13 AIR QUALITY

13.1 Introduction

13.1.1 This section of the ES describes the existing environment in relation to air quality and assesses the potential impacts of the construction, operational and decommissioning phases of the proposed scheme on local air quality. Mitigation measures are detailed and a discussion of residual impacts presented.

13.2 Guidance and consultation

Legislation and policy

The Air Quality Strategy

13.2.1 Air pollution can have adverse effects on the health of humans and ecosystems. EU legislation forms the basis for UK air quality policy. The EU Air Quality Framework Directive 96/62/EC (European Parliament, 1996) on Ambient Air Quality Assessment and Management entered into force in September 1996. This was a framework for tackling air quality through setting European-wide air quality limit values in a series of daughter directives, prescribing how air quality should be assessed and managed by the Member States. Directive 96/62/EC and the first three daughter Objectives were combined to form the new EU Directive 2008/50/EC (European Parliament, 2008) on Ambient Air Quality and Cleaner Air for Europe, which came into force June 2008.

13.2.2 The 1995 Environment Act (HMSO, 1995) required the preparation of a national Air Quality Strategy (AQS) which set air quality standards and Objectives for specified pollutants. The Act also outlined measures to be taken by local planning authorities in relation to meeting these standards and Objectives (the Local Air Quality Management (LAQM) system).

13.2.3 The UK AQS (DoE, 1997) was originally adopted in 1997 and has been reviewed and updated in order to take account of the evolving EU Legislation, technical and policy developments and the latest information on health effects of air pollution. The strategy was revised and reissued in 2000 as the AQS for England, Scotland, Wales and Northern Ireland (DETR, 2000). This was subsequently amended in 2003 (DEFRA, 2003) and was last updated in July 2007 (DEFRA, 2007).

13.2.4 The standards and Objectives relevant to the LAQM framework have been prescribed through the Air Quality (England) Regulations (2000) (HMSO, 2000), and the Air Quality (England) (Amendment) Regulations 2002 (HMSO, 2002); the Air Quality Standards Regulations 2010 (HMSO, 2010) set out the combined Daughter Directive limit values and interim targets for Member State compliance.

13.2.5 The current air quality Standards and Objectives (for the purpose of LAQM) are outlined in **Table 13-1**. Pollutant standards relate to ambient pollutant concentrations in air, set on the basis of medical and scientific evidence of how each pollutant affects human health. Pollutant Objectives however, incorporate future dates by which each standard is to be achieved, taking into account economic considerations, practicability and technical feasibility.

13.2.6 Where an air quality Objective is unlikely to be met by the relevant deadline, local authorities must designate those areas as Air Quality Management Areas (AQMAs), and develop an Air Quality Action Plan (AQAP) to work towards meeting the Objectives and improve air quality locally.

13.2.7 Possible exceedences of air quality Objectives are usually assessed in relation to those locations where members of the public are likely to be regularly present and are likely to be exposed for a period of time appropriate to the averaging period of the Objective.

Table 13-1 Air Quality Strategy Objectives (England) for the purpose of Local Air Quality Management

Pollutant	Air Quality Objective		To be achieved by
	Concentration	Measured as*	
Benzene	5µg.m^{-3}	Annual mean	31/12/2010
1,3 Butadiene	2.25µg.m^{-3}	Running annual mean	31/12/2003
Carbon monoxide	10mg.m^{-3}	Maximum daily running 8-hour mean	31/12/2003
Lead	0.25µg.m^{-3}	Annual mean	31/12/2008
Nitrogen dioxide (NO_2)	200µg.m^{-3}	1 hour mean not to be exceeded more than 18 times per year	31/12/2005
	40µg.m^{-3}	Annual mean	31/12/2005
Particles (PM_{10})	50µg.m^{-3}	24-hour mean not to be exceeded more than 35 times per year	31/12/2004
	40µg.m^{-3}	Annual mean	31/12/2004
Particles ($PM_{2.5}$)	25µg.m^{-3}	Annual mean (target)	2020
	15% cut in annual mean (urban background exposure)		2010 - 2020
Sulphur Dioxide (SO_2)	350µg.m^{-3}	1-hour mean not to be exceeded more than 24 times a year	31/12/2004
	125µg.m^{-3}	24-hour mean not to be exceeded more than 3 times a year	31/12/2004
	266µg.m^{-3}	15-minute mean not to be exceeded more than 35 times a year	31/12/2005

Note:* how the Objectives are to be measured is set out in the UK Air Quality (England) Regulations (2000).

National Policy Statement for Ports

13.2.8 The NPS for Ports (Department for Transport, 2012) provides relevant information with regard to the assessment of impacts on local air quality as a result of port infrastructure. The NPS states that ports can contribute to local air pollution problems, since they bring together several sources of pollutants including HGV traffic, shipping emissions and cargoes such as cements and aggregates which can cause local dust pollution. As stated in Paragraph 5.7.5, where air quality impacts may arise from a proposed scheme, the NPS states that the ES should describe:

- "any significant air emissions, their mitigation and any residual effects, distinguishing between the construction and operation stages and taking account of any significant emissions from any road traffic generated by the project;

- the predicted absolute emission levels from the proposed project, after mitigation methods have been applied; and,
- existing air quality levels and the relative change in air quality from existing levels".

National Planning Policy Framework

13.2.9 The NPPF (Department for Communities and Local Government, 2012) published in March 2012, states in Paragraph 109 that:

> *"The planning system should contribute to and enhance the natural and local environment by:*
>
> *preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability…"*

13.2.10 The NPPF (Annex 2) defines 'Pollution' as:

> *"Anything that affects the quality of land, air, water or soils, which might lead to an adverse impact on human health, the natural environment or general amenity. Pollution can arise from a range of emissions, including smoke, fumes, gases, dust, steam, odour, noise and light".*

13.2.11 The effect of the proposed scheme on the achievement of such policies and plans for the management of local air quality are matters that may be a material consideration by planning authorities, when making decisions for individual planning applications. Paragraph 124 of the NPPF states that:

> *"Planning policies should sustain compliance with and contribute towards EU limit values or national Objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan."*

13.2.12 The different roles of a planning authority and a pollution control authority are addressed by the NPPF in paragraph 122:

> *"...local planning authorities should focus on whether the development itself is an acceptable use of the land, and the impact of the use, rather than the control of processes or emissions themselves where these are subject to approval under pollution control regimes. Local planning authorities should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities."*

National Planning Practice Guidance

13.2.13 The National Planning Practice Guidance (NPPG) (Department for Communities and Local Government, 2014) provides a summary of the air quality issues set out in the NPPF and notes in Paragraph 009 that the assessment should include the following information:

- The existing air quality in the study area (existing baseline).
- The future air quality without the development in place (future baseline).

- The future air quality with the development in place (with mitigation).

13.2.14 The guidance then advises that the application should proceed to decision with appropriate planning conditions or planning obligation, if the proposed development (including mitigation) would not lead to an unacceptable risk from air pollution, prevent sustained compliance with EU limit values or fail to comply with the requirements of the Habitats Regulations.

Local Planning Policy

Redcar and Cleveland Borough Council

13.2.15 A review of the 'Development Policies DPD Adoption' document (RCBC, 2007) has highlighted the following policy relevant to air quality.

Policy DP6 Pollution Control:

"Development that would give rise to increased levels of noise or vibration or which would add to air, land or water pollution, by itself or in accumulation with existing or other proposed uses, will only be permitted if it is acceptable in terms of:

- human health and safety;
- environment; and
- general amenity.

Where pollution is unavoidable, mitigation measures to reduce pollution levels will be required in order to meet acceptable limits."

Stockton-on-Tees Borough Council

13.2.16 A review of the 'Core Strategy Development Plan Document' (SBC, 2010) has highlighted the following policy relevant to air quality. Only the relevant sections of the policy for air quality are detailed below.

Core Strategy Policy 10 (CS10) – Environmental Protection and Enhancement

"1. In taking forward development in the plan area, particularly along the river corridor, in the North Tees Pools and Seal Sands areas, proposals will need to demonstrate that there will be no adverse impact on the integrity of the Teesmouth and Cleveland Coast SPA and Ramsar site, or other European sites, either alone or in combination with other plans, programmes and projects. Any proposed mitigation measures must meet the requirements of the Habitats Regulations.

2. Development throughout the Borough and particularly in the Billingham, Saltholme and Seal Sands area, will be integrated with the protection and enhancement of biodiversity, geodiversity and landscape.

4. The integrity of designated sites will be protected and enhanced, and the biodiversity and geodiversity of sites of local interest improved in accordance with Planning Policy Statement 9: Biodiversity and Geological Conservation, ODPM Circular 06/2005 (also known as DEFRA Circular 01/2005) and the Habitats Regulations."

Consultation

13.2.17 A summary of the comments included in the PINS Scoping Opinion along with responses received to consultation under Section 42 of the Planning Act 2008 relevant to air quality are presented in **Table 13-2**.

Table 13-2 Summary of comments received from PINS and in response to Section 42 consultation with regard to air quality

Consultation Comment	Response / Section of the ES in which the comment has been addressed
Scoping Opinion (January 2014)	
Secretary of State	
The Secretary of State does not agree to scope out construction air quality impacts for Option 1 and 2 for ecological receptors as the presence of ecological receptors on the site has yet to be determined by Phase 1 habitat survey.	Not applicable (Options 1 and 2 are no longer proposed; see **Section 3.1**).
The Secretary of State agrees that air quality impacts on occupants of residential properties can be scoped out for Option 1 and 2 given the distance to the nearest receptor. However, air quality impacts associated with construction on other human receptors including workers on the site and the surrounding area and users of the public rights of way cannot be scoped out.	Occupational exposure to airborne contaminants is covered by separate health and safety legislation and therefore impacts on workers within the site have not been considered. Impacts on identified receptors, including public rights of way, within the assessment criteria distance specified by the IAQM are considered in **Section 13.5**.
Potential air quality impacts from marine vessels on ecological receptors cannot be scoped out of the EIA.	**Section 13.6**
Air quality assessments should take account of anticipated traffic movements set out in the Transport Assessment.	**Sections 13.3, 13.5 and 13.6 and Appendix 12.1.**
The Secretary of State noted that no primary data collection is proposed and existing data sources will be utilised to provide a description of the baseline. The Secretary of State advises that the approach (i.e. no primary data collection and utilisation of existing data) is agreed with the EA and the EHO.	**Section 13.3**
Emissions from construction and operational plant and machinery associated with the development should be included in the assessment.	**Sections 13.5 and 13.6**
A fugitive dust assessment should be carried out for all proposed options as ship loading and storage is likely to include dust generating activities, aside to those produced at the MHF.	**Section 13.5**
The assessment should consider effects on national and European designated sites due to an increase in airborne pollution including fugitive dust.	An assessment has been undertaken in accordance with relevant guidance and screening criteria available. **Sections 13.3, 13.4, 13.5 and 13.6.**
Air quality and dust levels should be considered not only on site but also off site, including along access roads, footpaths and other public rights of way.	**Sections 13.5 and 13.6**
Only deliverable mitigation measures should be taken into account in the assessment. It may be useful to provide a copy of the draft CEMP with the DCO application.	**Sections 13.5 and 13.6, Appendix 6.4 contains the outline CEMP**

Consultation Comment	Response / Section of the ES in which the comment has been addressed
Natural England	
Air quality in the UK has improved, however air pollution remains an issue (97% of sensitive habitat in England predicted to exceed critical loads for ecosystem protection from atmospheric nitrogen deposition). The ES should take account of the risks of air pollution and how these can be managed or reduced.	**Sections 13.5, 13.6 and 13.7**
Public Health England	
Significant impacts are unlikely to arise from installations which employ Best Available Techniques (BAT) and which meet regulatory requirements concerning emissions limits and design parameters.	Noted
When considering a baseline and in the assessment of future monitoring of impacts, these should include: Appropriate screening assessments and detailed dispersion modelling where this is screened as necessary; All pollutants which may be emitted by the installation in combination with all pollutants arising from associated development and transport; Assessment of construction, operation and decommissioning; Consideration of typical operational emissions from start-up, shut-down, abnormal operation and accidents when assessing potential impacts and include an assessment of worst case impacts; Assessment of fugitive emissions; Appropriate estimates of background levels; Cumulative and incremental impacts; Consideration of local authority, Environment Agency, Defra national network and any other local site specific sources of monitoring data; Comparison of predicted environmental concentrations to applicable standard or guideline value; Impacts on residential areas and sensitive receptors in the area which may be affected by emissions.	**Sections 13.4, 13.5 and 13.6**. Cumulative impacts are considered in the CIA.
When considering a baseline (of existing air quality), and in the assessment and future monitoring of impacts, these should: Include consideration of impacts on existing areas of poor air quality; and. Include modelling using appropriate meteorological data; Include modelling taking into account local topography.	**Sections 13.4, 13.5 and 13.6**
Section 42 consultation responses	
Redcar and Cleveland Borough Council	
The proposed scope of assessment and method has been agreed. The ES should assess the construction phase, operational phase and shipping vessel emissions. The response specified that the RCBC officer was satisfied with the proposed air quality assessment and would not recommend any additional information to that supplied in the PER.	Noted; **Sections 13.5 and 13.6** present the impact assessment

13.2.18 Targeted consultation was undertaken with RCBC during October and November 2014 to agree the methodology for the air quality assessment[5].

13.3 Methodology

Study area

Construction phase fugitive dust and particulate matter

13.3.1 For the assessment of construction phase fugitive dust and particulate matter, the study area was defined in accordance with guidance available from the IAQM (IAQM, 2014) as the area within 350m of the boundary of the proposed scheme footprint and 50m of the routes to be used by construction vehicles on the public highway, up to 500m from the site entrance.

13.3.2 The study area for the assessment of fugitive dust and particulate matter from the construction phase works is shown in **Figure 13-1**.

Construction and operational phase road traffic emissions assessment

13.3.3 A cumulative road traffic emissions assessment was undertaken to consider vehicle movements generated by the construction and operation of the whole YPP, including the Mine, MTS intermediate shaft sites, MHF and MTS Portal, and Harbour facilities. The Mine, MTS and MHF are subject to separate planning applications. Traffic movements predicted to be generated by the construction and operation of the Harbour facilities, and the cumulative scheme, are detailed later in this methodology section.

13.3.4 The road traffic emissions assessment identified receptor locations in the vicinity of the harbour facilities which potentially could be affected by associated traffic movements.

13.3.5 The study area for the road traffic emissions assessment, showing the roads considered in the assessment, is detailed in **Figure 13-2**.

Construction and operational phase marine vessel emissions assessment

13.3.6 For the assessment of marine vessel emissions the study area was defined based on those sensitive receptor locations that may be impacted by emissions resulting from vessel movements associated with the harbour facilities development.

Construction and operational phase on-site emissions

13.3.7 The study area in this case was defined based on those receptors that may be impacted by emissions resulting from construction and operational phase on-site emissions.

[5] Consultation was undertaken with Mr. Michael Gent of RCBC via email on 30th October 2014. A response was received, confirming acceptance of the proposed methodology, on 6th November 2014.

Guidance

13.3.8 The following guidance was used in the preparation of the air quality chapter:

- Department for Environment, Food and Rural Affairs (2009) *Air Quality Management Technical Guidance 2009.* LAQM.TG(09) (Defra, 2009).
- Environmental Protection UK (EPUK) (2010) Development Control: Planning for Air Quality (2010 Update). (EPUK, 2010).
- Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2014).
- Institute of Air Quality Management (2009) Position on the Description of Air Quality Impacts and their Significance. (IAQM, 2009).
- Highways Agency (2007) Design Manual For Roads and Bridges (DMRB), Volume 11, Section 3, Part 1, Advice Note HA207/07 Air Quality (Highways Agency, 2007).

Methodology for assessment of potential impacts

Construction phase fugitive dust and particulate matter

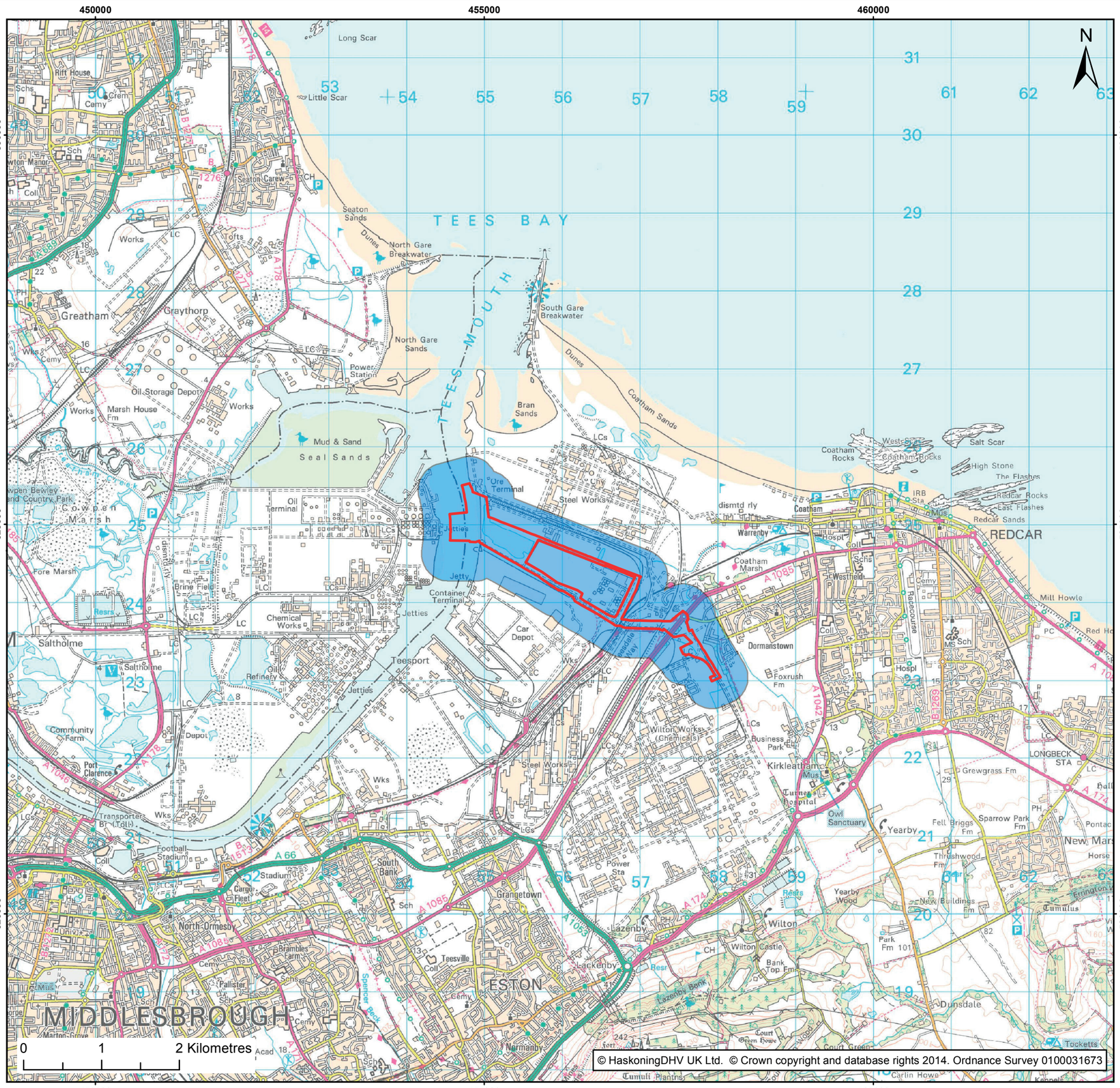
13.3.9 An assessment of potential construction phase fugitive dust and particulate matter emissions was undertaken in accordance with the methodology provided by the IAQM (IAQM, 2014). Full details of the assessment methodology are provided in **Appendix 13.1, Section 1**.

13.3.10 Fugitive emissions of airborne particulate matter are produced through the action of abrasive forces on materials and resuspension of settled materials, and, therefore, a wide range of site preparation and construction activities have the potential to generate this type of emission, including:

- demolition works;
- earthworks, including the handling, working and storage of materials;
- construction; and,
- trackout (the transfer of dust-making materials from the site onto the local road network via vehicles egressing the construction site).

13.3.11 Particulate matter in air comprises particles of a variety of sizes, and the concept of a 'size fraction' is used to describe particulates with sizes in a defined range. In this assessment the term 'dust' is used to mean particulate matter in the size fraction 1µm - 75µm in diameter, as defined in BS 6069:1994 (British Standards Institute, 1994). Dust impacts are considered in terms of the change in airborne concentration and the change in the rate of deposition of dust onto surfaces.

13.3.12 The size fraction 'PM_{10}' is composed of material with a mean aerodynamic diameter of less than 10µm and therefore is a constituent of the total dust fraction. Both annual and daily average air quality Objectives for PM_{10} have been set for the protection of human health, and the term PM_{10} is used in this assessment when referring to the potential impact of emissions of particulate matter from site preparation and construction activities (including plant and vehicle exhaust releases) on human health receptors. The short term, 24 hour mean objective for airborne concentrations of PM_{10} is the appropriate air quality benchmark for assessing the potential impact on health of short term fugitive emissions from construction sites such as this.



Legend:

- DCO Order Limits
- Study Area

DCO Order Limits as of 24/02/15

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

Title: Environmental Statement: Air Quality Assessment: Study Area for the Assessment of Fugitive Dust and Particulate Matter from Harbour Facilities Construction Phase Works

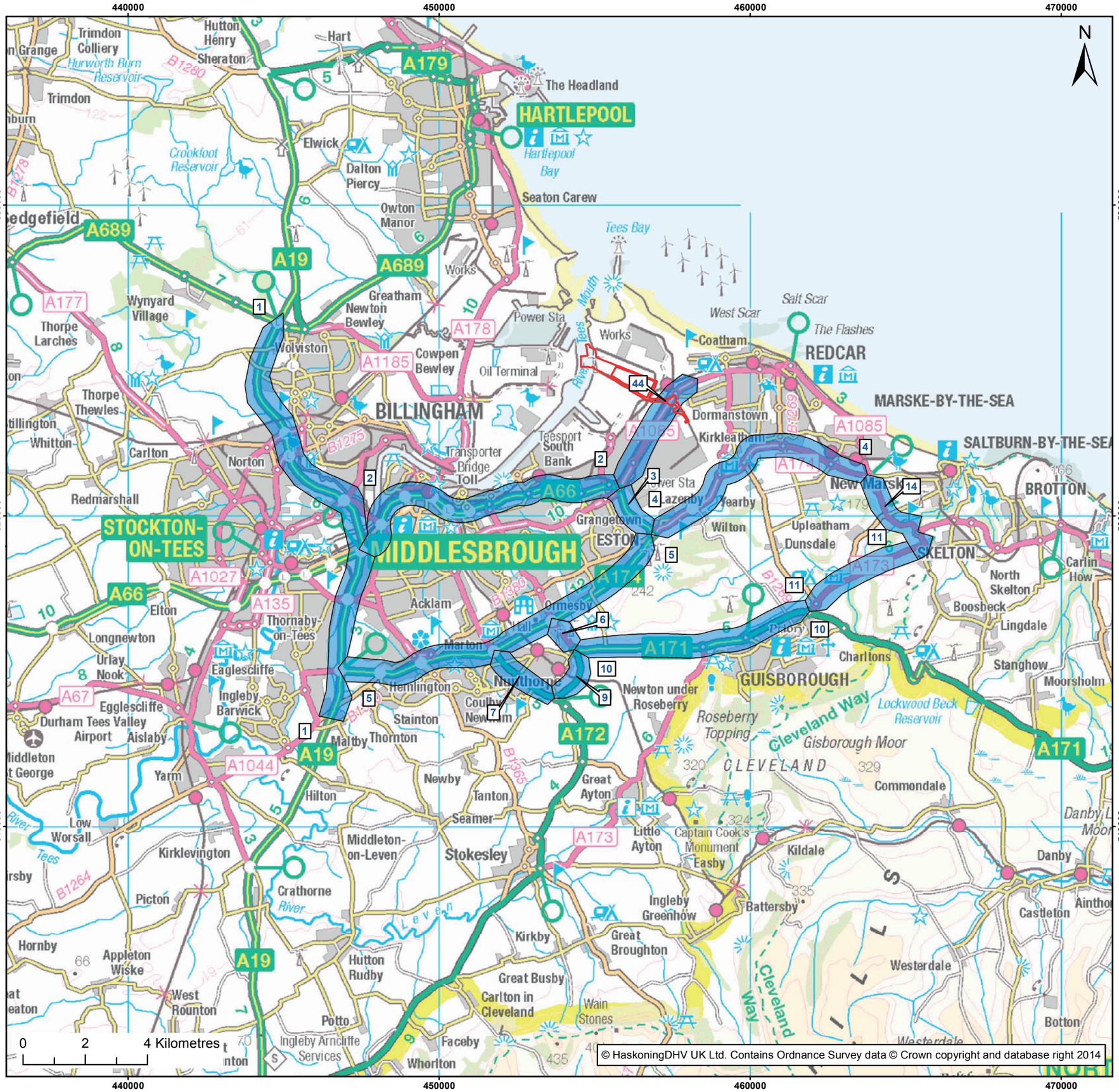
Part:	Figure:	Drawing No:
HF	13.1	9Y0989-HF-13-001

Rev:	Date:	Drawn:	Checked:	Size:	Scale:
1	06/03/2015	LB	SR	A3	1:50,000
0	09/12/2014	LB	SR	A3	1:50,000

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:

- DCO Order Limits
- Study Area
- 1 Road Links

DCO Order Limits as of 24/02/15

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

Title:

Environmental Statement:
Air Quality Assessment: Study Area for the Road Traffic Emissions Assessment

Part:	Figure:	Drawing No:
HF	13.2	9Y0989-HF-13-002

Rev:	Date:	Drawn:	Checked:	Size:	Scale:
1	06/03/2015	LB	SR	A3	1:125,000
0	09/12/2014	LB	SR	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

13.3.13 At present, there are no statutory UK or EU numerical standards relating to the assessment of nuisance dust. The emphasis for the management of dust should therefore be on control at source and the adoption of good working practices on site. This approach assumes that mitigation measures, beyond those inherent in the proposed design, that are identified as being necessary in the impact assessment, would be applied during works (possibly secured by planning conditions), to ensure potentially significant adverse effects do not occur.

13.3.14 A qualitative assessment was undertaken to assess the significance of any effects on identified sensitive receptors. A summary of the assessment process is provided below:

- Screen the need for a more detailed assessment.
- Separately for demolition, earthworks, construction and trackout:
  a. determine potential dust emission magnitude;
  b. determine sensitivity of the area; and
  c. establish the risk of dust impacts.
- Determine site specific mitigation.
- Examine the residual effects to determine whether or not additional mitigation is required.

Construction phase on-site non-road mobile machinery and plant emissions

13.3.15 At this stage specific details are not available regarding the exact specification of the non-road mobile machinery[6] (NRMM) and on-site plant required during the construction of the Harbour facilities. Hence a qualitative assessment was undertaken to consider potential emissions from on-site NRMM and plant.

Construction and operational phase road traffic emissions

13.3.16 Air pollution in urban areas is generally dominated by emissions from road vehicles. The quantities of each pollutant emitted are dependent on the type and quantity of fuel used, engine type and size, vehicle speeds and abatement equipment fitted. The main pollutants of concern from road traffic are oxides of nitrogen (NOx/NO_2) and fine particulate matter (PM_{10} and $PM_{2.5}$) since these pollutants are most likely to approach their respective Air Quality Strategy Objectives in proximity to major trunk roads. Traffic flows associated with the construction and operational phases of the Harbour facilities were provided and screened using assessment criteria provided in the DMRB (Highways Agency, 2007) and by EPUK (EPUK, 2010) to determine whether a detailed assessment was required.

13.3.17 In addition, a cumulative road traffic emissions assessment was undertaken to consider vehicle movements generated by the construction and operation of the mine, MTS, MHF and harbour facilities of the YPP. Full details of the assessment methodology for the consideration of cumulative YPP road traffic emissions are provided in **Appendix 13.1, Section 2**.

[6] Non-Road Mobile Machinery is defined as any mobile machinery, transportable industrial equipment or vehicle fitted with an internal combustion engine not intended for passenger or goods transport by road. Explanatory Memorandum to the UK Non Road Mobile Machinery (Emissions of Gaseous & Particulate Pollutants) (Amendment) Regulations (2006).

Air dispersion model

13.3.18 The Atmospheric Dispersion Modelling System for Roads (ADMS-Roads) was used to assess the local air quality impact of the YPP-generated vehicle exhaust emissions, on concentrations of NO_2, PM_{10} and $PM_{2.5}$ at identified receptors located adjacent to the assessed road network.

13.3.19 The ADMS-Roads model is a comprehensive tool for investigating air pollution in relation to road networks. The model uses algorithms for the height-dependence of wind speed, turbulence and stability to produce improved predictions. It can predict long-term and short-term concentrations, as well as calculations of percentile concentrations.

13.3.20 The ADMS-Roads model has been comprehensively validated in a large number of studies by the software manufacturer CERC (Cambridge Environmental Research Consultants, 2013). This includes comparisons with data from the UK's Automatic Urban Network (AUN) and specific validation exercises using standard field, laboratory and numerical data sets. CERC is also involved in European programmes on model harmonisation, and their models have compared favourably against other EU and US EPA systems. Further information in relation to this is available from the CERC web site at www.cerc.co.uk.

Traffic data

13.3.21 The traffic data used in the road traffic emissions assessment were provided by Royal HaskoningDHV, the transportation consultants for the project. The data were provided as 24 hour Annual Average Daily Traffic (AADT) flows and HGV proportion for use in the air quality assessment. The traffic data were provided as YPP cumulative development traffic flows and harbour facility-generated traffic flows for comparison purposes. Full details of the cumulative development traffic data used in the assessment are provided in **Appendix 13.1**. The traffic links considered in the assessment are detailed in **Figure 13-2**.

13.3.22 As set out above, the potential impact of the Harbour facilities construction and operational phase traffic on local air quality was screened using the methodology detailed in the DMRB (Highways Agency, 2007) and EPUK guidance (EPUK, 2010). These documents set out criteria for defining increases in traffic flows and HGV movements above which a detailed assessment of air quality impacts may be required. If increases in traffic flows and HGV movements are below the criteria, there are unlikely to be any significant air quality impacts as a result of the development and detailed assessment of air quality is not necessary. The screening criteria are detailed in **Table 13-4**.

13.3.23 A cumulative road traffic emissions assessment was undertaken for the whole YPP. Predicted NO_2, PM_{10} and $PM_{2.5}$ concentrations were compared to the relevant air quality Objectives as detailed in **Table 13-1**. Changes between without scheme and with scheme scenarios were compared to significance criteria provided by EPUK in the document 'Development Control: Planning for Air Quality (2010 Update) (EPUK, 2010)'.

Assessment scenarios

13.3.24 The following road traffic emissions assessment scenarios were considered:

- 2013 Baseline;
- 2015 Without Construction Traffic;
- 2015 With Construction Traffic;
- 2020 Without Operational Traffic;
- 2020 With Operational Traffic;
- 2030 Without Operational Traffic; and,
- 2030 With Operational Traffic.

Meteorological data

13.3.25 Hourly sequential meteorological data for 2013 from the Teesside recording station were utilised in the road traffic emissions assessment. This is the closest and most representative recording station to the study area.

Background pollutant concentrations

13.3.26 The air quality assessment requires the derivation of background pollutant concentration data that are factored to the year of assessment, to which contributions from the assessed roads are added.

13.3.27 Background pollutant concentrations used in this assessment were sourced from background pollutant maps (Defra, 2014) provided by Defra for a 1km x 1km resolution of the UK. The relevant background pollutant concentrations were obtained for the grid squares covering the study area. Due to current uncertainties regarding the rate at which background pollutant concentrations are decreasing, the assessment utilised 2011 background pollutant concentrations for the 2013 and 2015 assessment scenarios. Background pollutant concentrations are still expected to decrease in the future. For the 2020 and 2030 scenarios this approach was considered to be overly conservative as it is anticipated that by these dates background concentrations will have reduced from 2011 values. As such, 2020 and 2030 scenarios assume projected background concentrations for these years, as provided by Defra.

13.3.28 Full details of the background pollutant concentrations used in the assessment are provided in **Appendix 13.1, Section 2**.

NOx to NO_2 conversion

13.3.29 Oxides of nitrogen (NOx) concentrations were predicted using the ADMS-Roads model. The modelled road contribution of NOx at the identified receptor locations was then converted to NO_2 using the NOx to NO_2 calculator (v4.1, 2014) (Defra, 2014), in accordance with Defra guidance.

Emission factors

13.3.30 Emission factors from the Emissions Factor Toolkit (version 6.0.2) (Defra, 2014), released in November 2014, were utilised in the assessment.

Project specific nitrogen dioxide diffusion tube monitoring and model adjustment

13.3.31 Model verification was undertaken in accordance with the method provided by Defra in LAQM.TG(09) (Defra, 2009). The verification of the ADMS model output was achieved by modelling concentrations at monitoring locations within the study area and comparing the modelled concentration with the measured concentration.

13.3.32 Baseline NO_2 diffusion tube surveys were conducted in 2012, 2013 and 2014 to establish existing air quality conditions along transport routes affected by the YPP. The locations of the diffusion tubes situated in the vicinity of the study area are detailed in **Figure 13-3**. Details of the diffusion tube survey, annualisation of data and the verification process are provided in **Appendix 13.1, Section 2**.

Predicting exceedence of short term Objectives

13.3.33 The guidance document LAQM TG(09) sets out the method by which the number of days on which the PM_{10} 24 hour objective is exceeded can be obtained based on a relationship with the predicted PM_{10} annual mean concentration. Full details of the calculation undertaken are provided in **Appendix 13.1, Section 2**.

13.3.34 Research projects completed on behalf of Defra and the Devolved Administrations (Laxen and Marner, 2003; AEAT, 2008) concluded that the hourly mean nitrogen dioxide objective is unlikely to be exceeded if annual mean concentrations are predicted to be less than 60µg.m^{-3}. This value is therefore used as an annual mean equivalent threshold to evaluate likely exceedence of the hourly mean NO_2 objective.

Construction and operational phase marine vessel emissions

13.3.35 Marine vessel movements are associated with both the construction and operational phases of development. A qualitative assessment was therefore undertaken to consider the potential impacts of construction phase dredging emissions associated with the operation of the Harbour facilities.

13.3.36 A qualitative assessment was undertaken to consider potential impacts at the nearest human receptors and designated ecological sites. Details of the methodology of the assessment are provided in **Appendix 13**.

Operational phase fugitive dust emissions

13.3.37 The potential for fugitive dust emissions to be generated during the operational phase of the Harbour facilities was undertaken qualitatively, with consideration given to the operational processes involved, including the nature of the product, storage procedures and loading facilities.

Legend:

- DCO Order Limits
- Human Receptor Location

DCO Order Limits as of 24/02/15

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

Title:

Environmental Statement:
Air Quality Assessment: Receptor Locations for the Road Traffic Emissions Assessment

Part:	Figure:	Drawing No:
HF	13.5	9Y0989-HF-13-004

Rev:	Date:	Drawn:	Checked:	Size:	Scale:
1	06/03/2015	LB	SR	A3	1:85,000
0	09/12/2014	LB	SR	A3	1:85,000

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

BLANK PAGE

Assessment criteria

Construction phase fugitive dust and fine particulate matter

13.3.38 The sensitivity of the area surrounding the construction works is defined in the context of the risk of the proposed site activities (or a particular section of the site and/or phase of the works) giving rise to dust effects, in order to determine the significance of the effect associated with each type of activity (demolition, earthworks, construction and trackout), as detailed in **Table 13-3**.

13.3.39 For amenity effects (including that of dust), the aim is to bring forward a scheme, including mitigation measures if necessary, that does not introduce the potential for additional complaints to be generated as a result of the proposed development.

13.3.40 Experience in the UK is that good site practice is capable of mitigating the impact of fugitive emissions of particulate matter effectively. In all but the most exceptional circumstances, effects at receptors can be controlled to ensure impacts are of negligible or of slight adverse significance at worst. Conventional good practice mitigation is included within the design of the project and, therefore, the assessment undertaken includes the effective implementation of these mitigation measures.

Table 13-3 Effect descriptors for each activity with mitigation, at individual receptors

Sensitivity of Surrounding Area	Risk of Site Giving Rise to Dust Effects		
	High	Medium	Low
High	Slight Adverse	Slight Adverse	Negligible
Medium	Slight Adverse	Negligible	Negligible
Low	Negligible	Negligible	Negligible

Construction and operational phase road traffic emissions

13.3.41 The DMRB and EPUK screening criteria (used to determine the potential impact of the construction phase traffic on local air quality) are detailed in **Table 13-4**.

Table 13-4 DMRB and EPUK road traffic screening criteria

Guidance Document	Criteria	
DMRB	Road Traffic	Increase of 1,000 AADT or more
	HGVs	An increase in HGV movements of more than 200 per day
EPUK	Road Traffic	A change in annual average daily traffic (AADT) of more than 10%, on a road with more than 10,000 AADT (5,000 if 'narrow and congested')
	HGVs	An increase in HGV movements of more than 200 per day

13.3.42 The cumulative YPP road traffic emissions assessment used a two-step procedure to assess the significance of effects on local air quality sensitive receptors. This two-step procedure involved:

- First the effect of the various impacts was assessed, with standard descriptors applied to define the effect on individual receptors.
- Then overall effects were considered by applying professional judgement.

13.3.43 The IAQM has published recommendations for describing the magnitude of impacts at individual receptors and assigning a significance to such impacts (IAQM, 2009). This approach was used in this assessment, as set out in **Table 13-5**.

13.3.44 Guidance is provided by EPUK on criteria for determining the significance of a development's impact on local air quality (EPUK, 2010). **Table 13-5** details the magnitude of change in air pollutant concentration descriptors and **Table 13-6** details the significance descriptors that take account of the magnitude of changes (both positive and negative) and the concentration in relation to the air quality Objectives (specified in **Table 13-1**).

13.3.45 The human-health based receptor locations were selected to represent locations where people are likely to be present. The air quality Objectives are based on human health standards of air pollutant exposure, set at concentrations that provide protection to all members of society, including more vulnerable groups such as the very young, elderly or those with pre-existing respiratory conditions.

Table 13-5 Magnitude of changes in pollutant concentrations of NO_2, PM_{10} and $PM_{2.5}$

Magnitude of Change	Annual Mean Concentrations ($\mu g.m^{-3}$)			Exceedences of the 24-hr mean objective for PM_{10} (days)
	NO_2	PM_{10}	$PM_{2.5}$	
Large	> 4	> 4	> 2.5	> 4
Medium	2 – 4	2 – 4	1.25 – 2.5	2 to 4
Small	0.4 – 2	0.4 – 2	0.25 – 1.25	1 to 2
Imperceptible	< 0.4	< 0.4	< 0.25	< 1

13.3.46 For receptors that are predicted to experience a 'perceptible' change (as defined in EPUK guidance), the effect of the change on local air quality and the risk of exceeding the air quality objective value is summarised in **Table 13-6** for annual mean concentrations of NO_2 and PM_{10}.

Table 13-6 Air quality impact descriptors for changes to annual mean NO_2, PM_{10} and $PM_{2.5}$ at a receptor

Absolute Concentration in Relation to Objective/Limit Value	Change in Concentration		
	Small	Medium	Large
Increase with Scheme			
Above Objective/Limit Value With Scheme	Slight Adverse	Moderate Adverse	Substantial Adverse
Just Below Objective/Limit Value With Scheme (90 – 100%)	Slight Adverse	Moderate Adverse	Moderate Adverse

Absolute Concentration in Relation to Objective/Limit Value	Change in Concentration		
	Small	Medium	Large
Below Objective/Limit Value With Scheme (90 – 75%)	Negligible	Slight Adverse	Slight Adverse
Well Below Objective/Limit Value With Scheme (<75%)	Negligible	Negligible	Slight Adverse
Decrease with Scheme			
Above Objective/Limit Value Without Scheme	Slight Beneficial	Moderate Beneficial	Substantial Beneficial
Just Below Objective/Limit Value Without Scheme (90 – 100%)	Slight Beneficial	Moderate Beneficial	Moderate Beneficial
Below Objective/Limit Value Without Scheme (90 – 75%)	Negligible	Slight Beneficial	Slight Beneficial
Well Below Objective/Limit Value Without Scheme (<75%)	Negligible	Negligible	Slight Beneficial

Note: Well below Objective = < 75% of the Objective level. An 'imperceptible' change would be described as 'negligible'.

Baseline environment

13.3.47 The proposed scheme is not located within a designated Air Quality Management Area (AQMA) and RCBC has not declared any AQMAs within their administrative area.

Air quality monitoring

Redcar and Cleveland Borough Council air quality monitoring

13.3.48 The RCBC 2014 Air Quality Progress Report (RCBC, 2014) was reviewed to establish the current monitoring undertaken within the RCBC administrative area. RCBC does not undertake any monitoring using diffusion tubes within its area due to low traffic densities in areas of relevant public exposure.

13.3.49 RCBC operates one automatic monitoring station within its area which was relocated to Dormanstown in 2011. This monitoring site has been operational since January 2012. Prior to 2012 the monitor was located at Corporation Road. The Dormanstown monitoring site is classified as a suburban industrial location and is located approximately 3.7km to the east of the proposed scheme footprint. Monitoring data for 2008 to 2013 are detailed in **Table 13-7**.

Table 13-7 Monitored NO_2 and PM_{10} Concentrations

Site ID	Pollutant	Annual Mean Concentration ($\mu g.m^{-3}$)					
		2008*	2009*	2010*	2011	2012	2013
Dormanstown	NO_2	15.1	18.4	17.4	16.2	15.7	13.4
	PM_{10}	18.4	18.5	18.1	20.1	17.3	18.6

** Monitor was located at Corporation Road until 2011.*

13.3.50 The monitored pollutant concentrations detailed in **Table 13-7** are 'well below' the annual mean air quality objective of 40µg.m^{-3} for both NO_2 and PM_{10}.

Project specific air quality monitoring

Nitrogen dioxide diffusion tube monitoring

13.3.51 All NO2 concentrations monitored during the 2012, 2013 and 2014 diffusion tube monitoring surveys were 'well below' the annual mean air quality Objectives. Two of the diffusion tube monitoring locations were identified as suitable for use in model verification. Full details of the model verification procedure, including results of the diffusion tube monitoring, are provided in **Appendix 13.1, Section 2**.

Background pollutant concentrations

13.3.52 Background concentrations of NO_2, PM_{10} and $PM_{2.5}$ were obtained from the air pollutant concentration maps provided by Defra for the grid squares covering the study area. Full details of the background pollutant concentrations, at identified road traffic emissions receptors, used in the assessment are provided in **Appendix 13.1, Section 2**. **Table 13-8** summarises the background pollutant concentration ranges for each assessment year and also includes the grid squares covering the site.

Table 13-8 Annual mean background pollutant concentration ranges for each assessment year

Assessment Scenario	Background Pollutant Concentration Range		
	NO_2 (µg.m^{-3})	PM_{10} (µg.m^{-3})	$PM_{2.5}$ (µg.m^{-3})
2013 Baseline	9.91 – 26.61	13.97 – 17.27	9.04 – 11.73
2015 Construction	9.91 – 26.61	13.97 – 17.27	9.04 – 11.73
2020 Operation	7.28 – 19.93	12.55 – 19.71	8.20 – 12.96
2030 Operation	6.77 – 19.98	12.26 – 19.76	8.07 – 12.94

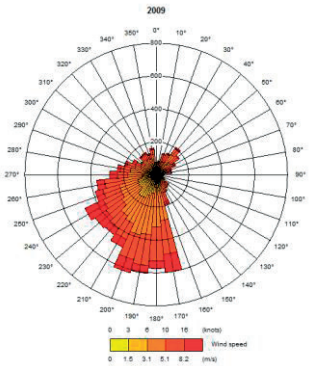
13.3.53 The annual mean background NO_2 and PM_{10} concentrations shown in **Table 13-8** are 'well below' their respective air quality Objectives.

Baseline meteorological conditions

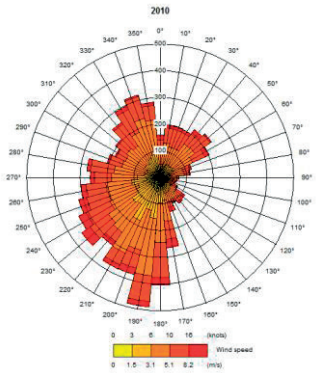
13.3.54 Meteorological data from the Teesside recording station was used in the assessment for the years 2009 to 2013. Wind roses for the years of meteorological data used in the assessment are shown in **Figure 13-4**.

Figure 13-4 Wind roses for Teesside recording station

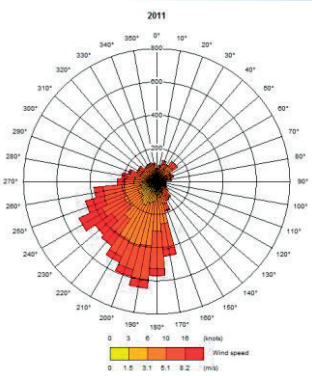
2009



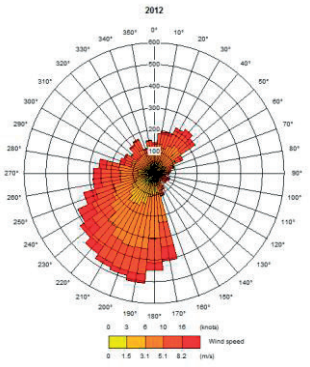
2010



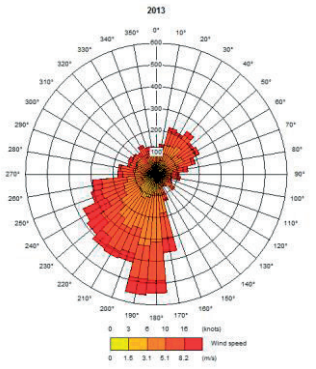
2011



2012



2013



13.3.55 The wind roses show that the most frequently occurring wind direction is from the south, south-west and west; however, the wind can reasonably be expected to blow from any direction over a short-term period during the year. If emissions are generated onsite then it is reasonable to assume that they could be transported in any direction over the short-term, depending upon the wind conditions at the time the emission occurs. Long-term average effects are more likely to be experienced down-wind of the prevailing conditions, i.e. to the north, north-east and east of the site.

Identification of receptor locations

Construction phase

13.3.56 Locations potentially sensitive to construction dust emissions were identified with reference to guidance provided by the IAQM (IAQM, 2014). The study area for the construction phase dust assessment is detailed in **Appendix 13.1, Section 1** and shown on **Figure 13-1**.

Road traffic emissions assessment

13.3.57 Impacts from road traffic emissions were quantified at a number of human receptors located along roads anticipated to be affected by YPP-related vehicles.

13.3.58 No designated ecological sites are located within 200m of the road links within the Harbour facilities study area. Therefore, in accordance with DMRB guidance (Highways Agency, 2007), impacts from road traffic on ecological receptors were not considered further in this assessment.

13.3.59 Full details of the receptors considered in the road traffic emissions assessment are provided in **Appendix 13.1, Section 2**. The receptor locations are also shown on **Figure 13-5**.

Assessment of potential impacts during construction

Construction phase fugitive dust and particulate matter assessment

13.3.60 Full details of the assessment of construction phase dust and particulate matter emissions are provided in **Appendix 13.1**. A summary of the construction phase dust and particulate matter assessment is provided herein.

13.3.61 The meteorological data indicate that short-term dispersion can occur in any direction and, therefore, the approach to the assessment assumed that mitigation would be available to be applied as required for the conditions experienced at the time of the works.

Mitigation measures for the various stages of the construction process are outlined in this section. These mitigation measures are an inherent part of the construction process, and the assessment therefore assumes that these would be implemented during on site works.

The dust emission magnitude of the site was determined based on the scale of the proposed works. A summary of the dust emission magnitudes for the site is provided in **Table 13-9**.

Table 13-9 Dust emission magnitude for the site

Activity	Dust Emission Magnitude
Demolition	Medium
Earthworks	Large
Construction	Large
Trackout	Large

13.3.62 The sensitivity of nearby receptors to dust soiling and human health impacts associated with fugitive dust and fine particulate matter from the Harbour facilities site was defined for each construction activity. Sensitivity was determined based on the proximity of the receptors to the works and background PM_{10} concentrations. A summary of the sensitivity of receptors is provided in **Table 13-10**.

Table 13-10 Sensitivity of the area to dust soiling and human health impacts

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	Low
Human Health	High	High	High	Low

Legend:

- DCO Order Limits
- Human Receptor Location

DCO Order Limits as of 24/02/15

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

Title:

Environmental Statement:
Air Quality Assessment: Receptor Locations for the Road Traffic Emissions Assessment

Part:	Figure:	Drawing No:
HF	13.5	9Y0989-HF-13-004

Rev:	Date:	Drawn:	Checked:	Size:	Scale:
1	06/03/2015	LB	SR	A3	1:85,000
0	09/12/2014	LB	SR	A3	1:85,000

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

BLANK PAGE

The significance of impacts with mitigation applied was determined by combining the dust emission magnitude with the sensitivity of the area to determine the risk, as shown in **Table 13-11**.

Table 13-11 Summary dust risk table to define site-specific mitigation

Potential Impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium Risk	High Risk	High Risk	Low Risk
Human Health	Medium Risk	High Risk	High Risk	Low Risk

Construction phase fugitive dust and particulate matter – assessment summary

13.3.63 The significance of effects arising from construction activities on nearby receptors for dust soiling and human health, with the implementation of mitigation, were determined and are summarised in **Table 13-12**.

Table 13-12 Summary of construction phase dust impacts at the harbour facilities site, with mitigation

Potential Impact	Activity			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Slight Adverse	Slight Adverse	Slight Adverse	Negligible
Human Health	Negligible	Negligible	Negligible	Negligible
Overall Effect	**Negligible – Slight Adverse**			

Construction phase fugitive dust and particulate matter - mitigation

13.3.64 A range of embedded mitigation measures would be employed in the construction phase; which is conventional good practice in large construction sites and minerals facilities across the UK. The mitigation measures would be incorporated into the contractual specifications and be mandatory working practice at the site during the construction phase.

13.3.65 The proposed mitigation measures, along with a detailed overview of the dust management at the site, are set out within the outlined Construction Environmental Management Plan (CEMP) included in **Appendix 6.4**. The CEMP provides an overview of potential dust emission sources, defines the activities requiring control, gives measures that should be employed to reduce emissions and also identifies where responsibility needs to be assigned for specific actions. The plan provides site management and delegated personnel with appropriate procedures for monitoring and recording dust conditions at the site and the actions that should be taken if and when significant levels of dust are noted beyond the construction site boundary.

13.3.66 Measures to mitigate construction phase dust emissions are included within the project design. The measures to be employed for construction phase activities, including preparation and groundworks, would include, but not be limited to, the following measures:

Communication

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager. Also display the head or regional office contact information.

Dust management

- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority.
- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.
- Liaise with other high risk construction sites within 500m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.
- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to note any dust deposition, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of site boundary, with cleaning to be provided if necessary.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is practicable.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Consider enclosure of site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Take measures to control site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible.
- Cover, seed or fence stockpiles to prevent wind whipping.
- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
- Implement a Travel Plan that supports and encourages sustainable travel for contractor operatives and staff (public transport, cycling, walking, and car-sharing).
- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.

- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
- Bonfires and burning of waste materials should not be permitted.

Measures specific to demolition

- Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.
- Bag and remove any biological debris or damp down such material before demolition.

Measures specific to earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.

Measures specific to construction

- Ensure sand and other aggregates are stored in silos, bunded areas or in a controlled and well-managed manner.
- Avoid scabbling (roughening of concrete surfaces) if possible.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust release.

Measures specific to trackout

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Record all inspections of haul routes and any subsequent action in a site log book.
- Install a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.

Construction phase fugitive dust and particulate matter residual impact

13.3.67 With the implementation of the mitigation measures outlined above, the impact of construction phase dust and particulate matter on local air quality, at identified receptor locations, is predicted to be **'not significant'.**

Construction phase on-site NRMM and plant emissions

13.3.68 At this stage no specific details are available regarding the exact specification of the NRMM and on-site plant required during the construction of the proposed scheme. A qualitative assessment was, therefore undertaken to consider potential emissions from onsite NRMM and plant.

13.3.69 NRMM and onsite plant would be used during the construction phase of the proposed scheme. It is anticipated that two small temporary 400kW generators may be required during the construction phase to provide power to the offices. Should construction phase generators be required they would be situated at the construction compound. Given the distance of the proposed compound locations to the closest residential receptor locations at Dormanstown (greater than 1.5km), emissions from a small number of temporary construction phase generators are not considered to be significant in the context of existing background air quality concentrations in Dormanstown; which are 'well below' the relevant annual mean air quality Objectives.

13.3.70 NRMM and onsite plant would be well maintained and additional mitigation measures are recommended to minimise any potential emissions.

Construction phase NRMM emissions – mitigation

13.3.71 If any emissions of dark smoke occur then the relevant machinery should stop immediately and any problem rectified. In addition, the following controls should apply to NRMM:

13.3.72 All NRMM should use fuel equivalent to ultralow sulphur diesel (fuel meeting the specification within EN590:2004).

13.3.73 All NRMM should comply with either the current or previous EU Directive Staged Emission Standards (97/68/EC, 2002/88/EC, 2004/26/EC, 2006/105/EC, 2010/26/EU, 2011/88/EU and 2012/46/EU). As new emission standards are introduced the acceptable standards should be updated to the previous and most current standard.

13.3.74 All NRMM should be fitted with Diesel Particulate Filters (DPF) conforming to defined and demonstrated filtration efficiency (load/duty cycle permitting).

13.3.75 The ongoing conformity of plant retrofitted with DPF, to a defined performance standard, should be ensured through a programme of onsite checks.

13.3.76 Implementation of energy conservation measures including instructions to throttle down or switch off idle construction equipment; switch off the engines of trucks while they are waiting to access the site and while they are being loaded or unloaded, ensure equipment is properly maintained to ensure efficient energy consumption.

Construction phase NRMM emissions – residual impact

13.3.77 With the implementation of the above mitigation measures, the residual impacts from NRMM are considered to be not significant.

Construction phase road traffic emissions assessment

13.3.78 As set out above, the potential impact of the construction phase traffic associated with the proposed scheme on local air quality was screened using the methodology detailed in the DMRB (Highways Agency, 2007) and EPUK guidance (EPUK, 2010). These documents set out criteria for increases in traffic flows and HGV movements above which a detailed assessment of air quality impacts may be required. If increases in traffic flows and HGV movements are below the criteria, there are unlikely to be any significant air quality impacts as a result of the development and detailed assessment of air quality is not required. The screening criteria are detailed in **Table 13-4**. The maximum increase in baseline traffic flows, as a result of construction phase traffic, is 1.14% on link 44 (A1085, Trunk Road). This is below the DMRB and EPUK screening criteria, indicating that an assessment of development traffic is not required as the impact on local air quality would be **not significant**. A detailed assessment of construction phase Harbour facilities traffic was not, therefore, undertaken.

13.3.79 A detailed assessment was however undertaken of the traffic generated by the cumulative YPP (Mine, MTS, MHF and Harbour facilities). Predicted annual mean concentrations of NO_2, PM_{10} and $PM_{2.5}$ for the 2015 with construction assessment scenarios are provided in **Tables 13-13 to 13-15**. The full assessment results are provided in **Appendix 13.1, Section 3**.

Table 13-13 Summary of predicted with development NO_2 concentrations at human receptor locations

Scenario	Lowest NO_2 Concentration		Highest NO_2 Concentration	
	Receptor Experiencing the Lowest Concentration	Annual Mean NO_2 Concentration ($\mu g.m^{-3}$)	Receptor Experiencing the Highest Concentration	Annual Mean NO_2 Concentration ($\mu g.m^{-3}$)
2015 Construction Year	R7	14.27	R19	45.57

Table 13-14 Summary of predicted with development PM_{10} concentrations at human receptor locations

Scenario	Lowest PM_{10} Concentration		Highest PM_{10} Concentration	
	Receptor Experiencing the Lowest Concentration	Annual Mean PM_{10} Concentration ($\mu g.m^{-3}$)	Receptor Experiencing the Highest Concentration	Annual Mean PM_{10} Concentration ($\mu g.m^{-3}$)
2015 Construction Year	R7	14.92	R19	19.75

Table 13-15 Summary of predicted with development $PM_{2.5}$ concentrations at human receptor locations

Scenario	Lowest Concentration		Highest Concentration	
	Receptor Experiencing the Lowest Concentration	Annual Mean $PM_{2.5}$ Concentration ($\mu g.m^{-3}$)	Receptor Experiencing the Highest Concentration	Annual Mean $PM_{2.5}$ Concentration ($\mu g.m^{-3}$)
2015 Construction Year	R7	9.33	R19	13.12

13.3.80 Annual mean pollutant concentrations for the construction year (2015) are predicted to be below the air quality Objectives at the majority of receptor locations assessed. However, there are exceedences of the annual mean NO_2 objective in the 2015 construction scenario. Further details of the receptors in exceedence are detailed in **Appendix 13.1, Section 3**. The receptors in exceedence of the annual mean NO_2 objective are located in close proximity to the A19, which experiences high traffic flows. It should be noted that annual mean NO_2 concentrations at these receptors are already in exceedence of the Objective without the contribution of construction phase traffic emissions. The construction phase of the proposed scheme, therefore, would not of itself cause any exceedences of the relevant annual mean Objectives for the pollutants considered.

13.3.81 All predicted NO_2 concentrations are well below $60\mu g.m^{-3}$ and therefore, in accordance with Defra guidance (Defra 2009), the 1-hour mean Objective is unlikely to be exceeded.

13.3.82 The number of days predicted to exceed the 24-hour mean PM_{10} objective was well below 35; therefore, the short-term PM_{10} objective is not anticipated to be exceeded.

13.3.83 The predicted changes in pollutant concentrations as a result of the YPP are detailed in **Tables 13-16 to 13-18** for NO_2, PM_{10} and $PM_{2.5}$ respectively.

Table 13-16 Summary of predicted change in NO_2 concentrations at human receptor locations

Scenario	Lowest NO_2 Change		Highest NO_2 Change	
	Receptor Experiencing the Lowest Change	Change in Annual Mean NO_2 ($\mu g.m^{-3}$)	Receptor Experiencing the Highest Change	Change in Annual Mean NO_2 ($\mu g.m^{-3}$)
2015 Construction Year	R5, R31	0.04	R11	1.62

Table 13-17 Summary of predicted change in PM_{10} concentrations at human receptor locations

Scenario	Lowest PM_{10} Change		Highest PM_{10} Change	
	Receptor Experiencing the Lowest Change	Change in Annual Mean PM_{10} Concentration ($\mu g.m^{-3}$)	Receptor Experiencing the Highest Change	Change in Annual Mean PM_{10} Concentration ($\mu g.m^{-3}$)
2015 Construction Year	R3, R4, R30, R31	<0.01	R24	0.11

Table 13-18 Summary of predicted change in $PM_{2.5}$ concentrations at human receptor locations

Scenario	Lowest $PM_{2.5}$ Change		Highest $PM_{2.5}$ Change	
	Receptor Experiencing the Lowest Change	Change in Annual Mean $PM_{2.5}$ Concentration ($\mu g.m^{-3}$)	Receptor Experiencing the Highest Change	Change in Annual Mean $PM_{2.5}$ Concentration ($\mu g.m^{-3}$)
2015 Construction Year	R1, R3-R5, R30-R31	<0.01	R24	0.07

13.3.84 The magnitude of change in pollutant concentrations and the associated impact of that change, at identified receptor locations, is summarised in **Table 13-19**.

Table 13-19 Summary of magnitude of change in pollutant concentration and associated impact for 2015 construction phase at identified receptor locations considered

Magnitude of Change	Impact	Number of Receptors Experiencing Magnitude of Change and Impact		
		NO_2	PM_{10}	$PM_{2.5}$
Imperceptible	Negligible	15	34	34
Small	Negligible	17	-	-
Small	Slight Adverse	2	-	-

13.3.85 Small increases in pollutant concentrations were predicted at 19 receptor locations, whilst the remaining 16 receptors were predicted to experience imperceptible increases in pollutant concentrations. However, all identified receptors are predicted to experience a **negligible** impact on NO_2, PM_{10} and $PM_{2.5}$ concentrations, with the exception of two receptors, which are predicted to experience **slight adverse** impacts. The overall impact of road traffic emissions resulting from the construction phase of the Harbour facilities on local air quality at identified human receptor locations is considered to be **not significant**.

Construction phase road traffic emissions – mitigation

13.3.86 A number of road transport mitigation measures are embedded within the YPP to reduce the impact of road traffic movements within the study area. These measures would also reduce the impact of emissions from road traffic, and include:

- Designated haul routing for HGVs accessing the harbour facilities site, to reduce the impact on local communities.
- The use of car sharing and public transport to minimise trips to and from the proposed scheme footprint would be required.

13.3.87 No additional road traffic emissions mitigation measures are proposed to further reduce the impact of the scheme on air quality.

Construction phase road traffic emissions – residual impact

13.3.88 The design measures detailed above would minimise the impact of road traffic such that there would be a **negligible** impact on local air quality.

13.4 Potential impacts during operation

Operational phase road traffic emissions assessment

13.4.1 YPL predicts an operational staff of six per shift during Phase 1 of the proposed scheme, with a total of 26 operational staff working each day. YPL predicts an operational staff of eight per shift during Phase 2 of the proposed scheme, with a total of 34 operational staff working at the proposed scheme each day. Assessment of the predicted traffic generated by the operation of the Harbour facilities was not therefore required, in accordance with the screening criteria provided in DMRB (Highways Agency, 2007) and by EPUK (EPUK, 2010).

13.4.2 A detailed assessment was, however, undertaken of the traffic generated by the cumulative YPP (Mine, MTS, MHF and Harbour facilities). Predicted annual mean concentrations of NO_2, PM_{10} and $PM_{2.5}$ for the 2020 and 2030 with operational phase assessment scenarios are detailed in **Appendix 13.1, Section 3**. **Tables 13-20 to 13-22** provide a summary of the receptors experiencing the lowest and highest predicted pollutant concentrations for 'with development' scenarios.

Table 13-20 Summary of predicted with development NO_2 concentrations at human receptor locations

Scenario	Lowest NO_2 Concentration		Highest NO_2 Concentration	
	Receptor Experiencing the Lowest Concentration	Annual Mean NO_2 Concentration ($\mu g.m^{-3}$)	Receptor Experiencing the Highest Concentration	Annual Mean NO_2 Concentration ($\mu g.m^{-3}$)
2020 Operational Year	R7	9.53	R19	30.25
2030 Operational Year	R7	8.22	R19	22.73

Table 13-21 Summary of predicted with development PM_{10} concentrations at human receptor locations

Scenario	Lowest PM_{10} Concentration		Highest PM_{10} Concentration	
	Receptor Experiencing the Lowest Concentration	Annual Mean PM_{10} Concentration ($\mu g.m^{-3}$)	Receptor Experiencing the Highest Concentration	Annual Mean PM_{10} Concentration ($\mu g.m^{-3}$)
2020 Operational Year	R15	13.65	R19	17.67
2030 Operational Year	R15	13.63	R19	17.85

Table 13-22 Summary of predicted with development $PM_{2.5}$ concentrations at human receptor locations

Scenario	Lowest Concentration		Highest Concentration	
	Receptor Experiencing the Lowest Concentration	Annual Mean $PM_{2.5}$ Concentration ($\mu g.m^{-3}$)	Receptor Experiencing the Highest Concentration	Annual Mean $PM_{2.5}$ Concentration ($\mu g.m^{-3}$)
2020 Operational Year	R7	8.40	R19	11.07
2030 Operational Year	R7	8.28	R19	11.02

13.4.3 The predicted annual mean pollutant concentrations for the operational years (2020 and 2030) are all below the relevant national air quality Objectives. The numbers of days predicted to experience an exceedence of the 24 hour mean PM_{10} objective is below the objective value (i.e. 35 days) for all assessment scenarios.

13.4.4 The predicted changes in pollutant concentrations as a result of the YPP are detailed in **Tables 13-23 to 13-25** for NO_2, PM_{10} and $PM_{2.5}$ respectively.

Table 13-23 Summary of predicted change in NO_2 concentrations at human receptor locations

Scenario	Lowest NO_2 Change		Highest NO_2 Change	
	Receptor Experiencing the Lowest Change	Change in Annual Mean NO_2 ($\mu g.m^{-3}$)	Receptor Experiencing the Highest Change	Change in Annual Mean NO_2 ($\mu g.m^{-3}$)
2020 Operational Year	R31	<0.01	R24	0.12
2030 Operational Year	R23, R30, R31	<0.01	R24	0.07

Table 13-24 Summary of predicted change in PM_{10} concentrations at human receptor locations

Scenario	Lowest PM_{10} Change		Highest PM_{10} Change	
	Receptor Experiencing the Lowest Change	Change in Annual Mean PM_{10} Concentration ($\mu g.m^{-3}$)	Receptor Experiencing the Highest Change	Change in Annual Mean PM_{10} Concentration ($\mu g.m^{-3}$)
2020 Operational Year	R1 - R4, R7, R12, R16, R18, R19, R22, R23, R28 - R30, R33	<0.01	R24	0.02
2030 Operational Year	R1 – R4, R7, R12, R13, R16, R17, R19, R22, R23, R28 , R30, R31	<0.01	R24	0.02

Table 13-25 Summary of predicted change in $PM_{2.5}$ concentrations at human receptor locations

Scenario	Lowest $PM_{2.5}$ Change		Highest $PM_{2.5}$ Change	
	Receptor Experiencing the Lowest Change	Change in Annual Mean $PM_{2.5}$ Concentration ($\mu g.m^{-3}$)	Receptor Experiencing the Highest Change	Change in Annual Mean $PM_{2.5}$ Concentration ($\mu g.m^{-3}$)
2020 Operational Year	R1, R3, R5, R6, R8, R11 – R13, R15 – R18, R21 – R23, R27, R28, R31, R32, R34	<0.01	R2, R4, R7, R10, R14, R19, R24 – R26, R30, R33	0.01
2030 Operational Year	R1 – R4, R7 – R9, R11 – R17, R19 – R23, R25 – R34	<0.01	R5, R6, R10, R18, R24	0.01

13.4.5 The magnitude of change in pollutant concentrations and associated impact of that change at identified receptor locations are summarised in **Table 13-26**.

Table 13-26 Summary of magnitude of change in pollutant concentration and associated impact for 2020 and 2030 operational phase at identified receptor locations considered

Magnitude of Change	Impact	Number of Receptors Experiencing Magnitude of Change and Impact		
		NO_2	PM_{10}	$PM_{2.5}$
Imperceptible	Negligible	34	34	34

13.4.6 Increases in pollutant concentrations were predicted to be of imperceptible magnitude at all receptors considered in both 2020 and 2030. All identified receptors were therefore predicted to experience a **negligible** impact on NO_2, PM_{10} and $PM_{2.5}$ concentrations. The overall impact of road traffic emissions resulting from the operational phase of the proposed Harbour facility and wider YPP on local air quality at identified human receptor locations is, therefore, considered to be **not significant**.

Operational phase road traffic emissions - mitigation

13.4.7 Once fully operational, the proposed Harbour facility scheme would have a maximum staff of eight personnel per shift, with up to 34 staff on site at any one time. The impact of road traffic emissions from such a low number of staff movements, therefore, would not be significant in accordance with DMRB (Highways Agency, 2007) and EPUK (EPUK, 2010) criteria, and no road traffic mitigation measures are considered necessary for the operational phase.

Operational phase road traffic emissions – residual impact

13.4.8 Residual impacts on local air quality are predicted to be not significant.

Marine vessel emissions

13.4.9 Marine vessel movements would be associated with both the construction and operational phases of development.

13.4.10 The area proposed to be dredged is shown on **Drawing PB1586-SK91** and **Drawing PB1586-SK93**. Dredging is required during both Phase 1 and Phase 2 construction periods and would occur for a period of 14 weeks for Phase 1 and 12 weeks for Phase 2 (open structure), and 13 weeks for Phase 1 and 10 weeks for Phase 2 (solid structure). The area to be dredged is not located in close proximity to any existing residential receptors or designated ecological sites and the short term nature of the dredging operation would not result in significant long term effects or emissions. A quantitative assessment of emissions from dredgers is not therefore required.

13.4.11 During the operation of the port terminal, the throughput of the facility is estimated to be 6.5mtpa in Phase 1 (0 to six years following the end of construction) and 13mtpa in Phase 2 (six to 50 years following the end of construction).

13.4.12 Vessels using the port are predicted to be bulk carriers up to a design maximum of 85,000 DWT. When Phase 2 is complete the facility would handle 13mtpa and it is estimated that there would be approximately 191 vessel calls per year to the terminal.

13.4.13 Dispersion modelling was undertaken to predict concentrations of NO_2 and SO_2 at the closest human receptor locations in Dormanstown and Grangetown, located approximately 3.2km east and 4km south of the proposed development respectively, as a result of emissions from vessels hoteling at the quayside using auxiliary engines. Increases in nutrient nitrogen and acid deposition on designated ecological sites in the vicinity of the proposed development were also predicted. The assessment assumed that a 85,000DWT bulk carrier would be hoteling in the dock continuously to provide a conservative assessment. Model input parameters and receptor location details for the vessel emissions assessment and the designated ecological sites considered are detailed in **Appendix 13**.

13.4.14 Maximum concentrations of NOx and SO_2 as a result of vessel emissions were predicted and compared to the lowest critical load values for the ecological habitats, present to provide a conservative assessment. Predicted concentrations of NO_2 and SO_2 at human receptors were compared to the air quality Objectives detailed in **Table 13.1**. Critical loads and critical levels utilised in the assessment are detailed in **Appendix 13**.

13.4.15 Full details of the assessment results are shown in **Appendix 13** for human receptors. The assessment indicated that concentrations of NO_2 and SO_2 were 'well below' the relevant Objectives at the nearest human receptor locations considered. Impacts on human receptors are therefore considered to be **not significant**.

13.4.16 Full details of the assessment results are shown in **Appendix 13** for designated ecological sites. The assessment also indicated that the maximum increases in nutrient nitrogen and acid deposition within the designated sites were below 1% of all critical loads, and total NOx and SO_2 concentrations were predicted to be below the critical levels for the protection of vegetation and ecosystems for both pollutants. Impacts on designated ecological sites are therefore considered to be **not significant**.

13.4.17 Furthermore, **Table 13-27** details the vessel movements experienced within the Tees estuary between January 2014 and October 2014. The number of movements in this ten month period totals 8,834. Assuming a similar number of movements were experienced in the last two months of the year to that experienced in June 2014 (i.e. the lowest number of monthly movements), approximately 10,368 vessel movements would have been made within the Tees estuary in 2014.

Table 13-27 Tees estuary vessel movements in 2014

Month	Vessel movements
January	922
February	907
March	1,055
April	882
May	804
June	767
July	869
August	857
September	878
October	893

13.4.18 Between January and October 2014 there were 562 vessels operating within the Tees Estuary larger than 85,000DWT. The proposed vessels are therefore not significantly larger than those currently operating within the Tees Estuary.

13.4.19 The generation of an additional 191 vessel movements per year when compared to the existing 10,368 annual movements (a 1.8% increase) is not considered to be significant and it is unlikely that vessel movements associated with the operational facility would have an impact on air quality (**no impact**). No detailed assessment of emissions from vessels, associated with the development travelling along the Tees Estuary, has therefore been undertaken.

Operational phase fugitive dust and particulate matter assessment

13.4.20 The potential for dust emissions to be generated during the operational phase of the proposed scheme was considered qualitatively. The product to be exported via the terminal would be pelletised and coated, with a thin wax layer, within the MHF. The pellets would then be transported to two surge bins at the Harbour facilities via an enclosed conveyor. The surge bins are also proposed to be enclosed. The pellets would be transported from the surge bins to the shiploader via a short section of enclosed conveyor. The transfer from the shiploader into the hatch of the vessel, for onward export, represents the only part of the process where there would be temporary exposure to air. However the wax coating on the pellets would ensure their integrity is maintained and, therefore, any breakdown of the product and associated dust generation would be minimal.

13.4.21 The product is sensitive to moisture and consequently the whole process is enclosed wherever possible and no stockpiling of product onsite would occur. In addition the product must be shipped in pellet form and, therefore, the processes occurring within the Harbour facilities site are designed to maintain the integrity of the pellets.

13.4.22 The processes occurring within the Harbour facilities site would be mechanised and enclosed and, therefore, onsite operational phase plant movements would be minimal. Based on this, impacts on local air quality from operational phase activities are predicted to be **not significant**.

Operational phase fugitive dust and particulate matter – mitigation

13.4.23 Operational phase activities are not predicted to represent a significant source of dust emissions. However best practice measures would be in operation to ensure that the Harbour facilities site is well managed and maintained.

Operational phase fugitive dust and particulate matter – residual impact

13.4.24 Residual impacts on local air quality from operational phase activities would be **not significant**.

Assessment of potential impacts during decommissioning

13.4.25 The decommissioning phase of the proposed scheme would comprise the removal of the conveyor system and complete removal of site infrastructure and remedial works to restore the site in keeping with the surrounding environment.

13.4.26 The decommissioning works would involve the breaking out of foundations of the conveyors, breaking and crushing of concrete structures and earthworks to fill voids left by the removal of the conveyor platform foundations.

13.4.27 Such activities have the potential to generate fugitive dust emissions although, overall, the works required would be less than those detailed for the construction phase.

13.4.28 Decommissioning works would also require NRMM and onsite plant and would generate vehicle movements on the local road network. The decommissioning works would require a lower overall number of movements on the network than detailed for the construction phase works, given the smaller scale of the works required and the shorter programme for decommissioning compared with construction.

Decommissioning phase – mitigation

13.4.29 The potential for fugitive dust generation during the decommissioning works is considered to be less than for the construction phase. However it is recommended that the mitigation measures provided for the construction phase, and detailed in **Section 13.6**, are also adopted for the decommissioning phase as necessary.

13.4.30 No details of the NRMM and plant specifications required during the decommissioning phase are available at this stage; however it is recommended that the mitigation measures proposed for the construction phase are also adopted within the decommissioning phase as necessary.

13.4.31 Vehicle movements on the local road network in the decommissioning phase are anticipated to be less than those assessed for the construction phase and, therefore additional measures, to mitigate local air quality impacts, are not predicted to be necessary. However a decommissioning phase Traffic Management Plan is likely to be required, which would include designated routing for HGVs to minimise the impact on local communities.

Decommissioning phase – residual impact

13.4.32 Residual impacts on local air quality resulting from the required decommissioning works are predicted to be **not significant**.

13.5 Summary

13.5.1 This assessment considered the potential for the proposed scheme to impact on local air quality at identified existing receptor locations during its construction, operation and decommissioning.

13.5.2 A construction phase fugitive dust and particulate matter assessment was undertaken in accordance with guidance provided by the IAQM (IAQM, 2014). Site specific dust emission classes for activities associated with demolition, earthworks, construction and trackout were identified and mitigation measures recommended to minimise the potential impact of the construction phase on local air quality at receptor locations. With the implementation of the mitigation measures proposed any impact is predicted to be not significant.

13.5.3 A qualitative assessment was undertaken to consider potential emissions from NRMM and onsite plant associated with the construction phase. Mitigation measures were recommended and with the implementation of these, together with the temporary and short term requirement for NRMM and onsite plant to be present, any impact on local air quality is predicted to be not significant.

13.5.4 An assessment of construction and operational phase road traffic emissions was undertaken. The traffic generation associated with the proposed scheme was compared to relevant screening criteria. The traffic generation associated with the proposed scheme is below the threshold requiring assessment and therefore any impact, during the construction and operational phases, is predicted to be not significant.

13.5.5 A cumulative road traffic emissions assessment was undertaken to consider the impact of all elements of the YPP. Detailed air dispersion modelling was undertaken and NO_2, PM_{10} and $PM_{2.5}$ concentrations predicted at identified receptor locations for both 'without' and 'with' YPP development scenarios. Predicted pollutant concentrations were compared to the relevant air quality Objectives and changes in pollutant concentrations were compared to relevant significance criteria. The results of the assessment showed that changes in pollutant concentrations, as a result of the construction and operation of the YPP, are predicted to be not significant.

13.5.6 Vessel movements associated with the operational phase of the proposed scheme were considered quantitatively. Dispersion modelling was undertaken to predict impacts at human receptors and designated ecological sites. Pollutant concentrations associated with quayside vessel emissions were predicted to be 'well below' the relevant Objectives at human receptor locations. Increases in nutrient nitrogen and acid deposition on designated ecological sites were predicted to be below the critical

levels and less than 1% of the critical loads for the most sensitive habitat present. The number of vessel movements associated with the operational phase of the proposed scheme was also compared to existing vessel movements in the Tees Estuary. Vessel movements associated with the proposed scheme were predicted to be not significant in comparison with existing movements in the Tees Estuary. The overall impact of vessel emissions on human and ecological receptors was considered to be not significant.

13.5.7 Operational phase activities were also considered with regard to the potential for fugitive dust and particulate matter generation. The transportation of product from the MHF to the vessels for export is an enclosed process with the only potential for emissions to air at the final loading point into the ship hatch. However the product would be encased in a thin wax coating to prevent degradation of the pellets and, therefore, the potential for any dust generation is considered to be minimal and any impacts on local air quality at identified receptor locations would be not significant.

13.5.8 The potential impact of the decommissioning phase on local air quality was also considered with regard to fugitive dust and particulate matter emissions, NRMM and onsite plant emissions and road traffic emissions. Relevant mitigation measures were recommended and the residual impact of the decommissioning phase on local air quality was predicted to be not significant. **Table 13-28** presents a summary of the air quality impacts.

Table 13-28 Summary of air quality impacts

Impact	Sensitivity of receptor	Magnitude of effect	Significance of impact	Mitigation	Residual impact
Construction					
Construction Dust Soiling and Human Health Impacts	High	Large	N/A	Mitigation measures recommended as detailed in IAQM guidance to reduce the effects of dust soiling and human health impacts during demolition, earthworks, construction and trackout	Not significant
Impacts on Local Air Quality as a Result of On-Site Non-Road Mobile Machinery and Plant Emissions	High	N/A	N/A	Mitigation measures recommended to reduce the effects on human health as a result of the operation of NRMM	Not significant
Local Air Quality Impacts as a Result of Construction Vehicle Exhaust Emissions	High	Small - Imperceptible	Negligible – Slight Adverse	Not required	Not significant

Operation					
Local Air Quality Impacts as a Result of Operational Phase Vehicle Exhaust Emissions	High	Imperceptible	Negligible	Not required	Not significant
Local Air Quality Impacts as a Result of Vessel Emissions	High	N/A	Not significant	Not required	Not significant
Ecological Impacts as a Result of Vessel Emissions	High	N/A	Not significant	Not required	Not significant
Local Air Quality Impacts as a Result of Fugitive dust and Particulate Matter	N/A	N/A	N/A	N/A	Not significant
Decommissioning					
Dust Soiling and Human Health Impacts	High	Large	N/A	Mitigation measures recommended for construction phase should be utilised to reduce the effects of dust soiling and human health impacts during demolition, earthworks, construction and trackout	Not significant
Local Air Quality Impacts as a Result of On-Site Non-Road Mobile Machinery and Plant Emissions	High	N/A	N/A	Mitigation measures recommended for the construction phase should be utilised to reduce the effects on human health as a result of the operation of NRMM	Not significant
Local Air Quality Impacts as a Result of Decommissioning Phase Vehicle Exhaust Emissions	High	Less than construction phase traffic effects	Negligible	Not required	Not significant