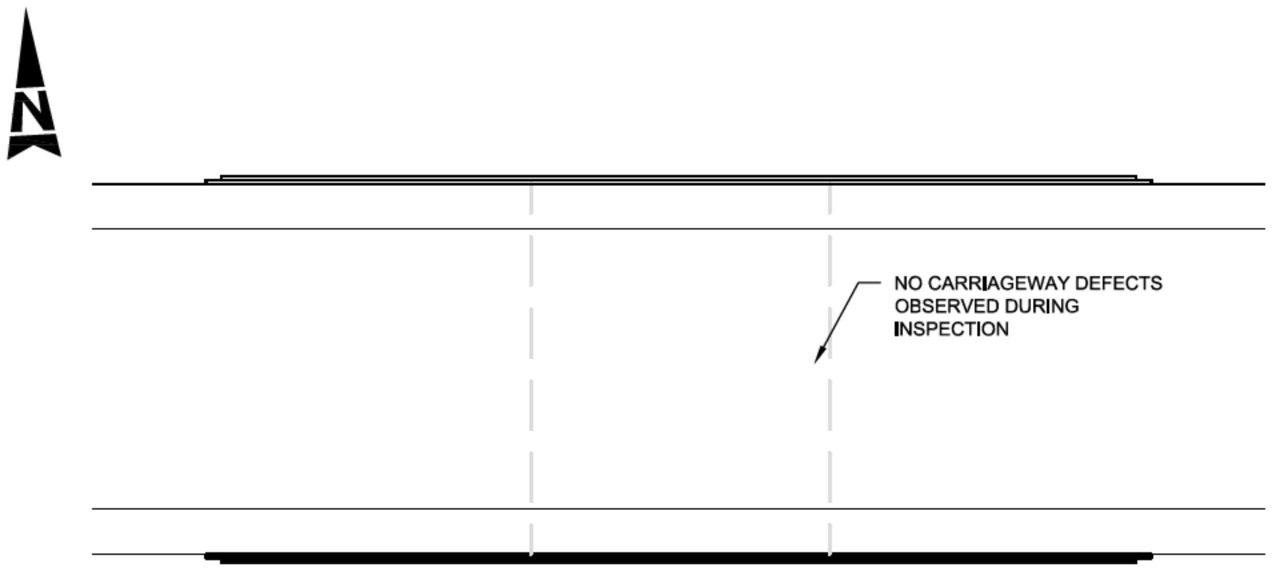
DO NOT SCALE

A3

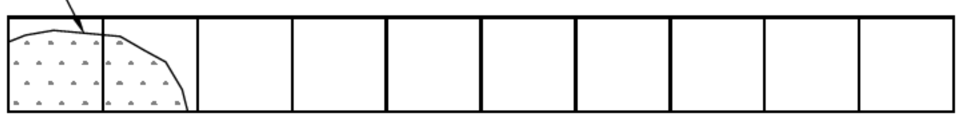
File: P:\GBTSB\HandT\TSol\CP\Projects\5123276 - Scarborough Bridge Pts and Strength Assessments\20_CAD\01_Drgs\02_Structures\5123276-ATK-ST2400-ZZ-DR-S-0001-0003.dwg
Date: Aug 22, 2013 - 2:24pm Plotted by: chan3765

P:\GBTSB\HandT\TSol\CP\Projects\5123276 - Scarborough Bridge Pts and Strength Assessments\20_CAD\01_Drgs\02_Structures\5123276-ATK-ST2400-ZZ-DR-S-0001-0003.dwg

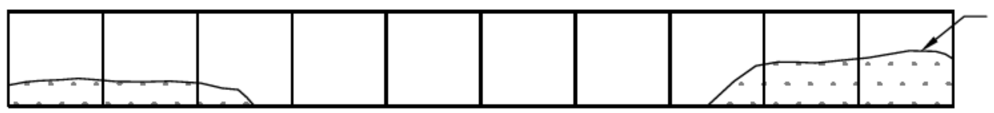
DO NOT SCALE



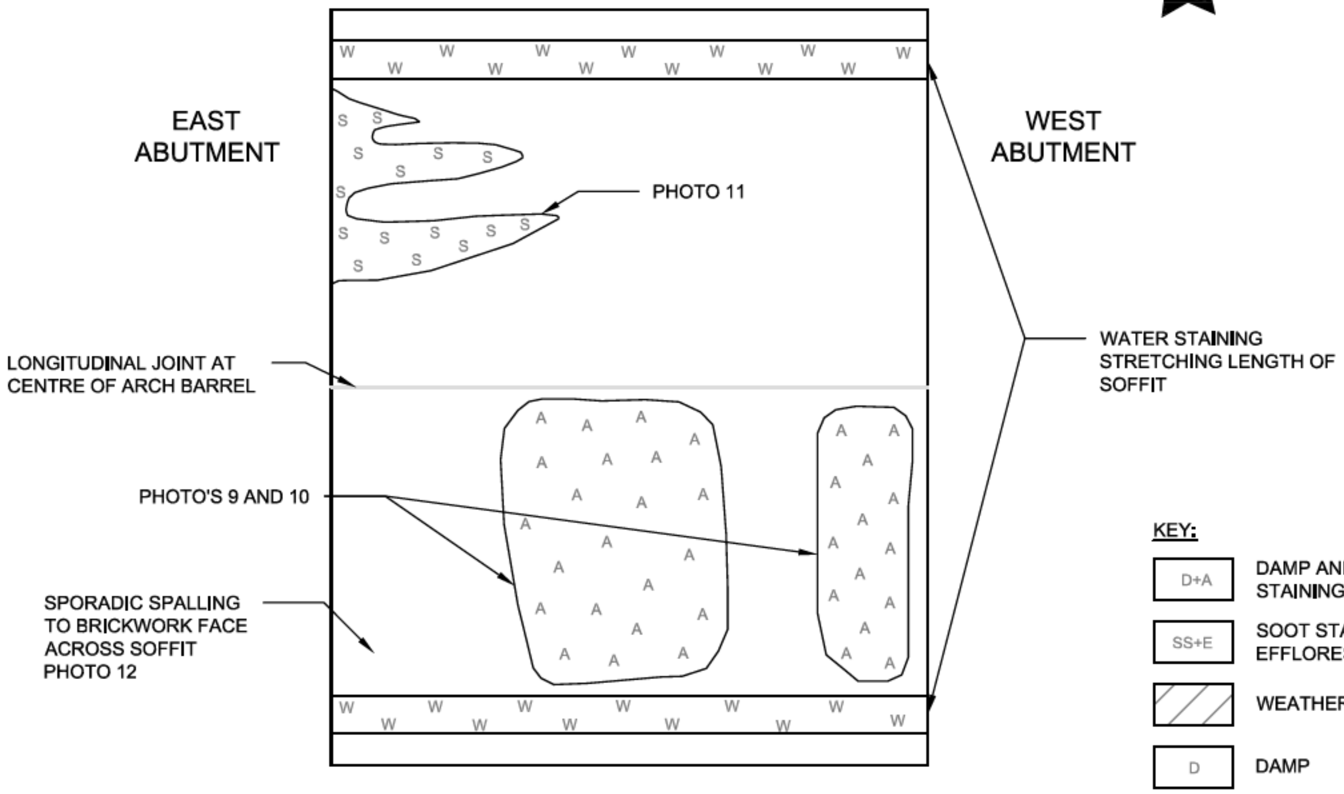
PLAN
SCALE 1:200



INSIDE FACE - NORTH PARAPET
SCALE 1:200



INSIDE FACE - SOUTH PARAPET
SCALE 1:200



VIEW ON SOFFIT
SCALE 1:100

KEY:

Symbol	Description
D+A	DAMP AND ALGAE STAINING
SS+E	SOOT STAINING AND EFFLORESCENCE
(hatched)	WEATHERING
D	DAMP
(dots)	VEGETATION
D+L	DAMP AND LICHEN GROWTH
S+D	SALT AND DAMP STAINING
S	SALT STAINING
A	ALGAL STAINING
(shaded)	GAP/HOLLOW AREA
(cross-hatched)	SPALLING
W	WATER STAINING

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING SIGNIFICANT RESIDUAL RISKS

CONSTRUCTION
NONE
MAINTENANCE/CLEANING
NONE
USE
NONE
DECOMMISSIONING/DEMOLITION
NONE

NOTES:

1. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE PRINCIPAL INSPECTION REPORT (REF NO. 5123276-06-05-001).

Stat	Purpose of Issue	Date	Auth	Rev	Description	By	Date	Chk'd	Auth
R	RECORD	20/08/13	NM	A	FIRST ISSUE	DC	20/08/13	MG	NM

ATKINS
Atkins Limited
Consulting Engineers, Dunedin House, Riverside Columbia Drive Stockton-on-Tees, England TS17 6BJ
Tel: (01642) 525200
Fax: (01642) 525201
www.atkinsglobal.com

Client: Borough of Scarborough — A great place to live, work & play

Project: PRINCIPAL BRIDGE INSPECTIONS AND ASSESSMENTS 2013

Title: PROSPECT HILL BRIDGE REF. 19 DEFECTS DRAWING SHEET 2 OF 3

Sheet Size	Original Scale	Designed/Drawn	Checked	Authorised
A3	As Shown	DC, Date 28/06/13	MG, Date 20/08/13	NM, Date 20/08/13

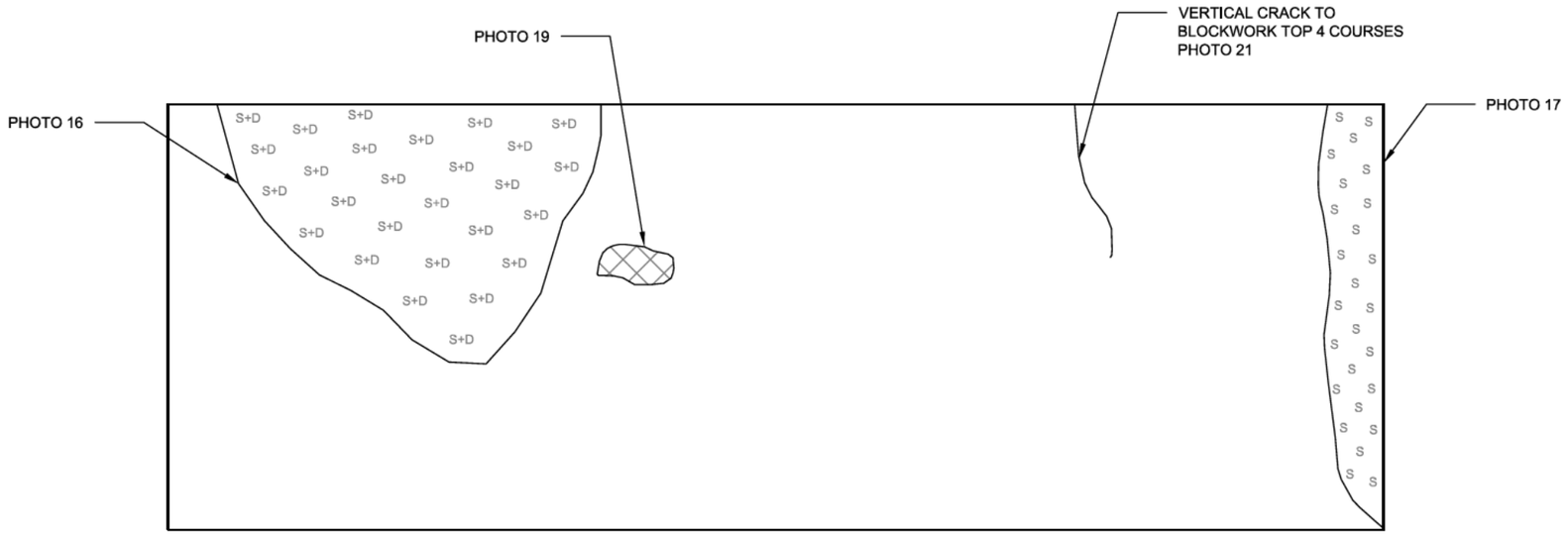
Status	Drawing Number	Rev
R	5123276-ATK-ST2400-ZZ-DR-S-0002	A

Status R | Drawing Number 5123276-ATK-ST2400-ZZ-DR-S-0002 | Rev A

A3

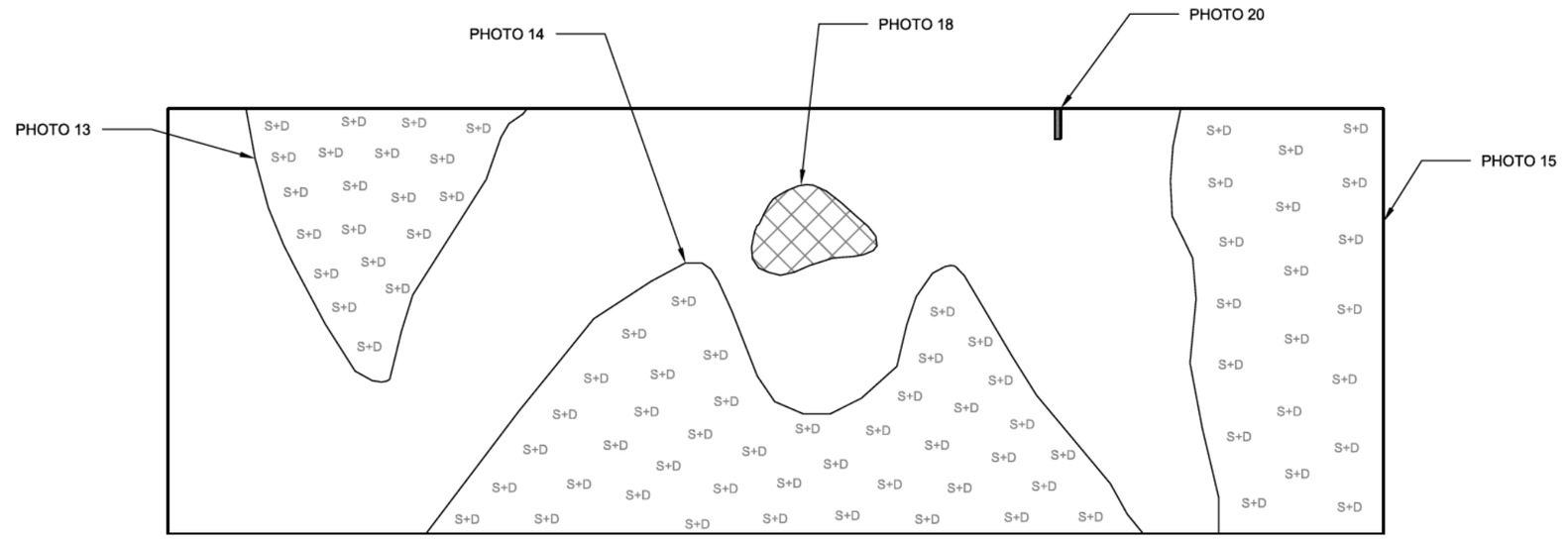
File: P:\GBTSB\HandT\TSol\CP\Projects\5123276 - Scarborough Bridge PIs and Strength Assessments\20_CAD\01_Drgs\02_Structures\5123276-ATK-ST2400-ZZ-DR-S-0001-0003.dwg Date: Aug 22, 2013 - 2:25pm Plotted by: chan3785

P:\GBTSB\HandT\TSol\CP\Projects\5123276 - Scarborough Bridge PIs and Strength Assessments\20_CAD\01_Drgs\02_Structures\5123276-ATK-ST2400-ZZ-DR-S-0001-0003.dwg



EAST ABUTMENT

SCALE 1:50



WEST ABUTMENT

SCALE 1:50

KEY:

D+A	DAMP AND ALGAE STAINING
SS+E	SOOT STAINING AND EFFLORESCENCE
	WEATHERING
D	DAMP
	VEGETATION
D+L	DAMP AND LICHEN GROWTH
S+D	SALT AND DAMP STAINING
S	SALT STAINING
A	ALGAL STAINING
	GAP/HOLLOW AREA
	SPALLING
W	WATER STAINING

NOTES:

1. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE PRINCIPAL INSPECTION REPORT (REF NO. 5123276-06-05-001).

Stat	Purpose of issue	Date	Auth	Rev	Description	By	Date	Chk'd	Auth
R	RECORD	20/08/13	NM	A	FIRST ISSUE	DC	20/08/13	MG	NM

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING SIGNIFICANT RESIDUAL RISKS

CONSTRUCTION
NONE

MAINTENANCE/CLEANING
NONE

USE
NONE

DECOMMISSIONING/DEMOLITION
NONE

ATKINS™
Atkins Limited
Consulting Engineers,
Dunedin House, Riverside
Columbia Drive
Stockton-on-Tees, England
TS17 6BJ
Tel: (01642) 525200
Fax: (01642) 525201
www.atkinsglobal.com

Client: South Scarborough Task Force — A great place to live, work & play

Project: PRINCIPAL BRIDGE INSPECTIONS AND ASSESSMENTS 2013

Title: PROSPECT HILL BRIDGE REF. 19 DEFECTS DRAWING SHEET 3 OF 3

Sheet Size	Original Scale	Designed/Drawn	Checked	Authorised
A3	As Shown	DC Date 28/06/13	MG Date 20/08/13	NM Date 20/08/13

Status	Drawing Number	Rev
R	5123276-ATK-ST2400-ZZ-DR-S-0003	A

Rev A
Drawing Number 5123276-ATK-ST2400-ZZ-DR-S-0003
Status R

DO NOT SCALE

A3

File: P:\GBTSB\MandT\TSol\CP\Projects\5123276 - Scarborough Bridge Pls and Strength Assessments\20_CAD\01_Drgs\02_Structures\5123276-ATK-ST2400-ZZ-DR-S-0001-0003.dwg
Date: Aug 22, 2013 - 2:25pm Plotted by: chan3785

P:\GBTSB\MandT\TSol\CP\Projects\5123276 - Scarborough Bridge Pls and Strength Assessments\20_CAD\01_Drgs\02_Structures\5123276-ATK-ST2400-ZZ-DR-S-0001-0003.dwg

BLANK PAGE

Appendix F. **MEXE Field Data Sheet**

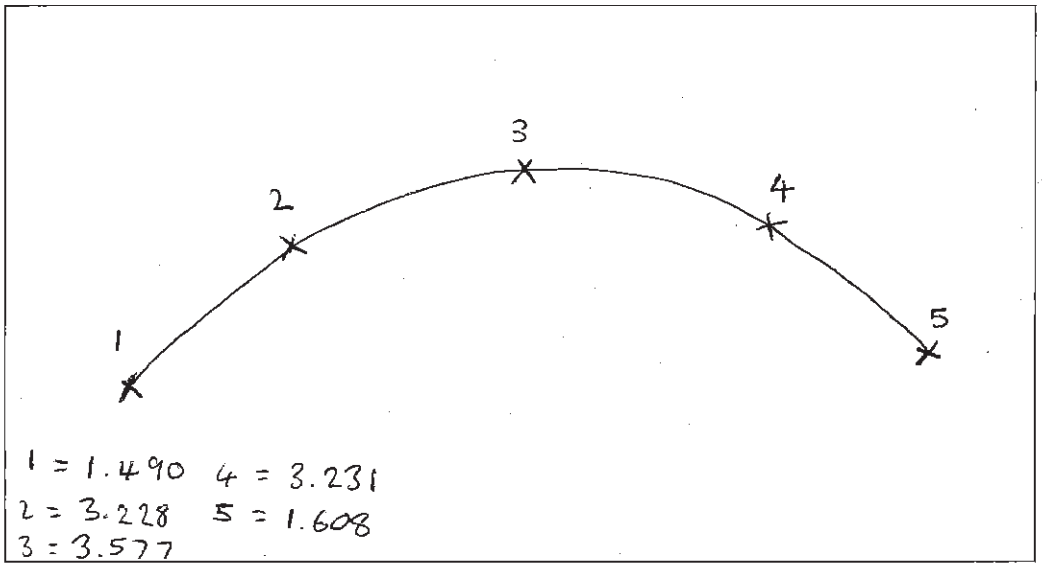
Masonry Arch Bridges
Modified MEXE Method Field Data Sheet (to BA 16/97)

Bridge Ref: 19 Bridge Name: PROSPECT HILL

Assessed By: M. GOSNAY

Date: 08/07/13

Sketch of Arch Profile:



Dimensions: L = 7.903 d* = 0.8 d + h = 1.6

r_c = 2.028 h = 0.8 (limited to barrel thickness)

r_q = 1.681

Modifying Factors:

Barrel Factor: F_b = 1.0 (Table 3/1) Mortar Factor: F_{mo} = 1.0 (Table 3/4)

Fill Factor F_f = 0.7 (Table 3/2) Depth Factor: F_d* = 0.95 (Table 3/5)

Width Factor: F_w = 0.9 (Table 3/3)

Condition Factor: F_{cM} = 0.8

Comments

BRICK BARREL THICKNESS CAN NOT BE DETERMINED AS IT IS HIDDEN. PREVIOUS TESTING WORKS INDICATE DEPTH OF 800mm. DEPTH OF FILL >> DEPTH OF BARREL, THEREFOR HAS BEEN LIMITED (CONSERVATIVE)

*NOTE: d must be adjusted to allow for depth of missing mortar unless depth factor, F_d is to be used.

Appendix G. **MEXE Calculations**

Project: **Bridge Assessment**
Structure: **Prospect Hill Bridge** Sheet No. 1 of 1

MEXE Analysis to BA 16/97
(All dimensions in metres)

L = 7.903 r_c = 2.028 r_q = 1.681 d = 0.8 h+d = 1.6

Adjustment to limit h+d to 2*d not required 1
Calculations are based on an h+d value of 1.6

F_b = 1.0 F_f = 0.7 F_w = 0.9 F_{mo} = 1.0 F_d = 0.95 F_{CM} = 0.8

Clause No:

3.10) Provisional Axle Load = $740(d+h)^2/L^{1.3}$ = 70.00 tonnes

3.11) Span/Rise Factor L/r_c = 3.90 Hence F_{sr} = 1.00 (Fig 3/3)

3.12) Profile Factor $F_p = 2.3((r_c - r_q)/ r_c)^{0.6}$ = 0.80

3.13) Material Factor $F_m = ((F_b * d)+(F_f * h)) / (d+h)$ = 0.85

3.16) Joint Factor $F_j = F_w * F_d * F_{mo}$ = 0.86

3.24) Modified Axle Load = $F_{sr} * F_p * F_m * F_j * F_{CM} * PAL$ = 32.5 tonnes

3.27) Axle Lift-Off
(Fig 3/5a & 3/5b) **No Axle Lift-Off :** Af for 2 axle bogie = 1.00

a) Single Axle A_f = 1.52 Allowable Axle = 49.0 tonnes

b) 2 Axle bogie A_f = 1.00 Allowable Axle = 32.0 tonnes

c) 3 Axle bogie Af = 0.92 Allowable Axle = 29.5 tonnes

From Table 3/6 Max Gross Vehicle Weight = 40 tonnes

Appendix H. **Approval in Principal**

Principal Inspections and Strength Assessments

Approval In Principal for Assessment

Scarborough Borough Council

21 August 2013
Bridge 19 - Prospect Hill

ATKINS

Plan Design Enable

Scarborough Borough Council
Bridge Inspections and Assessments - Prospect Hill Bridge, Whitby

Approval In Principle For Assessment

21/08/2013

Notice

Document History

JOB NUMBER: 5123276			DOCUMENT REF: 5123276_06_05_AIP_Prospect Hill Bridge.doc			
A	First Issue	Sam Oxley	N Smith	N McKay	N McKay	18/07/13
B	Final Issue	Sam Oxley	N Smith	N McKay	N McKay	21/08/13
Revision	Purpose Description	Originated	Checked	Reviewed	Authorised	Date

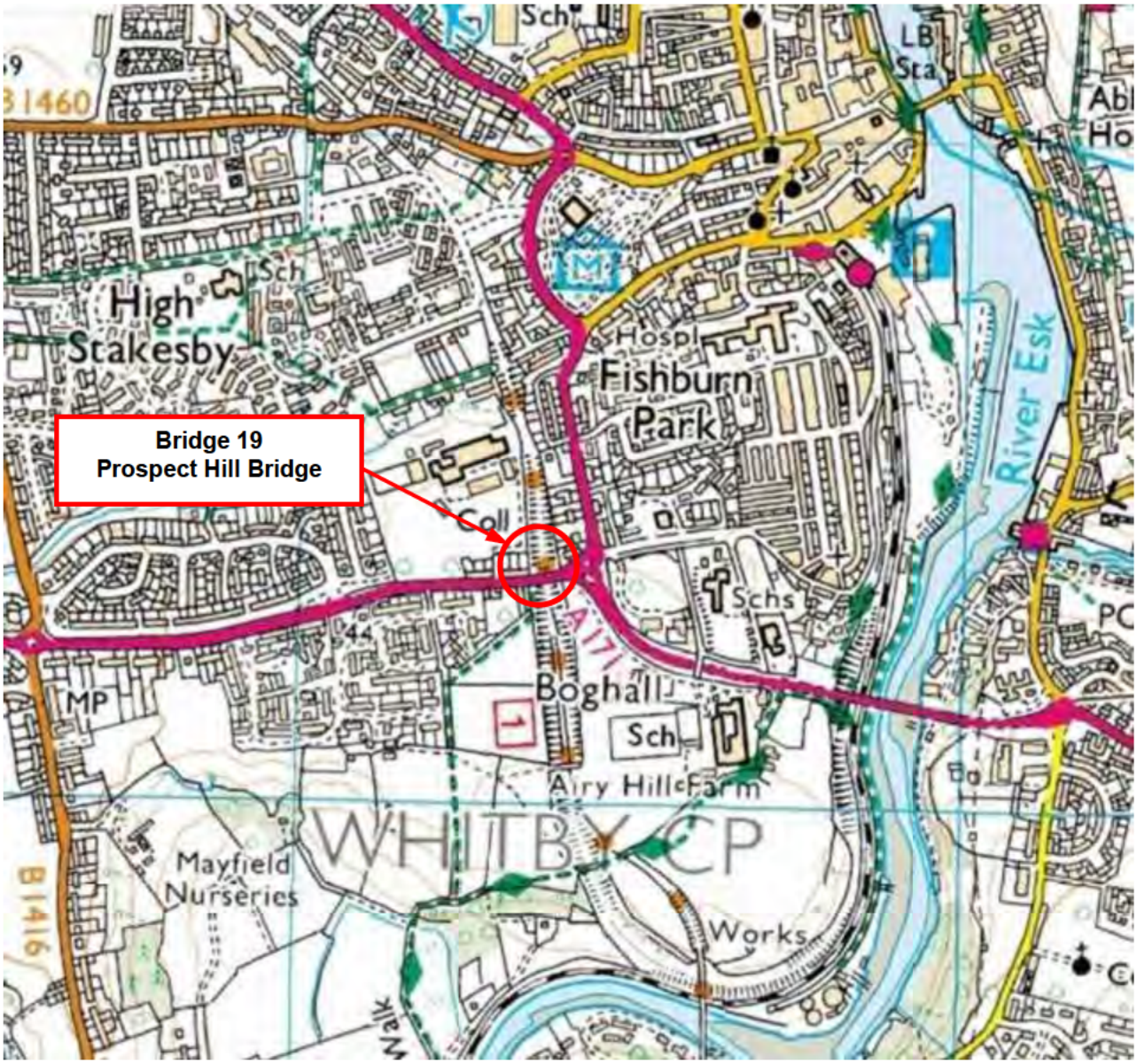
Plan Design Enable

Contents

Section Page

Appendices

Location Plan and Photograph



LOCATION PLAN
(Not to Scale)

1. Highway details

1.1 Type of highway

Over: A171 Prospect Hill

Under: None

1.2 Permitted traffic speed

Over Structure: 48 kph (30 mph)

2. Site details

2.1 Obstacles crossed

Disused railway corridor, now designated a traffic-free cycle route

3. Proposed structure

3.1 Description of structure

Prospect Hill Bridge carries the A171 Middlesbrough to Scarborough single carriageway road over a disused railway. The structure is a single span brick arch with stone spandrel walls and wing walls. The bridge has a clear span of approximately 7.9m. There is a footway on both sides of the A171 across the bridge. Concrete retaining walls run across the top of the bridge and retain the fill beneath the carriageway.

3.2 Structural type

Single span masonry arch.

3.3 Foundation type

Unknown

3.4 Span arrangements

Approximately 7.9m square span

3.5 Articulation arrangements

Deflection and movement under loads accommodated by the mortar joints between brickwork units.

3.6 Road restraint systems

Steel post and rail edge protection to the concrete retaining walls above the brick arch. A visual barrier is installed at the back of each footway but does not offer vehicular restraint.

3.7 Proposed arrangements for Inspection for Assessment

An inspection for assessment has been conducted in July 2013.

3.7.1 Traffic management

None. Vehicular, pedestrian and cycle movement above and below the bridge will not be unduly affected during the course of the inspection.

3.7.2 Arrangements for future maintenance and inspection of structure

Access arrangements to structure:

Access to the superstructure will be carried out on foot using laddered access where appropriate.

3.7.3 Intrusive or further investigation proposed

None

3.8 Environment and sustainability

None

3.9 Materials strengths assumed and basis of assumptions

Characteristic strength of masonry will be taken from BA16/97 with amendment 2.

3.10 Risks and hazards considered for design, execution, maintenance and demolition

None

3.11 Year of construction

Unknown

3.12 Reason for assessment

The structure is to be assessed as part of Scarborough Borough Council's Inspection and Assessment Programme.

3.13 Part of structure to be assessed

Brick arch

4. Assessment criteria

4.1 Actions

4.1.1 Actions relating to normal traffic under AW regulations and C&U regulations.

Assessment live loading in accordance with BD21/01.

4.1.2 Actions relating to General Order Traffic under STGO regulations

Not Applicable.

4.1.3 Footway or footbridge variable actions

Not Applicable.

4.1.4 Actions relating to Special Order Traffic, provision for exceptional abnormal indivisible loads including location of vehicle track on deck cross-section

None

4.2 Heavy or high load route requirements and arrangements being made to preserve the route, including any provision for future heavier loads or future widening

None

4.3 Minimum headroom provided

Not Applicable

4.4 Authorities consulted and any special conditions required

Scarborough Borough Council - None

4.5 Standards and documents listed in the Technical Approval Schedule

See Appendix A.

4.6 Proposed Departures relating to departures from standards given in 4.5

None

4.7 Proposed Departures relating to methods of dealing with aspects not covered by standards in 4.5

None

5. Structural analysis

5.1 Methods of analysis proposed for superstructure, substructure and foundations

Substructure: The sub-structure end supports will be inspected for signs of distress and if none is visible then the structural elements will be assessed qualitatively in accordance with BD 21/01 (DMRB 3.4.3). However, the sub-structure will be assessed analytically if:

- there are evident signs of distress or of corrosion or other forms of material deterioration, or
- dead load is to be increased, for example by increased surfacing.

Superstructure: The masonry arch of the bridge will be assessed in accordance with BA16/97 using the modified MEXE method. This will consider the load carrying capacity of the arch barrel.

5.2 Description and diagram of idealised structure to be used for analysis

None.

5.3 Assumptions intended for calculation of structural element stiffness

Not Applicable

5.4 Proposed range of soil parameters to be used in assessment of earth retaining elements

Not Applicable

6. Geotechnical conditions

6.1 Acceptance of recommendations of the Geotechnical Design Report to be used in the assessment and reasons for any proposed changes

Not Applicable.

6.2 Summary of design for highway structure in the Geotechnical Design Report

Not Applicable.

6.3 Differential settlement to be allowed for in the assessment of the structure

None.

6.4 If the Geotechnical Design Report is not yet available, state when the results are expected and list the source of information used to undertake this assessment

No Geotechnical Design Report for this assessment is available and none is proposed. For derivation of fill factors (Ff) for use in MEXE or for analysis of passive restraint to the arch if needed in a mechanism analysis, information will be taken from on site observations and fill material will be assumed to be that most appropriate for use over structures.

7. Checking

7.1 Proposed Category

Category 1.

7.2 If Category 3, name of proposed Independent Checker

Not Applicable.

8. Drawings and documents

8.1 List of drawings (including numbers) and documents accompanying the submission

None.

8.2 List of construction and record drawings (including numbers) to be used in the assessment

Construction Record Drawings

None.

8.3 List of pile driving or other construction records

None.

8.4 List of previous inspection and assessment reports

Prospect Hill Bridge Stage 1 Report (1995)
Prospect Hill Bridge Stage 2 Report (1995)

9. The above is submitted for acceptance

Signed: _____

Name: Neal Smith

Assessment Team Leader

Engineering Qualifications: CEng MICE

for and on behalf of

Atkins Consultants Ltd

Date: 21st August 2013

10. The above is agreed subject to the amendments and conditions shown below

Signed: _____

Name: _____

Position held: _____

Engineering Qualifications: _____

TAA

Date: _____

Appendix A List of the relevant documents from the TAS

BA 16/97	The Assessment of Highway Bridges and Structures. Amendment Nos.1 and 2
BA 55/06	The Assessment of Bridge Substructures and Foundations, Retaining Walls and Buried Structures
BD 63/07	Inspection of Highway Structures
BD 2/12	Technical Approval of Highway Structures
BD21/01	The Assessment of Highway Bridges and Structures
BD101/11	Structural Review and Assessment of Highway Structures
BD74/00	Foundations

BLANK PAGE

Appendix B Available as-built information

ROADS 277
(Rev. 6/85)

NA_ _F BR_ _ _ F PEC HILL BRID | D_ _ _ RID No. — | AT AL ( ) RE | 42 | 7 | 3

LOCATION OF BRIDGE .... COUNTY .... AGENT AUTHORITY BRIDGE No. —

AGENT AUTHORITY	for bridge structure: SCARBOROUGH BOROUGH COUNCIL	File Reference(s) H.Q. — / R O (Tp) —	PYNF No. —
	for road surface: SCARBOROUGH BOROUGH COUNCIL		DB KEY No. —
BRIDGE OWNER	SCARBOROUGH BOROUGH COUNCIL		Trunk Road Classification No. A170

Road *over / under: DISUSED RAILWAY — *Region Railway / Canal / River / Road

Date of Construction: UNKNOWN

Is Bridge scheduled as an Ancient Monument? Y / N

Name of Navigation: —

Design Office: ....

and/or

Drainage Authority: —

Railway Bridge No. ..../

Is River tidal ☐

navigable ☐ (tick box)

Names of statutory undertakers having services on bridge: NORTHERN ELECTRIC/YORKSHIRE WATER/BRITISH GAS/SCARBOROUGH B.C./BRITISH TELECOM

*Delete as necessary

Min Headroom Clearance under*/over Motorway* /Trunk Road carriageways: N. BOUND/W. BOUND — ; S. BOUND/E. BOUND —

Design loading: UNKNOWN

Special loading/restriction: NONE

Construction Details

Deck Materials (e.g. Insitu PSC): MASONRY/BRICK

Type of Construction (e.g. Solid Slab): BRICK ARCH

Form of Deck (e.g. Propped Cantilever): ARCH

End Supports (e.g. Skeleton Abutment): MASONRY WALLS

Intermediate Supports (e.g. Slab Wall): —

Nature of Foundations (e.g. Caissons): UNKNOWN

	Manufacturer	Type
Joints	—	—
Bearings	NONE	NONE
Parapets	UNKNOWN	TIMBER ON RC POSTS FOUNDED ON CONCRETE RETAINING WALL
Waterproofing	NONE	NONE
Prestressing System	—	—

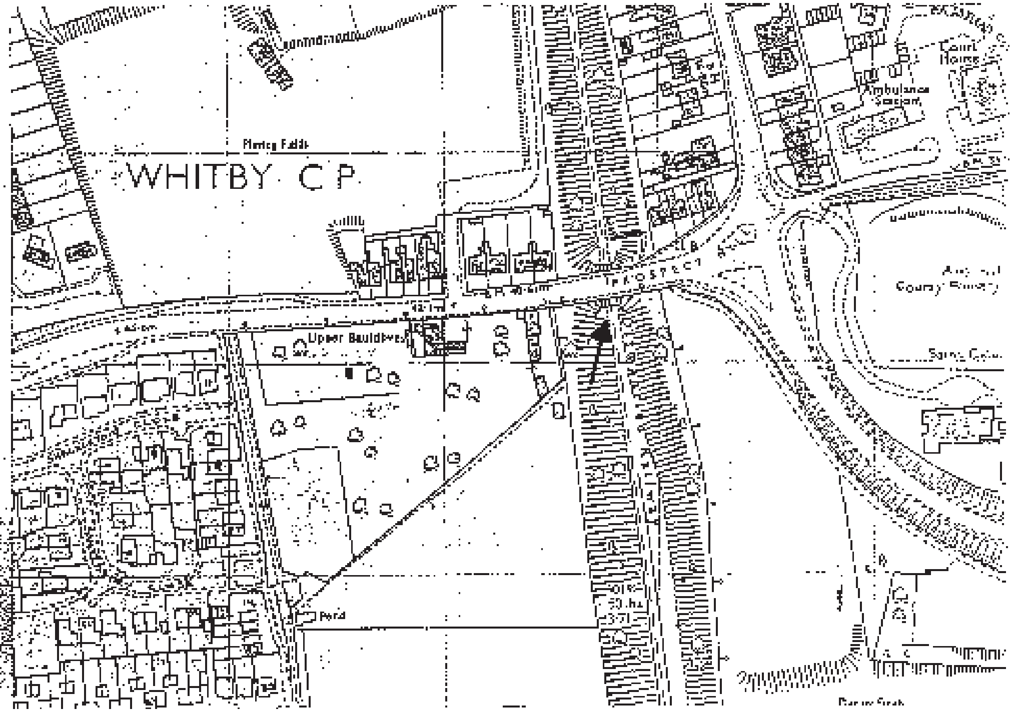
Paint System: Parapet —

Internal —

External —

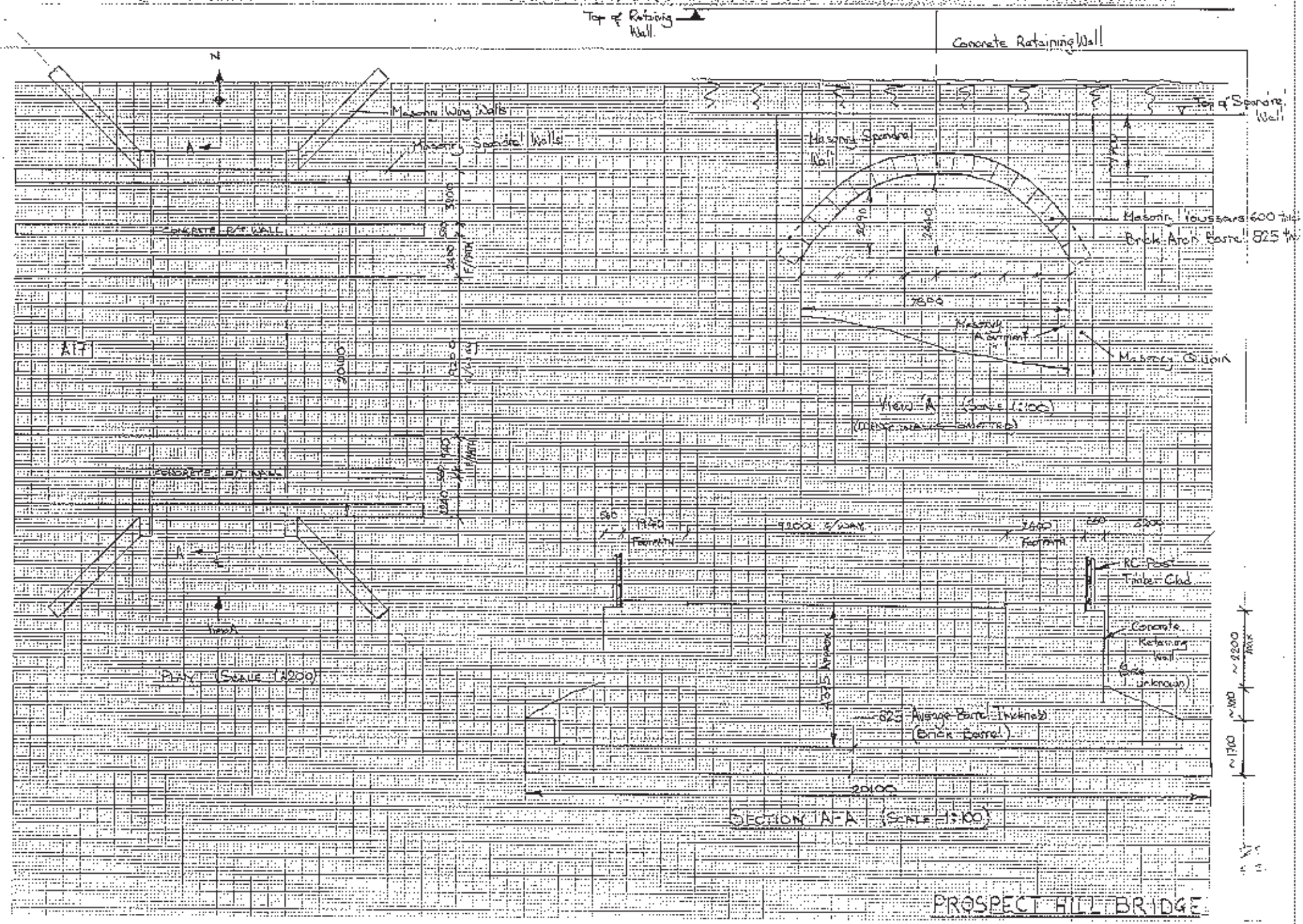
Site Plan (1:2500) and Photograph(s)

[Dimensional Elevation and Cross Section of Bridge overleaf]



Dimensional Elevation and Cross Section of Bridge

Indicate roadway and pavement widths of the reference road and also of the crossing road where appropriate. (Incl. spans).



BLANK PAGE

Appendix C Data recorded on site

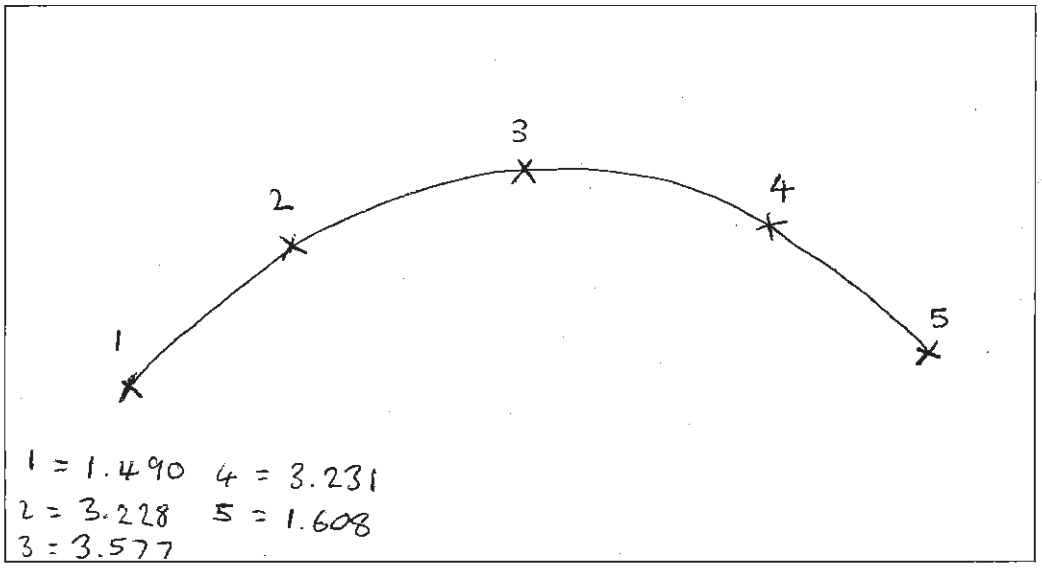
Masonry Arch Bridges
Modified MEXE Method Field Data Sheet (to BA 16/97)

Bridge Ref: 19 Bridge Name: PROSPECT HILL

Assessed By: M. GOSNAY

Date: 08/07/13

Sketch of Arch Profile:



Dimensions: L = 7.903 d* = 0.8 d + h = 1.6

r_c = 2.028 h = 0.8 (limited to barrel thickness)

r_q = 1.681

Modifying Factors:

Barrel Factor: F_b = 1.0 (Table 3/1) Mortar Factor: F_{mo} = 1.0 (Table 3/4)

Fill Factor F_f = 0.7 (Table 3/2) Depth Factor: F_d* = 0.95 (Table 3/5)

Width Factor: F_w = 0.9 (Table 3/3)

Condition Factor: F_{cM} = 0.8

Comments

BRICK BARREL THICKNESS CAN NOT BE DETERMINED AS IT IS HIDDEN. PREVIOUS TESTING WORKS INDICATE DEPTH OF 800mm. DEPTH OF FILL >> DEPTH OF BARREL, THEREFOR HAS BEEN LIMITED (CONSERVATIVE)

*NOTE: d must be adjusted to allow for depth of missing mortar unless depth factor, F_d is to be used.

Niall McKay
Atkins
Dunedin House,
Columbia Drive,
Stockton-on-Tees
TS17 6BJ

niall.mckay@atkinsglobal.com
01642 525 265

BLANK PAGE

9. Selected Correspondence

Andrew Pearce

From: Nick Freeman <n.freeman@sir-robert-mcalpine.com>
Sent: 26 August 2014 12:06
To: Andrew Pearce
Subject: AIL Access Enquiry from Teesport to North Yorkshire
Attachments: 0065-18.08.14 AIL Access Study Teesport to North Yorkshire.pdf

Reference: SRM/WYNNS/EML/WP806/0008
Filing Code: WP806 - Abnormal Loads
Subject: AIL Access Enquiry from Teesport to North Yorkshire

Good afternoon Andy

With regards to your request below, on behalf of the A168/A19 Dishforth to Tyne Tunnel DBFO, I can respond as follows:

Route 1:

Does not enter the A19 DBFO network area.

Routes 2, 3, 4 and 5:

Enters the A19 DBFO network area at the exit from the A1053/A1085 West Gate Roundabout to the A1053 Greystones Road, and exits at the top of the A174 westbound exit slip road at A174/A171 Ormesby Interchange.

Structures crossing over the A19 DBFO network roads are the responsibility of Redcar and Cleveland Borough Council, however there are no signed height restrictions (minimum 5.03m height clearance).

The A19 DBFO structures crossed over (and status for the two vehicles detailed):

A1053//0.50 - Greystones Accommodation Bridge - OK
A174//11.50//1 - Greystones Subway East - OK
A174//10.60 - New Incline Underpass - OK
A174//10.10 - Bank Lane Underpass - OK
A174//9.10 - Normanby Underpass - OK
A174//8.00 - Crosswood Underpass - OK

Route 6:

Enters the A19 DBFO network area at the exit from the A1053/A1085 West Gate Roundabout to the A1053 southbound, and exits at the top of the A174 westbound exit slip road at A174/A172 Stokesley Road Interchange.

Structures crossing over the A19 DBFO network roads are the responsibility of Redcar and Cleveland Borough Council, Network Rail (Roseland Railway Bridge only) and the A19 DBFO (Ormesby Grange Bridge only). There are no signed height restrictions (minimum 5.03m height clearance).

The A19 DBFO structures crossed over (and status for the two vehicles detailed):

All those listed in Routes 2, 3, 4 and 5 above - OK
A174//5.90/Q/1 - Low Gill Culvert - OK
A174//5.80 - Red House Underpass - OK

All Routes:

The overall load widths of 3.7m may conflict with traffic management and/or lane and carriageway closures on the

A1053 and A174 Trunk Roads and slip roads, and would need to be checked by the Operator prior to movement.

We have not carried out a swept path analysis, and any necessary arrangements to temporarily remove street furniture, etc. would need to be made with the A19 DBFO company, Autolink Concessionaires (A19) Limited at the address below. There has been no assessment to take into account the possibility of damage to Statutory Undertakers apparatus.

I trust that the above is acceptable to you, however should you require any further assistance, please do not hesitate to contact me.

Regards

Nick Freeman

Abnormal Loads Representative & Highway Structures Engineer
Autolink/Sir Robert McAlpine A19 ROM
Billingham Reach Industrial Estate
Haverton Hill Road
Billingham
TS23 1PX

Tel No 01642 567456
Mob No 07808 900037
Fax No 01642 560721

From: Andrew Pearce <Andy.Pearce@wynnslimited.com> on 18/08/2014 12:29

To: "A19DBFOabnormalloads@sir-robert-mcalpine.com" <A19DBFOabnormalloads@sir-robert-mcalpine.com>; "engineering@redcar-cleveland.gov.uk" <engineering@redcar-cleveland.gov.uk>; "abnormalloads@jacobs.com" <abnormalloads@jacobs.com>; "Abnormal Loads Additional Appraisal (AbnormalLoads.AdditionalAppraisal@networkrail.co.uk)" <AbnormalLoads.AdditionalAppraisal@networkrail.co.uk>; "RSGBRB@jacobs.com" <RSGBRB@jacobs.com>; "abnormal.loads@canalrivertrust.org.uk" <abnormal.loads@canalrivertrust.org.uk>; "crsu@northyorkshire.pnn.police.uk" <crsu@northyorkshire.pnn.police.uk>; "abnormal.loads@cleveland.pnn.police.uk" <abnormal.loads@cleveland.pnn.police.uk>
cc:
Subject: AIL Access Enquiry from Teesport to North Yorkshire

Dear All,

Please see that attached that should be self explanatory. Please note that this enquiry should remain confidential.

I look forward to hearing from you as soon as possible.

Kind Regards

Andy Pearce
andy.pearce@wynnslimited.com

Wynns Ltd.
Shaftesbury House, High Street, Eccleshall, Staffordshire, ST21 6BZ

Tel: +44 (0) 1785 850411 | Fax: +44 (0) 1785 851866
Mobile: +44 (0) 7834 621269 |

wynnslimited.com | robertwynnandsonshistory.com |

Celebrating our 150th anniversary in 2013.

Andrew Pearce

From: Abnormal Loads <Abnormal.Loads@canalrivertrust.org.uk>
Sent: 18 August 2014 19:52
To: Andrew Pearce
Subject: RE: AIL Access Enquiry from Teesport to North Yorkshire

Andy,

This is ok with us.

Thanks,

Mike.

From: Andrew Pearce [mailto:Andy.Pearce@wynnslimited.com]
Sent: 18 August 2014 12:30
To: A19DBFOabnormalloads@sir-robert-mcalpine.com; engineering@redcar-cleveland.gov.uk; abnormalloads@jacobs.com; Abnormal Loads Additional Appraisal (AbnormalLoads.AdditionalAppraisal@networkrail.co.uk); RSGBRB@jacobs.com; Abnormal Loads; crsu@northyorkshire.pnn.police.uk; abnormal.loads@cleveland.pnn.police.uk
Subject: AIL Access Enquiry from Teesport to North Yorkshire
Importance: High

Dear All,

Please see that attached that should be self explanatory. Please note that this enquiry should remain confidential.

I look forward to hearing from you as soon as possible.

Kind Regards

Andy Pearce
andy.pearce@wynnslimited.com

Wynns Ltd.
Shaftesbury House, High Street, Eccleshall, Staffordshire, ST21 6BZ

Tel: +44 (0) 1785 850411 | Fax: +44 (0) 1785 851866
Mobile: +44 (0) 7834 621269 |

wynnslimited.com | robertwynnandsonshistory.com |

Celebrating our 150th anniversary in 2013.

Andrew Pearce

From: Maniraj Sunil <Sunil.Maniraj@networkrail.co.uk> on behalf of Network Rail Abnormal Loads <AbnormalLoadsContact@networkrail.co.uk>
Sent: 19 August 2014 10:44
To: Andrew Pearce
Subject: RE: AIL Access Enquiry from Teesport to North Yorkshire

Hi Andy

Your proposed movement does not affect any Network Rail owned road over rail bridges or tunnels therefore we have no objection to your proposed route.

Please note we only check the load carrying capacity of Network Rail owned road over rail bridges affected we do not check anything else including:

- Load carrying capacity of level crossings
- Clearance to bridge parapets
- Clearance under a rail bridge
- Clearance to overhead wires at level crossings

Many thanks
Sunil Maniraj
Abnormal Loads Clerk
Abnormal Loads Team
AMS Technical Services

Abnormal Loads Help Desk: 01908 783 140

The Quadrant: MK | Elder Gate | Milton Keynes | MK9 1EN
Furzton Building F3-ZC-Agile

From: Andrew Pearce [mailto:Andy.Pearce@wynnslimited.com]
Sent: 18 August 2014 12:30
To: A19DBFOabnormalloads@sir-robert-mcalpine.com; engineering@redcar-cleveland.gov.uk; abnormalloads@jacobs.com; Abnormal Loads Additional Appraisal; RSGBRB@jacobs.com; abnormal.loads@canalrivertrust.org.uk; crsu@northyorkshire.pnn.police.uk; abnormal.loads@cleveland.pnn.police.uk
Subject: AIL Access Enquiry from Teesport to North Yorkshire
Importance: High

Dear All,

Please see that attached that should be self explanatory. Please note that this enquiry should remain confidential.

I look forward to hearing from you as soon as possible.

Kind Regards

Andrew Pearce

From: Howell, Tania <Tania.Howell@jacobs.com>
Sent: 18 August 2014 14:13
To: Andrew Pearce
Subject: RE: AIL Access Enquiry from Teesport to North Yorkshire

Dear Andrew,

None of the proposed routes pose any problems for us.

Thanks
Tania

Tania Howell
Abnormal Loads Officer
Jacobs
DDI: 0118 946 8911

If your mail concerns abnormal load movements, please reply to RSGBRB@jacobs.com

---

From: Andrew Pearce [mailto:Andy.Pearce@wynnslimited.com]
Sent: 18 August 2014 12:30
To: A19DBFOabnormalloads@sir-robert-mcalpine.com; engineering@redcar-cleveland.gov.uk; Abnormal Loads; Abnormal Loads Additional Appraisal (AbnormalLoads.AdditionalAppraisal@networkrail.co.uk); RSGBRB@jacobs.com; abnormal.loads@canalrivertrust.org.uk; crsu@northyorkshire.pnn.police.uk; abnormal.loads@cleveland.pnn.police.uk
Subject: AIL Access Enquiry from Teesport to North Yorkshire
Importance: High

Dear All,

Please see that attached that should be self explanatory. Please note that this enquiry should remain confidential.

I look forward to hearing from you as soon as possible.

Kind Regards

Andy Pearce
andy.pearce@wynnslimited.com

Wynns Ltd.
Shaftesbury House, High Street, Eccleshall, Staffordshire, ST21 6BZ

Tel: +44 (0) 1785 850411 | Fax: +44 (0) 1785 851866
Mobile: +44 (0) 7834 621269 |

wynnslimited.com | robertwynnandsonshistory.com |

Andrew Pearce

From: Martin Lloyd <Martin.Lloyd@scarborough.gov.uk>
Sent: 03 September 2014 16:04
To: Andrew Pearce
Subject: FW: AIL Access Enquiry from Teesport to North Yorkshire

Hi Andrew, I received this back from the consultant for your consideration.

Martin Lloyd
Principal Engineer
Regeneration and Planning Services
Town Hall
St. Nicholas Street
Scarborough
N.YORKS
YO11 2HG
T : 01723 23 24 55
M : 07807 529 764
E : martin.lloyd@scarborough.gov.uk

From: McKay, Niall I [mailto:niall.mckay@atkinsglobal.com]
Sent: 03 September 2014 14:09
To: Martin Lloyd
Cc: Kilcar, Jim C
Subject: RE: AIL Access Enquiry from Teesport to North Yorkshire

Hi Martin

I do remember the bridge. I have also discussed this with our team who carried out the MEXE assessment previously.

The method of assessment used was appropriate for the level of loading that used the bridge at the time and consequently was certified accordingly at 40T GVW. Loads exceeding this would require a further assessment using appropriate mechanism analysis. As the loads proposed may be in the region of 150T this would definitely be required. Programmes such as Archie-M and Ring are very easy to use and can enable more rigorous analyses of specific loads to be carried out. We have experience of both.

We would need to carry out an additional survey as both programmes require a minimum of 10 points to be established around the arch. Also a small trial pit would identify if there is any backing material over the bridge which would significantly influence the capacity of the arch.

The assessment would be in the region of £4k, I can confirm a more accurate fee in a formal offer letter if this seems reasonable. Would you require a full report or a simple technical memo? Also, would you require just assessment of the sample vehicles or a more complete assessment using BD86 so that a screening check (ref Annex D in BD86) can be carried out? This would involve applying an additional 3 to 4 loads to the bridge which are fairly straightforward to model in the above software packages.

Feel free to give me a call to discuss as needed.

Kind regards

Niall McKay
Group Engineer
Highways & Transportation

ATKINS

Dunedin House, Columbia Drive, Stockton On Tees. TS17 6BJ | Tel: +44 (0)1642 525265 (Direct) | Mob: +44 (0)7545 060584 |
E-mail: mailto:niall.mckay@atkinsglobal.com| Web: http://www.atkinsglobal.com | http://www.atkinsglobal.com/careers |
Twitter: http://www.twitter.com/atkinsglobal | Facebook: http://www.facebook.com/atkinsglobal
LinkedIn: http://www.linkedin.com/company/atkins | YouTube: http://www.youtube.com/wsatkinsplc
Personal LinkedIn: uk.linkedin.com/in/niallmckay1

From: Martin Lloyd [mailto:Martin.Lloyd@scarborough.gov.uk]
Sent: 02 September 2014 11:25
To: McKay, Niall I
Subject: FW: AIL Access Enquiry from Teesport to North Yorkshire
Importance: High

Hi Niall, I have received this enquiry for prospect Hill bridge in Whitby, that you carried out a Principle Inspection on back in December 2013.
The proposed loading exceed the Gross vehicle weight of 40 Tonnes, are you able to offer comment on the feasibility of the proposed loading and if it requires a separate assessment, what would it cost?

I have attached the PI for ease of reference.

Regards,

Martin Lloyd
Principal Engineer
Regeneration and Planning Services
Town Hall
St. Nicholas Street
Scarborough
N.YORKS
YO11 2HG
T : 01723 23 24 55
M : 07807 529 764
E : martin.lloyd@scarborough.gov.uk

From: Andrew Pearce [mailto:Andy.Pearce@wynnslimited.com]
Sent: 27 August 2014 11:37
To: Martin Lloyd
Subject: FW: AIL Access Enquiry from Teesport to North Yorkshire
Importance: High

Martin,

I have been struggling to contact you via phone over the last week or so and would welcome your comments on the issue highlighted below as soon as possible please.

Kind Regards

Andy Pearce

From: Andrew Pearce
Sent: 19 August 2014 09:32
To: 'Martin.Lloyd@scarborough.gov.uk'
Subject: FW: AIL Access Enquiry from Teesport to North Yorkshire

Dear Martin,

I have been given your contact information by Phil Clark working for Jacobs on behalf of North Yorkshire County Council in respect to an enquiry I have for an abnormal load access enquiry which involves crossing Prospect Hill Bridge in Whitby. I am advised the structure is in fact within the ownership of Scarborough Council rather than North Yorkshire County Council. Please see below and attached some information in respect to the enquiry. I would welcome your comments as to whether the loads proposed are acceptable for the passage over the bridge as far as Scarborough Council are concerned.

If you wish to discuss further please do not hesitate to contact me on the number below. I did try and call you this morning but after going round and round the switchboard got cut off!

I look forward to hearing from you.

Kind Regards

Andy Pearce
andy.pearce@wynnslimited.com

Wynns Ltd.
Shaftesbury House, High Street, Eccleshall, Staffordshire, ST21 6BZ

Tel: +44 (0) 1785 850411 | Fax: +44 (0) 1785 851866
Mobile: +44 (0) 7834 621269 |

wynnslimited.com | robertwynnandsonshistory.com |

Celebrating our 150th anniversary in 2013.

From: Clark, Phil [mailto:Phil.Clark@jacobs.com]
Sent: 18 August 2014 17:26

To: Andrew Pearce
Subject: FW: AIL Access Enquiry from Teesport to North Yorkshire

Andrew,
Further to our telephone conversation, corrected grid references are as follows, apologies for any confusion caused: -

- Scaling Dam Bridge NZ 754 129
- Prospect Hill Bridge NZ 893 103
- Whitby New Bridge NZ 899 101

With regard to the Scarborough Borough Council-owned Prospect Hill Bridge, we have previously referred abnormal load notifications to Martin Lloyd [Martin.Lloyd@scarborough.gov.uk].
Regards,
Phil

From: Clark, Phil
Sent: 18 August 2014 15:27
To: 'Andrew Pearce'
Cc: Abnormal Loads
Subject: RE: AIL Access Enquiry from Teesport to North Yorkshire

Andrew,
My initial comments relating to your proposed routes and loads are as follows: -

(i) Routes 1, 2, 3 & 6 are not on North Yorkshire County Council roads and I therefore have no comments to make.

(ii) Route 4 traverses 79 Scaling Dam Bridge on the A171 at NZ 129 754 which is a 4.5m single span masonry arch/concrete portal frame structure. This may need to be assessed particularly for the 13t axles on the 144t vehicle + load but is likely to be OK.

(iii) Route 5 traverses 79 Scaling Dam Bridge [as (ii) above] and 920 Prospect Hill Bridge at NZ 898 103 owned by Scarborough Borough Council which is a large masonry arch bridge over a redundant railway. This may need to be assessed but is likely to be OK. The route then passes beneath Airy Hill Footbridge on the A171 to the south side of Whitby at NZ 896 102 which has a minimum headroom of 5.2m as measured in 2005. The road also slopes quite steeply downhill beneath the footbridge which means that clearance will be very tight for your 132t vehicle + load with its height of 4.895m. The route also then traverses the 7-span high level 81 Whitby New Bridge at NZ 101 899 which should be OK for the proposed vehicles.

Regards,
Phil Clark
Jacobs UK Ltd
On behalf of North Yorkshire County Council

From: Andrew Pearce [mailto:Andy.Pearce@wynnslimited.com]
Sent: 18 August 2014 12:30
To: A19DBFOabnormalloads@sir-robert-mcalpine.com; engineering@redcar-cleveland.gov.uk; Abnormal Loads; Abnormal Loads Additional Appraisal (AbnormalLoads.AdditionalAppraisal@networkrail.co.uk); RSGBRB@jacobs.com; abnormal.loads@canalrivertrust.org.uk; crsu@northyorkshire.pnn.police.uk; abnormal.loads@cleveland.pnn.police.uk
Subject: AIL Access Enquiry from Teesport to North Yorkshire
Importance: High

Dear All,

Please see that attached that should be self explanatory. Please note that this enquiry should remain confidential.

I look forward to hearing from you as soon as possible.

Kind Regards

Andrew Pearce

From: CRSU (Abnormal Loads) <CRSU-AbnormalLoads@northyorkshire.pnn.police.uk>
Sent: 18 August 2014 12:48
To: Andrew Pearce
Subject: RE: AIL Access Enquiry from Teesport to North Yorkshire

Email:CRSU@northyorkshire.pnn.police.uk <mailto:CRSU@northyorkshire.pnn.police.uk>
Tel: 01904 618891
Address:
Abnormal Loads Department

Vale House

Thirsk

North Yorkshire

Y07 3BX

North Yorkshire Abnormal Loads Office

Response to Notification of Abnormal Load

Hauliers are required by law to notify North Yorkshire Police when a load intended to travel on roads in North Yorkshire exceeds one of the following:

* Overall width: 2.9m
* Overall length: 18.35m
* Overall weight: 44 tonnes

You have emailed North Yorkshire Police Abnormal Loads Office. If you are notifying us of an intended abnormal load movement and the conditions below apply then this movement is acceptable. If they do not apply please either resend your notification to CRSU@northyorkshire.pnn.police.uk with the text ##ABL##appended in the subject line or call the office on the number above between 08:30 and 16:00 Monday to Friday. If your email is a general message and not a notification please resend with the text ##MSG## appended in the subject line.

Conditions of movement:

* The driver and haulier of the abnormal load are responsible for ensuring that the load travels safely and is properly secured and marked at all times
* All abnormal loads must comply with all road traffic legislation whether being escorted or not

* Vehicle must be able to maintain speed of 30mph on level ground

* A copy of the original notification and this response to be carried by driver

* Load to be properly secured including hydraulic arms

* Haulier must ensure the route is suitable & approved by other authorities where required

* The extremities of the load must be clearly marked with approved marker boards - and if visibility is reduced these must be illuminated

* No deviation from the notified route

* It is the hauliers responsibility to make sure that there are no roadworks that could effect the route before commencing the journey

* We do not normally request that cranes have an escort

Self Escorting is required for loads as follows:

Type of road

Overall width

Overall length

Overall weight

Single carriageways

4.1m or above

26m or above

80 tonnes or above

Dual carriageways

4.3m or above

30m or above

130 tonnes or above

* Escort vehicle, markings, equipment and manner of use must comply with The Highways Agency Codes of Practice for Self Escorting Abnormal Loads

A Police Escort will only be provided for the following reasons:

* The load has been issued with a VR1 by the Department for Transport

* The load is to be moved under the authority of a Special Order issued by the Secretary of State

* The size of the load or the route to be taken determine that it requires a police escort (e.g. where traffic control or closure of roads will be required)

North Yorkshire Police will charge for providing this service and will require 10 clear working days notice.

The haulier is ultimately responsible at all times for ensuring that loads travel safely on appropriate route and in compliance with legislation.

Road Policing officers from North Yorkshire Police will be pro-active in the enforcement of legislation and conduct of Abnormal load movements and will expect drivers to carry a copy of original notification and this document.

Andrew Pearce

From: Barron, Denise <Denise.Barron@northyorkshire.pnn.police.uk> on behalf of CRSU (Abnormal Loads) <CRSU-AbnormalLoads@northyorkshire.pnn.police.uk>
Sent: 19 August 2014 10:20
To: Andrew Pearce
Subject: RE: AIL Access Enquiry from Teesport to North Yorkshire [NOT PROTECTIVELY MARKED]

Classification: NOT PROTECTIVELY MARKED

Good Morning,
With regards to the attached proposal for abnormal load moves as specified, North Yorkshire Police do not have any objections to these loads travelling along any of these proposed routes but you would require movement orders as both loads are in excess of 80 tonnes and wish to travel on minor roads. These loads will definitely require self escort.
I cannot comment on the suitability of the loads if there are any bridges etc along the route. You will need clarification of this from Highways.
Hope this helps. Please don't hesitate to contact us here at Abnormal Loads Department, North Yorkshire Police.
Kindest regards

Denise

Denise Barron
Collar No 6947
RPG Support Officer
Vale House
Thirsk
Tel : 01904 618891
Fax : 01904 618892
TAAL@northyorkshiore.pnn.police.uk
CRSU@northyorkshire.pnn.police.uk

Committed to the Code of Ethics

Dial 101, press option 2 and ask for me by my full name or collar number
If using my collar number please state each number individually
Web: www.northyorkshire.police.uk
Facebook: facebook.com/NorthYorkshirePolice
Twitter: twitter.com/NYorksPolice

image001.jpg
image002.jpg
NOT PROTECTIVELY MARKED

From: Andrew Pearce [mailto:Andy.Pearce@wynnslimited.com]
Sent: 18 August 2014 12:30
To: A19DBFOabnormalloads@sir-robert-mcalpine.com; engineering@redcar-cleveland.gov.uk; abnormalloads@jacobs.com; Abnormal Loads Additional Appraisal (AbnormalLoads.AdditionalAppraisal@networkrail.co.uk); RSGBRB@jacobs.com; abnormal.loads@canalrivertrust.org.uk; CRSU (Abnormal Loads); abnormal.loads@cleveland.pnn.police.uk
Subject: AIL Access Enquiry from Teesport to North Yorkshire
Importance: High

Dear All,

Andrew Pearce

From: WILSON, Beverley (C7964) <Beverley.Wilson@cleveland.pnn.police.uk>
Sent: 27 August 2014 16:41
To: Andrew Pearce
Subject: RE: AIL Access Enquiry from Teesport to North Yorkshire

Andy

I have had a look at the routes attached and from Cleveland Police's point of view I cant see any problems.

Thanks

Bev

From: Andrew Pearce [mailto:Andy.Pearce@wynnslimited.com]
Sent: 22 August 2014 14:43
To: Abnormal Loads
Subject: FW: AIL Access Enquiry from Teesport to North Yorkshire
Importance: High

Beverley,

As discussed please see attached my original enquiry.

I look forward to hearing from you.

Kind Regards

Andy

From: Andrew Pearce
Sent: 18 August 2014 12:30
To: A19DBFOabnormalloads@sir-robert-mcalpine.com; engineering@redcar-cleveland.gov.uk; 'abnormalloads@jacobs.com'; Abnormal Loads Additional Appraisal (AbnormalLoads.AdditionalAppraisal@networkrail.co.uk); RSGBRB@jacobs.com; abnormal.loads@canalrivertrust.org.uk; 'crsu@northyorkshire.pnn.police.uk'; 'abnormal.loads@cleveland.pnn.police.uk'
Subject: AIL Access Enquiry from Teesport to North Yorkshire
Importance: High

Dear All,

Please see that attached that should be self explanatory. Please note that this enquiry should remain confidential.

I look forward to hearing from you as soon as possible.

Kind Regards

Andy Pearce
andy.pearce@wynnslimited.com

BLANK PAGE

Annex 9

BLANK PAGE

Harbour Facilities Preliminary Car Park Accumulation

Time Period		Harbour Facilites Employee Car Park Accumulation				Parking Accumulation
		Employees		Vehicles		
		arrive	depart	arrive	depart	
00:00	01:00	0	0	0	0	0
01:00	02:00	0	0	0	0	0
02:00	03:00	0	0	0	0	0
03:00	04:00	0	0	0	0	0
04:00	05:00	0	0	0	0	0
05:00	06:00	0	0	0	0	0
06:00	07:00	0	0	0	0	0
07:00	08:00	0	0	0	0	0
08:00	09:00	175	0	70	0	70
09:00	10:00	0	0	0	0	70
10:00	11:00	0	0	0	0	70
11:00	12:00	0	0	0	0	70
12:00	13:00	0	0	0	0	70
13:00	14:00	0	0	0	0	70
14:00	15:00	0	0	0	0	70
15:00	16:00	0	0	0	0	70
16:00	17:00	0	0	0	0	70
17:00	18:00	0	175	0	70	0
18:00	19:00	0	0	0	0	0
19:00	20:00	0	0	0	0	0
20:00	21:00	0	0	0	0	0
21:00	22:00	0	0	0	0	0
22:00	23:00	0	0	0	0	0
23:00	00:00	0	0	0	0	0
Total Vehicle Spaces Required			70			

Notes

Total workforce of site

Key

Peak Accummulation

Wilton (MTS & MHF) Preliminary Car Park Accumulation

Time Period		Wilton Employee Car Park Accumulation								
		MTS				MHF				
		Employees		Vehicles		Employees		Vehicles		Parking
		arrive	depart	arrive	depart	arrive	depart	arrive	depart	Accumulation
00:00	01:00	0	0	0	0	0	0	0	0	16
01:00	02:00	0	0	0	0	0	0	0	0	16
02:00	03:00	0	0	0	0	0	0	0	0	16
03:00	04:00	0	0	0	0	0	0	0	0	16
04:00	05:00	0	0	0	0	0	0	0	0	16
05:00	06:00	66	0	26	0	0	0	0	0	42
06:00	07:00	0	40	0	16	0	0	0	0	26
07:00	08:00	0	0	0	0	252	0	101	0	127
08:00	09:00	0	0	0	0	0	0	0	0	127
09:00	10:00	0	0	0	0	0	0	0	0	127
10:00	11:00	0	0	0	0	0	0	0	0	127
11:00	12:00	0	0	0	0	0	0	0	0	127
12:00	13:00	0	0	0	0	0	0	0	0	127
13:00	14:00	40	0	16	0	0	0	0	0	144
14:00	15:00	0	42	0	17	0	0	0	0	126
15:00	16:00	0	0	0	0	0	0	0	0	126
16:00	17:00	0	0	0	0	0	0	0	0	126
17:00	18:00	0	0	0	0	0	252	0	101	26
18:00	19:00	0	0	0	0	0	0	0	0	26
19:00	20:00	0	24	0	10	0	0	0	0	16
20:00	21:00	0	0	0	0	0	0	0	0	16
21:00	22:00	40	0	16	0	0	0	0	0	32
22:00	23:00	0	40	0	16	0	0	0	0	16
23:00	00:00	0	0	0	0	0	0	0	0	16
Total Vehicle Spaces Required				144						

Notes

Total workforce of each site

Key

Peak Accummulation