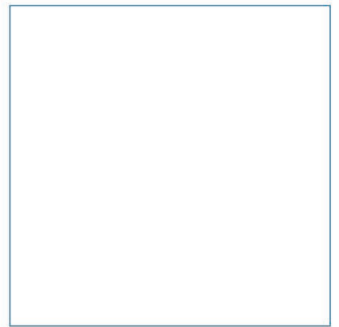
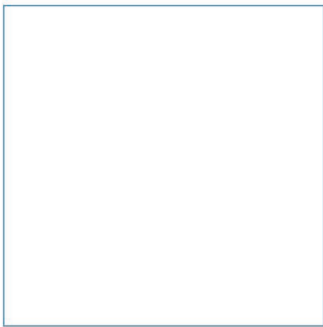
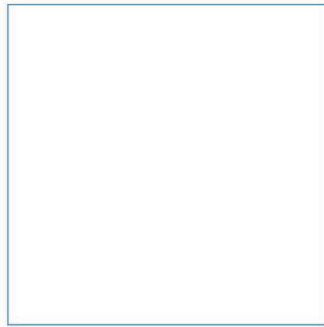


Associated British Ports

Immingham Eastern Ro-Ro Terminal

Preliminary Environmental Information Chapter 13: Air Quality

January 2022



Innovative Thinking - Sustainable Solutions

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Immingham Eastern Ro-Ro Terminal

Preliminary Environmental Information
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Document Information

Document History and Authorisation	
Title	Immingham Eastern Ro-Ro Terminal Preliminary Environmental Information Chapter 13: Air Quality
Commissioned by	Associated British Ports
Issue date	January 2022
Document ref	R.3783
Project no	R/5035/1

Date	Version	Revision Details
14/01/2022	1	Issued for client use

Suggested Citation

ABPmer, (2022). Immingham Eastern Ro-Ro Terminal, Preliminary Environmental Information Chapter 13: Air Quality, ABPmer Report No. R.3783. A report produced by ABPmer for Associated British Ports, January 2022.

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13 Air Quality

13.1 Introduction

- 13.1.1 This chapter provides a preliminary assessment of the effects on local air quality that could result from the proposed Immingham Eastern Ro-Ro Terminal (IERRT). This chapter has been prepared by AECOM Ltd.
- 13.1.2 The potential effects on air quality are considered with respect to existing national and local planning policy and with reference to industry standard guidance.
- 13.1.3 The following receptor types have been considered as part of the assessment:
- Dust sensitive receptors within 350 m of demolition and construction activities and within 50 m of a public road used by construction traffic that is within 500 m of a construction site entrance.
 - Air quality sensitive receptors, including designated habitats and residential properties with the potential to be significantly affected by proposed development emissions associated with traffic movements and/or operational vessels.
- 13.1.4 A number of figures support the description of the existing environment (baseline) and are provided in Volume 2 of the Preliminary Environmental Information Report (PEIR). Figure 13.1 shows the location of dust and air quality sensitive receptors considered in this assessment, and air quality monitoring locations in relation to the proposed red line boundary of the Immingham Eastern Ro-Ro Terminal project. Figure 13.2 shows potential impacts during construction and Figure 13.3 the potential impacts during operation.
- 13.1.5 The local air quality assessment is supported by other topic chapters of the PEIR, including traffic data generated for the assessment reported in Chapter 17 Traffic and Transport. Air quality impacts also have the potential to affect nature conservation sites. The significance of any effect on such sites and protected features is described in this air quality chapter, with inputs provided by a competent expert in ecology.

13.2 Definition of the study area

- 13.2.1 The study area for this assessment is the area over which potential direct and indirect effects of the IERRT project are predicted to occur during the construction and operational periods.
- 13.2.2 The IERRT project is located within an existing and well-established operational port and onsite emissions associated with the construction and

operation of the project will form a small proportion of the overall emissions associated with the Port of Immingham.

- 13.2.3 The study area for potential construction impacts from dust and particulate matter (particles with an aerodynamic diameter of less than 10 micrometres (PM₁₀)) has been determined with reference to Institute of Air Quality Management (IAQM) guidance (Holman et al., 2014). They are only likely to occur at locations where there are human health or amenity sensitive receptors within 350 m of the proposed project boundary (taken to represent the construction site boundary in this assessment) and/or 50 m of a public road used by construction vehicles that is within 500 m of a site access point, and where there are sensitive ecological receptors within 50 m of the Proposed Project Boundary and/or 50 m of a public road used by construction vehicles that is within 500 m of a site access point.
- 13.2.4 Potential road traffic emissions impacts during construction and operation are only likely to occur where there are sensitive human and/or ecologically sensitive receptors within 200 m of an 'affected' road link (Highways England 2019). An 'affected' road link is defined by the following criteria:
- Any urban or rural road link not situated within or adjacent to an Air Quality Management Area (AQMA) that will experience a change in two-way traffic flow of 500 or more annual average daily Light Duty Vehicles (LDV) (vehicles <3.5 tonnes) and/or 100 or more annual average daily Heavy Duty Vehicles (HDV) (all vehicles >3.5 tonnes), as defined within Environmental Protection UK (EPUK) and IAQM guidance (Moorcroft and Barrowcliffe *et al.*, 2017).
 - Any urban or rural road link that is situated within or adjacent to an AQMA that will experience a change of in two-way traffic flow of 100 or more annual average daily LDVs and/or 25 or more annual average daily HDVs, as defined within EPUK and IAQM guidance (Moorcroft and Barrowcliffe *et al.*, 2017).
 - Any road link that forms part of the Strategic Road Network (SRN) that will experience a change in two-way traffic flow of 1000 or more Annual Average Daily Traffic (AADT) and/or 200 or more annual average daily HDVs, as defined within National Highways guidance LA105 (Highways England, 2019).
- 13.2.5 Vessel emissions impacts during construction and operation will occur close to the source. This element of the assessment will focus on human and/or ecologically sensitive receptors that are present in the vicinity of the vessel source.

13.3 Assessment methodology

Data and information sources

- 13.3.1 Current baseline conditions have been determined by a desk-based review of available information.
- 13.3.2 The main desk-based sources of information that have been reviewed to inform the current baseline description within the vicinity of the proposed development include:
- Existing air quality monitoring data gathered by Local Authorities (North East Lincolnshire Council and North Lincolnshire Council);
 - Existing air quality monitoring data gathered by Defra's Automatic Urban and Rural Network (AURN) of continuous air quality monitoring stations; and
 - Defra Background Pollutant Concentration Data.
- 13.3.3 Site specific surveys that are being undertaken to underpin the assessments include:
- Nitrogen dioxide (NO₂) diffusion tube survey.
- 13.3.4 The purpose of the NO₂ survey is to improve the resolution of air quality monitoring data in the area, to better inform consideration of baseline conditions and provide a dataset by which the road traffic emissions dispersion model can be verified.

Determining significance of effects

- 13.3.5 To facilitate the impact assessment process and ensure consistency in the terminology of significance, a standard assessment methodology has been applied. This methodology has been developed from a range of sources, including:
- IAQM Guidance on the assessment of dust from demolition and construction (Holman et al., 2014);
 - IAQM/EPUK Guidance on land-use planning and development control: planning for air quality (Moorcroft and Barrowcliffe. et al., 2017);
 - IAQM's guide to the assessment of air quality impacts on designated nature conservation sites (Holman et al., 2020);
 - National Highways Guidance on assessing the effects of highways projects (Highways England, 2019); and
 - Environment Agency guidance on air emissions risk assessment for your environmental permit (Environment Agency, 2016).

Construction Phase Dust and Plant Emissions

Construction Dust

- 13.3.6 The impacts associated with the construction phase of the proposed development have been qualitatively assessed following the approach set out in the IAQM guidance on the Assessment of Dust from Demolition and Construction (Holman et al., 2014).
- 13.3.7 According to the IAQM, the main air quality impacts that may arise during demolition and construction activities are:
- Dust deposition, resulting in the soiling of surfaces;
 - Visible dust plumes, which are evidence of dust emissions;
 - Elevated PM₁₀ concentrations resultant of dust generating activities on site; and
 - An increase in concentration of airborne particles and NO₂ due to exhaust emissions from diesel powered vehicles and equipment on site and vehicles accessing the site.
- 13.3.8 Activities on construction sites are classified into four types to reflect their different potential impacts:
- Demolition;
 - Earthworks;
 - Construction (erection of buildings and structures); and
 - Track-out (the deposition of material onto the public road network by construction vehicles leaving site).
- 13.3.9 The following steps, as defined by the IAQM, were followed as part of the construction dust assessment:
- Step 1: Screen the need for a detailed assessment. Human and ecological receptors were identified and distance to the proposed development and construction routes were determined;
 - Step 2: Assess the risk of dust impacts arising. The potential risk of dust impacts occurring for each activity was determined, based on the magnitude of the potential dust emissions and the sensitivity of the area;
 - Step 3: Identify the need for site-specific mitigation. Based on the risk of impacts occurring, site specific mitigation measures were determined; and
 - Step 4: Define impacts and their significance. The significance of the potential residual dust impacts (taking mitigation into account) for each activity was determined.
- 13.3.10 The full construction dust assessment methodology is set out in Appendix 13.1 (Volume 3 of this PEIR).

13.3.11 For amenity effects from coarser dust (>PM₁₀), the aim of the IAQM guidance method is to bring forward a scheme, including mitigation measures where necessary, that would control impacts so that they give rise to negligible or minor effects (at worst) at the closest sensitive receptors. Measures that reduce dust emissions will also reduce emissions of finer particles (PM₁₀). Determination of whether an effect is likely to be significant or not is based on professional judgement (based on experience of similar projects), taking account of whether effects are permanent or temporary, direct or indirect, constant or intermittent and whether any secondary effects are caused (in this instance, secondary effects refers to dust that is generated and deposited (primary impact) and then re-suspended and deposited again by further activity).

13.3.12 The classification of dust soiling (amenity) and health effects on receptors exposed to impacts has been assessed using the relationship between the magnitude of impact identified, in combination with receptor sensitivity and other related factors where appropriate (as described in the IAQM guidance (Holman et al., 2014)), which results in a classification of effects as defined in Table 13.1.

Table 13.1. Definition of Significance of Fugitive Dust and PM₁₀ Effects

Effect	Change in Dust Deposition Rate and Short-term PM ₁₀ Concentrations	Significance
Major	Impact is likely to be intolerable for any more than a very brief period of time and is very likely to cause complaints from local people. Increase in PM ₁₀ concentrations at a location where concentrations are already elevated and to the extent that the short term PM ₁₀ air quality objective is likely to be exceeded. Deposition impact likely to harm habitat within a designated nature conservation area of international importance.	A significant effect that is likely to be a material consideration in its own right.
Moderate	Impact is likely to cause annoyance and might cause complaints, but may be tolerated if short-term and prior warning and explanation has been given. Increase in PM ₁₀ concentrations at a location where concentrations are already elevated and to the extent that the short term PM ₁₀ air quality objective is at risk of being exceeded. Deposition impact likely to harm habitat within a designated nature conservation area of national importance.	A significant effect that may be a material consideration in combination with other significant effects, but is unlikely to be a material consideration in its own right.

Effect	Change in Dust Deposition Rate and Short-term PM ₁₀ Concentrations	Significance
Minor	Impact may be perceptible, but of a magnitude or frequency that is unlikely to cause annoyance to a reasonable person or to cause complaints. Limited increase in PM ₁₀ concentrations. Deposition impact likely to harm habitat within a designated nature conservation area of local importance.	An effect that is not significant but that may be of local concern.
Negligible	Impact is unlikely to be noticed by and/or have an effect on sensitive receptors. Negligible increase in PM ₁₀ concentrations and deposition.	An effect that is not significant.

Non-Road Mobile Machinery (NRMM) and Site Plant

13.3.13 Emissions from construction-related NRMM and site plant will have the potential to increase NO₂, PM₁₀ and PM_{2.5} concentrations at locations close to working areas of the site.

13.3.14 IAQM guidance (Holman et al., 2014) states that:

“Experience of assessing the exhaust emissions from on-site plant (also known as non-road mobile machinery or NRMM) and site traffic suggests that they are unlikely to make a significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed.”

13.3.15 The assessment of potential emissions from NRMM and site plant is, therefore, qualitative in nature and focuses on the justification as to why impacts from this source can be mitigated to ensure any effect is not significant.

Road Traffic and Vessel Emissions

13.3.16 The incomplete combustion of fuel in vehicle engines results in the presence of a variety of pollutants including hydrocarbons (HC), such as benzene, 1,3-butadiene, sulphur dioxide (SO₂) and carbon monoxide (CO) in the exhaust emissions. However, it is the emission of NO_x (mainly in the form of nitric oxide (NO), which is then converted to NO₂ in the atmosphere) and particulate matter (PM₁₀ and PM_{2.5}) in exhaust emissions that are the main pollutants of concern in relation to road traffic emissions, due to their association with the potential for adverse effects on human health.

13.3.17 Although SO₂, CO, benzene and 1,3-butadiene are present in motor vehicle exhaust emissions, detailed consideration of the associated impacts from motor vehicle emissions on local air quality is not considered relevant in the context of the site and motor vehicle emission sources. Road traffic

emissions of SO₂, CO and HC associated with the construction or operational phase are limited and it is considered would not be capable of compromising the achievement of the relevant air quality objectives for the protection of human health. Concentrations of these pollutants within the surrounding area to the IERRT are not considered to be at risk of exceedance, having been reviewed as part of North East Lincolnshire Council's Local Air Quality Management (LAQM) responsibilities. Emissions of SO₂, CO and HC from road traffic emissions are, therefore, not considered further within this preliminary assessment, and we do not intend to consider them in the Environmental Statement.

- 13.3.18 Exhaust emissions from road vehicles could affect the concentrations of the principal pollutants of concern, i.e. NO₂, PM₁₀ and PM_{2.5}, at sensitive receptors in the vicinity of the proposed development. Therefore, it is these pollutants that are the focus of the assessment of the impact and significance of road traffic related air quality impacts.
- 13.3.19 Exhaust emissions from vessels operating within the estuary during both construction and operational phases have the potential to impact on local air quality, with the pollutants of concern varying depending on the fuel type of the vessel engine, such as Marine Gas Oil (MGO), but likely to include one or more of the following: NO_x (NO and NO₂); PM₁₀; PM_{2.5}; and SO₂.
- 13.3.20 At this PEIR stage of the DCO process, not all information is available to undertake a detailed assessment of road traffic emission impacts (or vessel emissions impacts, should further consideration determine that detailed assessment of this source is required). Instead, currently available information has been reviewed and the assessment reported in this chapter is proportionate to the level of information available for each source. The method for determining significance in the paragraphs below requires modelled impacts and total pollutant concentrations to be quantified. It is included here in this PEIR chapter to support the elements of the assessment that have been quantified to date.
- 13.3.21 Significance of local air quality effects is determined in line with IAQM and EPUK guidance (Moorcroft and Barrowcliffe et al., 2017). This approach does not define a graduating scale of human health receptor sensitivity. Instead, human health receptors are considered either sensitive or not, depending on the period of time for which they are exposed to emissions. The absolute magnitude of change in pollutant concentrations between the baseline and assessment scenarios, relative to the air quality objective value, is described and this is used to consider the risk of those objectives being exceeded.

13.3.22 For a change in annual mean concentrations of NO₂, PM₁₀ and PM_{2.5}, of a given magnitude, IAQM and EPUK have published recommendations for describing the effects of such impacts at individual receptors (Moorcroft and Barrowcliffe et al., 2017). These are set out in Table 13.2.

Table 13.2. Impact Descriptors at Individual Receptors - Annual Mean NO₂, PM₁₀ and PM_{2.5}

Annual Mean Concentrations at Receptor in Assessment Year (% of air quality objective)	% Change in Concentration Relative to Air Quality Assessment Level (AQAL)				
	<1 % ¹	1-2 % ²	2-5 % ³	6-10 % ⁴	> 10 % ⁵
≤75 %	Negligible	Negligible	Negligible	Slight	Moderate
76 % – 94 %	Negligible	Negligible	Slight	Moderate	Moderate
95 % – 102 %	Slight	Slight	Moderate	Moderate	Substantial
103 % – 109 %	Moderate	Moderate	Moderate	Substantial	Substantial
≥110 %	Moderate	Moderate	Substantial	Substantial	Substantial

¹ Imperceptible; ² Very small; ³ Small; ⁴ Medium; and ⁵ Large

13.3.23 The IAQM/EPUK guidance states that the descriptors are for individual receptors only and that overall significance is determined using professional judgement. It also states that it is unwise to ascribe too much accuracy to incremental changes or background concentrations, and this is especially important when total concentrations are close to the objective value. For a given year in the future, it is impossible to define the new total concentration without recognising the inherent uncertainty, which is why there is a category that has a range around the objective value, rather than being exactly equal to it.

13.3.24 A change in predicted long-term (annual mean) concentrations of less than 0.5 % of an air quality objective is considered to be 'Imperceptible'. An impact that is 'Negligible', given normal bounds of variation, would not be capable of having a direct effect on local air quality that could be considered to be significant.

13.3.25 The guidance suggests the potential for 'Low' air quality impacts as a result of changes in pollutant concentrations between 2 % and 5 % of relevant air quality objective. For example, for annual mean NO₂ and PM₁₀ concentrations, this relates to changes in concentrations ranging from 0.6 – 2.1 µg/m³. In practice, changes in concentration at the lower end of this magnitude band are likely to be very difficult to distinguish from the inter-annual effects of varying meteorological conditions and are therefore not

considered likely to be capable of having a direct effect on local air quality that could be considered to be significant.

13.3.26 Changes in concentration of more than 5 % are considered to be of a magnitude which is far more likely to be discernible above the natural variation in baseline conditions and, as such, carry additional weight within the overall evaluation of significance for air quality. 'Moderate' impacts do not necessarily constitute a significant effect, where they do not contribute to an exceedance or risk of an exceedance of an air quality objective, particularly where such impacts relate to a small minority of receptors with the majority experiencing lesser impacts. A 'Substantial' impact will almost certainly constitute a significant effect that will require additional mitigation to address.

13.3.27 The IAQM/EPUK guidance also provides thresholds for determining whether short-term (1-hour mean and 24-hour mean) impacts on human health sensitive receptors have the potential to cause a significant effect or not. The guidance indicates that severity of peak short-term concentrations can be described without the need to reference background concentrations as the source contribution is used to measure impact, not the overall short-term concentration at the receptor. The guidance suggests the following criteria to determine the impact of peak short-term source contributions:

- Source contributions ≤ 10 % of the air quality objective represents an Imperceptible impact that is 'Negligible';
- Source contributions between 11-20 % of the air quality objective or is Small in magnitude, representing a 'Slight' impact;
- Source contributions 21-50 % of the air quality objective is Medium in magnitude, representing a 'Moderate' impact; and
- Source contributions ≥ 51 % of the air quality objective is Large in magnitude, representing a 'Substantial' impact.

13.3.28 In addition to the short-term criteria provided by the IAQM/EPUK, the magnitude of the change in the predicted number of exceedances of the short-term 24-hour PM_{10} objective can be directly derived from the predicted annual average PM_{10} value using the relationship defined in LAQM.TG (16) (Defra, 2021). An exceedance of the short-term PM_{10} air quality objective is unlikely where annual mean PM_{10} concentrations are less than $32 \mu\text{g}/\text{m}^3$. Research projects completed on behalf of Defra and the Devolved Administrations (Laxen and Marner, 2003 and AEAT, 2008) have concluded that the short-term 1-hour NO_2 objective is unlikely to be exceeded where annual mean concentrations are predicted to be less than $60 \mu\text{g}/\text{m}^3$.

13.3.29 For impacts at nature conservation receptors, whether the effect is significant or not is determined by a competent expert in ecology. To inform this judgement, the Environment Agency provide guidance (2016) that states that impacts may be considered insignificant ('not significant') where:

- The short-term impact is less than 10 % of environmental assessment level for the nature conservation site; and
- The long-term impact is less than 1 % of the long-term air quality objective or environmental assessment level for the nature conservation site.

13.3.30 Where the long-term impact at a nature conservation receptor exceeds these criteria, it may also be considered insignificant ('not significant') where:

- The long-term total concentration after the impact is <70 % of the air quality objective or environmental assessment level for the nature conservation site.

13.3.31 Where an impact on nature conservation sensitive receptors cannot be screened as insignificant at this preliminary stage, this does not mean that the effect should be considered significant. Where this occurs, model inputs and assumptions will be reviewed and accuracy enhanced where possible. The predicted impacts will then be reviewed relative to the appropriate Air Quality Standards and Environmental Assessment Levels and the headroom that remains once the proposed development is in operation assessed (i.e. is there a risk of an exceedance of an Air Quality Standard and Environmental Assessment Level). This information is then shared with the competent expert for ecology and the ultimate decision on whether air quality impacts have a significant effect on nature conservation habitat is made by them as an expert in the field of ecology.

13.4 Consultation

- 13.4.1 The Consultation with regard to the outcomes of the formal scoping process and whether there are any likely air quality effects of the IERRT project has been undertaken as appropriate, with the Planning Inspectorate (PINS).
- 13.4.2 The consultation that has been undertaken, along with the outcome of such consultation and how it has influenced this air quality assessment is provided in Table 13.3.

Table 13.3. Summary of consultation to date

Consultee	Reference, Date	Summary of Response	How comments have been addressed in this chapter
PINS	Scoping Opinion, 25 October 2021 Table ID 4.8.2	The Scoping Report states that the study area will cover all roads in the affected road network (ARN) within 200 m of the Humber Estuary Special Area of Conservation (SAC)/ Special Protection Area (SPA)/Ramsar and Site of Special Scientific Interest (SSSI). The Inspectorate considers that the ES should assess effects on Local Wildlife Sites and habitats of principal importance within 200 m of the ARN as well.	The air quality assessment reported in this PEIR does consider the potential for significant effects at the nature conservation sites, including effects on Local Wildlife Sites and habitats of principal importance within 200 m of the ARN. The assessment of impacts on these designations is set out in Section 13.8.
	Scoping Opinion, 25 October 2021 Table ID 4.3.3	Unless it has already been determined which plant would be used during construction, the ES should describe any assumptions made about the plant to be used and explain why these represent the worst-case scenario which could arise under the DCO.	At the PEIR stage, this detail of information is not available. It will, however, be considered in the ES as the detailed design of the construction works is developed.
	Scoping Opinion, 25 October 2021 Table ID 4.3.4	The Scoping Report does not describe whether there are any AQMAs within the proposed ARN that may be affected by the proposed development. The ES should confirm whether there are any relevant AQMAs likely to experience impacts from the proposed development and, if so, identify their location on a figure.	The nearest AQMAs to the proposed development are described in Section 13.6 and shown on Figure 13.1.

Consultee	Reference, Date	Summary of Response	How comments have been addressed in this chapter
	<p>Scoping Opinion, 25 October 2021</p> <p>Table ID 4.3.5</p>	<p>The Scoping Report does not explain if PM_{2.5} will be considered in the air quality assessments. The Applicant is advised to seek agreement with NELC on the range of pollutants to be included in the assessments.</p>	<p>The air quality assessment reported in this PEIR and the assessment that will accompany the ES will include consideration of PM_{2.5}. NELC have provided a formal Scoping Response that confirmed that the assessment approach described in the Scoping Report, including pollutants to be considered, contained everything they had expected.</p>
	<p>Scoping Opinion, October 2021</p> <p>Table ID 4.3.6</p>	<p>The ES should include a figure / figures to identify the final study area for air quality and the human and ecological receptors that have been considered in the assessment.</p>	<p>The study area and receptors considered in this PEIR are shown on Figure 13.1. The same items will be included on a figure to accompany the air quality chapter of the ES.</p>
<p>Natural England</p>	<p>Scoping Opinion, October 2021</p> <p>Appendix 2 Natural England response</p>	<p>The assessment should take account of the risks of air pollution and how these can be managed or reduced.</p>	<p>Section 13.8 of this PEIR chapter identifies potential risks of air pollution with reference to the data currently available at this time and Section 13.9 provides some mitigation with the aim of managing and reducing this risk. The assessment that will accompany the ES will include a more comprehensive assessment of air quality impacts and the risk of air pollution, and provide additional measures to manage and reduce risk where necessary.</p>

Consultee	Reference, Date	Summary of Response	How comments have been addressed in this chapter
UK Health Security Agency	UK Health Security Agency response, 25 October 2021	We support approaches which minimise or mitigate public exposure to non-threshold air pollutants, address inequalities (in exposure), maximise co-benefits (such as physical exercise). We encourage their consideration during development design, environmental and health impact assessment, and development consent.	Mitigation measures to manage and reduce emissions generated by the proposed development are set out in Section 13.9 of this PEIR chapter. The assessment that will accompany the ES will provide additional measures to manage and reduce emissions where necessary.
North East Lincolnshire Council	North East Lincolnshire Council response, 30 November 2021	Having reviewed the AQ section of the scoping request, everything we'd expect to be covered within the proposed Air Quality Assessment is included.	N/A
North Lincolnshire Council	North Lincolnshire Council response, 30 November 2021	The response lists the impacts described within the Scoping Report to be considered in the air quality assessment, but does not provide any comment on them.	N/A

13.5 Implications of policy legislation and guidance

13.5.1 This section of the chapter sets out key aspects and implications of policy and guidance that are relevant to the assessment of likely impacts on air quality. It builds upon the overarching chapter covering Legislative and Consenting Framework (Chapter 5). This will be kept under review as the assessment progresses.

UK legislation

Clean Air for Europe

13.5.2 The Clean Air for Europe (CAFE) programme consolidated and replaced (with the exception of the 4th Daughter Directive) preceding directives with a single legal act, the Ambient Air Quality and Cleaner Air for Europe Directive 2008/50/EC (Council of the European Union, 2008) (hereafter referred to as the 'EU Air Quality Framework Directive'). This directive is transcribed into UK legislation by the Air Quality Standards Regulations 2010 (H.M. Government, 2010) which came into force on 11 June 2010. The 2010 Regulations were amended by the Air Quality Standards Regulations 2016 (H.M. Government, 2016), which came into force on 31 December 2016. The limit values defined therein are legally-binding and are considered to apply everywhere (with the exception of the carriageway and central reservation of roads and any locations where the public do not have access). EU limit values were published in these regulations for 7 pollutants, as well as target values for an additional 5 pollutants.

Air Quality Strategy

13.5.3 Part IV of the Environment Act (2021) (H.M. Government, 2021) requires H.M. Government to produce a national Air Quality Strategy (AQS) which contains standards, objectives and measures for improving ambient air quality. Defra's Clean Air Strategy is the current revision of the Strategy (Defra 2019), published in January 2019. The AQS outlines proposals to tackle emissions from a range of sources. This includes providing clear and effective guidance on how Air Quality Management Areas (AQMAs), Clean Air Zones (CAZ) and Smoke Control Areas interrelate and how they can be used by local government to tackle pollution. New legislation will seek to shift the focus towards prevention of exceedances rather than tackling pollution when limits have been surpassed. The AQS sets out air quality objectives that are maximum ambient pollutant concentrations that are not to be exceeded either without exception or with a permitted number of exceedances over a specified timescale.

13.5.4 Air quality objectives, as defined by the Air Quality Strategy, are generally in line with the EU Limit Values, although they have different dates for compliance, and a different legal status as follows:

- EU limit values (as transcribed into UK legislation) are legally binding in the UK. National government compliance at the agglomeration scale is mandatory.
 - UK air quality objectives are for the purposes of LAQM and there is no legal obligation for local authorities to achieve them. They do have a responsibility to work towards achieving them.
- 13.5.5 Of the seven pollutants for which EU limit values have been set, national assessments have demonstrated that there is no risk of CO, 1,3-butadiene, benzene, lead and SO₂ concentrations exceeding the limits due to emissions from traffic anywhere in the UK.
- 13.5.6 The EU limit values and air quality objectives for the remaining pollutants are displayed in Table 13.4. Limits are expressed in one of two ways: as annual mean concentrations which are not to be exceeded without exception, due to their chronic effects; or as shorter term (24 hour or one hour) mean concentrations for which only a specified number of exceedances are permitted within a specified time frame, due to their acute effects.
- 13.5.7 An air quality objective for NO_x of 30 µg/m³ and SO₂ of 20 µg/m³ are set for the protection of vegetation. In addition to these, critical loads for nitrogen deposition have also been determined which represent (according to current knowledge) the exposure below which there should be no significant harmful effects on sensitive elements of those habitats. Critical loads are set for different types of habitat based on their respective sensitivity to nutrient nitrogen and have been obtained for each designated site with the potential to be affected by the proposed development.

Table 13.4. Air quality objectives and EU limit values

Pollutant	Averaging Period	Concentration	Maximum Permitted Exceedances	Target Date (AQO)	Target Date (EULV)
AQOs/EULVs for the Protection of Human Health					
Nitrogen Dioxide (NO ₂)	Annual mean	40µg/m ³	None	31 Dec 2005	1 Jan 2010
	1 hour mean	200µg/m ³	18 times per year	31 Dec 2005	1 Jan 2010
Particulate matter with an aerodynamic diameter of 10 microns or less (PM ₁₀)	Annual mean	40µg/m ³	None	31 Dec 2004	1 Jan 2005
	24 hour mean	50µg/m ³	35 times per year	31 Dec 2004	1 Jan 2005

Pollutant	Averaging Period	Concentration	Maximum Permitted Exceedances	Target Date (AQO)	Target Date (EULV)
Particulate matter with an aerodynamic diameter of 2.5 microns or less (PM _{2.5})	Annual mean	25 µg/m ³	None	1 Jan 2015	1 Jan 2010
Sulphur Dioxide (SO ₂)	24 hour mean	125 µg/m ³	3 times per year	31 Dec 2004	1 Jan 2005
	1 hour mean	350 µg/m ³	24 time per year	31 Dec 2004	1 Jan 2005
AQOs/EULVs for the Protection of Vegetation and Ecosystems					
Nitrogen oxides (NO _x)	Annual mean	30 µg/m ³	None	31 Dec 2000	19 Jul 2001
Sulphur dioxide	Annual mean	20 µg/m ³	None	31 Dec 2000	19 Jul 2001
Nutrient nitrogen deposition	Annual mean	Salt marsh: 20-30 kg N/ha/yr	None	N/A	N/A
		Coastal and floodplain grazing marsh: 10-15 kg N/ha/yr			
		Deciduous woodland: 10-20 kg N/ha/yr			

National policy

National Policy Statement for Ports (NPSfP)

13.5.8 Section 5.7 of the National Policy Statement for Ports (Department for Transport, 2012) sets out the Government's policy for ports relating to air quality. It highlights key air quality concerns relating to ports as emissions from vehicles accessing and leaving ports, emissions from ship engines and dust emissions from potentially dust generating cargo.

13.5.9 Paragraph 5.13.5 of the Policy Statement describes what an air quality chapter of an Environmental Statement should include:

- *“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.”*

13.5.10 Section 5.8 of the National Policy Statement for Ports sets out policy for ports relating to emissions of dust and odour and the potential harm to amenity. It is acknowledged in the Policy Statement that *“some impact on amenity for local communities is likely to be unavoidable. The aim should be to keep impacts to a minimum and at a level that is acceptable”*.

13.5.11 Paragraph 5.8.5 of the Policy Statement describes what an air quality chapter of an Environmental Statement should include with regards to potential emissions of dust and odour:

- *“the type, quantity and timing of emissions;*
- *aspects of the development which may give rise to emissions;*
- *premises or locations that may be affected by the emissions;*
- *effects of the emission on identified premises or locations; and*
- *measures to be employed in preventing or mitigating the emissions.”*

UK Marine Policy Statement (MPS)

13.5.12 Section 2.6.2 of the UK MPS (Defra, 2011) sets out the Government’s policy for marine environments relating to air quality. In paragraph 2.6.2.1 it is noted that *“The construction, operation and decommissioning phases of projects can involve emissions to air which could lead to adverse impacts on human health, biodiversity, or on the wider environment.”*

Marine Plan – East Inshore

13.5.13 The Marine Plan for the UK East Inshore region (Maritime Management Organisation, 2016) includes some policies that are relevant to air quality and this assessment. They focus on potential impacts on nature conservation as follows:

- **Policy BIO1 Biodiversity** – *“Appropriate weight should be attached to biodiversity, reflecting the need to protect biodiversity as a whole, taking account of the best available evidence including on habitats and species that are protected or of conservation concern in the East marine plans and adjacent areas (marine, terrestrial)”;*
- **Policy ECO1 Ecosystem** – *“Cumulative impacts affecting the ecosystem of the East marine plans and adjacent areas (marine, terrestrial) should be addressed in decision-making and plan implementation”;*
- **Policy MPA1 Marine protected areas** – *“Any impacts on the overall Marine Protected Area network must be taken account of in strategic*

level measures and assessments, with due regard given to any current agreed advice on an ecologically coherent network.”

National Planning Policy Framework (NPPF)

13.5.14 The revised NPPF (Ministry of Housing, Communities & Local Government, 2021) sets out the Government’s planning policies for England and how these are expected to be applied.

13.5.15 The revised NPPF maintains the presumption in favour of sustainable development which should be delivered in accordance with three main objective areas: economic, social and environmental (Paragraph 8). The revised NPPF aims to enable local people and their local authorities to produce their own distinctive local and neighbourhood plans, which should be interpreted and applied in order to meet the needs and priorities of their communities.

13.5.16 Air quality is considered as an important element of the natural environment. On conserving and enhancing the natural environment, Paragraph 174 states that:

“Planning policies and decisions should contribute to and enhance the natural and local environment by:

...

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality ...”

13.5.17 Air quality in the UK has been managed through the LAQM regime using national objectives. The effect of a proposed development on the achievement of such policies and plans may be a material consideration by planning authorities when making decisions for individual planning applications. Paragraph 186 of the NPPF states that:

“Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.”

13.5.18 Sections of the Planning Practice Guidance (Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local

Government, 2021) were updated in November 2019. With regards to air quality, the updated guidance (paragraph 003 Reference ID: 32-003-20191101) states that:

“Whether air quality is relevant to a planning decision will depend on the proposed development and its location. Concerns could arise if the development is likely to have an adverse effect on air quality in areas where it is already known to be poor, particularly if it could affect the implementation of air quality strategies and action plans and/or breach legal obligations (including those relating to the conservation of habitats and species). Air quality may also be a material consideration if the proposed development would be particularly sensitive to poor air quality in its vicinity.”

13.5.19 In paragraph 005 (Reference ID: 32-005-20191101) it is stated that:

“Where air quality is a relevant consideration the local planning authority may need to establish:

- *the ‘baseline’ local air quality, including what would happen to air quality in the absence of the development;*
- *whether the proposed development could significantly change air quality during the construction and operational phases (and the consequences of this for public health and biodiversity); and*
- *whether occupiers or users of the development could experience poor living conditions or health due to poor air quality.”*

13.5.20 The PPG goes on to state that considerations that may be relevant to determining a planning application include whether the development would (Paragraph: 006 Reference ID: 32-006-20191101):

- Lead to changes in vehicle-related emissions in the immediate vicinity of the proposed development or further afield;
- Introduce new point sources of air pollution;
- Expose people to harmful concentrations of air pollutants;
- Give rise to potentially unacceptable impacts during construction for nearby sensitive locations; and
- Have a potential adverse effect on biodiversity.

13.5.21 The PPG also suggests that the following items could form part of an air quality assessment suitable for an Environmental Impact Assessment (EIA) (Paragraph: 007 Reference ID: 32-007-20191101):

- A description of baseline conditions;
- Consideration of sensitive habitats (including designated sites of importance for biodiversity);
- The assessment methods to be adopted and any requirements for the verification of modelling air quality;
- The basis for assessing impacts and determining the significance of an impact;

- Where relevant, the cumulative or in-combination effects arising from several developments;
- Construction phase impacts;
- Acceptable mitigation measures to reduce or remove adverse effects; and
- Measures that could deliver improved air quality even when legally binding limits for concentrations of major air pollutants are not being breached.

Local policy

13.5.22 The North East Lincolnshire Local Plan (Local Plan) (2013 to 2032) was adopted in 2018 and sets out a strategic vision for the county (North East Lincolnshire Council, 2018). The plan is centred around set challenges for the Local Council and policy which has been implemented to solve them and support local economic sectors.

13.5.23 A key challenge highlighted in the Local Plan (paragraph 14.151) is to “*ensure transport contributes to environmental excellence, improved air quality and reduced greenhouse gas emissions*” and aims to enhance the environment in parallel with delivering economic growth. A key weakness identified by the council with regards to the environment is pockets of poor air quality in Grimsby and Immingham. Immingham town itself serves the surrounding rural community. The main challenges in this area concern traffic movements and air quality in relation to proximity to the Port of Immingham.

13.5.24 A relevant strategic objective outlined in the Local Plan is SO [Strategic Objective] 2: Climate change. Whilst titled “Climate change”, this objective also includes managing air quality in the North East Lincolnshire Council area, decreasing the number of active AQMAs, and improving use of sustainable modes of transport.

13.5.25 Several policies within the Local Plan are relevant to air quality in the Immingham port area:

- **Policy 5:** Development boundaries sets out how all proposed developments within the Council must consider noise and air quality, in line with sustainability considerations.
- **Policy 31:** Renewable and low carbon infrastructure was introduced to maximise renewable energy capacity and developments must consider use of renewable energy along with air quality impacts.
- **Policy 36:** Promoting sustainable transport aims to reduce congestion and improve environmental quality. This policy highlights priority areas, including the A180 corridor, where sustainable transport measures and highway improvements will be focused.

13.5.26 The North East Lincolnshire Council Transport Plan also highlights air quality in Transport Challenge H (section 1.3), which recognised that emissions of transport account for a large part of the council’s total carbon

emissions and is a source of poor air quality in Immingham and Grimsby (North East Lincolnshire Council, 2016).

13.5.27 In neighbouring North Lincolnshire, the North Lincolnshire Local Plan has been replaced by the Local Development Framework (LDF) (2006 to 2026). The LDF consists of a Core Strategy (North Lincolnshire Council, 2011a) which states that a key goal of the Framework is to reduce pollution levels and frame North Lincolnshire local environmental needs within the wider global picture. Most air quality management objectives focus on the AQMA at Scunthorpe. However, a relevant objective to the proposed development is:

- **Spatial Objective 7:** Efficient Use and Management of Resources. This aims to support measures to minimise pollution and improve air quality and ensure adequate infrastructure is in place to serve new developments.

13.5.28 The North Lincolnshire Local Transport Plan (2011-2026) details a strategic vision for transport management in the borough (North Lincolnshire Council, 2011b). Local transport goals include supporting sustainable modes of transport and reducing traffic related CO₂ and NO₂ emissions so as to protect and enhance the natural environment. In the Transport Plan, the A160 at South Killingholme was identified as an area of concern regarding levels of NO₂.

13.6 Preliminary description of the existing environment

Local Air Quality Management

13.6.1 The main sources of air pollution within North East Lincolnshire Council area are detailed in the North East Lincolnshire Council Air Quality Annual Status Report (2020). This report details air quality monitoring data for up to 2019. Whilst 2020 data exists, 2019 represents the most recent representative dataset, due to the Covid-19 pandemic and the affect this had on reducing emissions to air (from both traffic and industry) in 2020. In North East Lincolnshire, the main sources of pollution are road traffic emissions and local background sources such as rail and industry. Historically, industrial emissions associated with the Ports of Grimsby and Immingham have been a local factor, but monitoring over the past few years has suggested this is no longer the case. An AQMA was previously designated within Immingham was revoked in 2016 due to relevant pollutant concentrations falling below the air quality objective value. One AQMA does still remain in place in Grimsby, at Cleethorpe Road/Riby Square, declared for annual mean NO₂ in 2010, although annual mean concentrations have been measured to be below the air quality objective value for the last few years.

13.6.2 Within the North East Lincolnshire Council area, passive and automatic monitoring is undertaken, including the background AURN monitoring station, which is in place on Woodlands Avenue and is operated by the Environment Agency. A summary of monitoring data gathered in the vicinity

- of the proposed development is provided in Table 13.5. In 2019, there were no recorded exceedances of the annual mean NO₂ objective and concentrations were such that there was little risk of the 1-hour mean NO₂ objective being exceeded - where annual mean NO₂ concentrations are below 60 µg/m³, this is also considered to represent a proxy to suggest that the 1-hour NO₂ objective is not exceeded. Some diffusion tube locations have been in operation at the same location for a number of years and inter-annual variation suggest that annual mean concentrations of NO₂ are falling, including at locations within the AQMA.
- 13.6.3 North East Lincolnshire Council does not currently monitor PM₁₀ or PM_{2.5}. However, in 2017, PM₁₀ was monitored by Beta Attenuation (Particulate) Monitors (BAMs) at two sites: Fryston House in Grimsby (CM1) and Kings Road in Immingham (CM2). No exceedances of the annual mean objective were recorded at either of the monitoring sites.
- 13.6.4 In the North Lincolnshire Council area, air quality is monitored across the administrative area using both automatic and passive monitoring. North Lincolnshire Council declared an AQMA for exceedances of the 24-hour mean PM₁₀ concentrations in Scunthorpe in 2005, which was amended to cover a smaller area of the town in 2018. Within Scunthorpe, there is an Integrated Iron and Steel Works, which is the main source of these emissions. The M180 runs to the south of Scunthorpe and outside of this AQMA.
- 13.6.5 The North Lincolnshire Council Annual Status Report (2020) details recorded annual mean NO₂ monitoring results for the past few years (North Lincolnshire Council, 2020), including locations close to the A160 at South Killingholme. These results are summarised in Table 13.6 and demonstrate concentrations below the air quality objective and below the value to suggest any risk of the 1 hour NO₂ objective being exceeded. The Annual Status Report also demonstrates that in 2019, the annual mean PM₁₀ air quality objective and the 24hr mean objective were complied with at all monitoring locations, including CM6 at South Killingholme, and at monitoring stations within the AQMA at Scunthorpe. All other objectives relating to SO₂, NO₂ and PM_{2.5} were also complied with at all sites. It was highlighted by North Lincolnshire Council that despite levels of PM₁₀ having met the 24hr mean objective during 2019, some areas within the borough still experienced high concentrations. In particular, the area immediately around Scunthorpe Integrated Steelworks site, within the AQMA.

Table 13.5. Recorded NO₂ Concentrations in Immingham from North East Lincolnshire Air Quality Monitoring Network.

Site ID	Grid Reference		Site Type	Monitoring type	NO ₂ Annual Mean Concentration (µg/m ³)				
	X	Y			2015	2016	2017	2018	2019
Immingham									
AURN	518277	415116	Urban Back-ground	Automatic	-	-	16.9	13.9	12.5
NEL 23	519193	415279	Roadside	Diffusion Tube	30.0	33.3	28.5	26.5	24.5
NEL 24	517543	414312	Kerbside	Diffusion Tube	-	-	-	-	16.5
NEL 25	518108	414533	Kerbside	Diffusion Tube	-	-	-	-	19.1
Cleethorpe Road AQMA, Grimsby									
Cleethorpe Road	527761	410425	Roadside	Automatic	46.5	41.6	35.9	-	32.0
NEL 11/12/13	527761	410425	Roadside	Co-located Diffusion Tubes	42.7	45.2	47.3	38.0	37.8
NEL 14	527754	410445	Kerbside	Diffusion Tube	34.7	37.3	34.7	33.3	31.6
NEL 15	527789	410438	Kerbside	Diffusion Tube	30.8	35.7	37.3	32.9	31.0
Values in Bold signify an exceedance of the annual mean NO ₂ air quality objective									

Table 13.6. Recorded NO₂ Concentrations in Immingham from North Lincolnshire Air Quality Monitoring Network.

Site ID	Grid Reference		Site Type	Monitoring type	NO ₂ Annual Mean Concentration (µg/m ³)				
	X	Y			2015	2016	2017	2018	2019
South Killingholme									
CM6	514880	416133	Other	Automatic	20	17	17	18	15
DT13	514573	415901	Roadside	Diffusion Tube	26	31	20	17	17
DT14	514782	415971	Roadside	Diffusion Tube	34	31	27	28	29
DT15	515452	416107	Urban Back-ground	Diffusion Tube	19	21	19	20	18
DT16	515279	416085	Roadside	Diffusion Tube	27	26	25	26	25

Baseline nitrogen dioxide diffusion tube survey

13.6.6 To supplement the existing NO₂ monitoring data gathered by the Local Authorities in the study area, a project specific NO₂ survey is also being undertaken. The survey is due to be completed in February 2022 and will be used to inform the air quality assessment reported in the Environmental Statement.

Defra background pollutant map concentrations

13.6.7 Defra has produced maps of background pollutant concentrations covering the whole of the UK for Local Authorities and consultants to use in air quality assessments, where local background monitoring data are unavailable or inappropriate to use. The maps provide background pollutant concentrations for each 1 km x 1 km grid square within the UK for all years between 2018 and 2030 for NO_x, NO₂, PM₁₀ and PM_{2.5}, and 2001 for SO₂. Table 13.7 outlines the average 2019 background concentrations of NO_x, NO₂, PM₁₀, PM_{2.5} and SO₂ within the grid square where the proposed development is approximately located (519500, 412500). Background concentrations within this grid square are well below the respective Air Quality Standards.

Table 13.7. Defra Mapped Annual Mean Background Concentrations for approximate area of site (µg/m³).

Grid Square		NO _x	NO ₂	PM ₁₀	PM _{2.5}	SO ₂
X	Y					
519500	412500	14.5	13.0	113.0	9.4	6.7

Dust

13.6.8 Existing background dust levels are likely to be variable across the study area. Close to the Port and surrounding industrial/ commercial areas, there are likely to be a number of dust generating activities already present and baseline levels of dust deposition and dust soiling are potentially elevated. Away from the Port and the industrial areas, where most dust sensitive receptors are present, including the residential areas of Immingham and South Killingholme, dust deposition rates and dust soiling are likely to be typical of most urban, suburban, and semi-rural locations.

13.7 Future baseline environment

13.7.1 The site of the proposed development forms part of the operational Port of Immingham and has been in active use for port purposes for a number of decades. The current use of the site is for bulk cargo, steel sections, lorry and automotive storage. In the absence of the IERRT, the site would continue to be utilised for port activity.

Local air quality

- 13.7.2 Future baseline air quality will be predicted at selected air quality sensitive receptors using dispersion modelling once a full traffic dataset is available and reported in the Environmental Statement.
- 13.7.3 In the absence of a full traffic dataset at this time, it is estimated that future baseline conditions in the study area in the year of peak construction will be similar to that experienced currently, with growth in traffic flow offset by improved vehicle emissions technology and evolution of the vehicle fleet. It is estimated that future baseline conditions in the year of opening will be similar if not better than existing conditions, as overtime the improvement in vehicle emissions technology and evolution of the vehicle fleet outweighs growth in traffic flow.

Dust

- 13.7.4 Future baseline dust conditions are unlikely to be perceptibly different to conditions experienced now, providing no greater source of dust emissions is introduced into the study area than what is currently present. This is considered highly unlikely given the current use of sections of the site for bulk cargo storage.

13.8 Preliminary consideration of likely impacts and effects

- 13.8.1 This section identifies the potential likely impact and effects on the identified receptors as a result of the construction and subsequent operation of the IERRT project which have been identified at this preliminary stage.
- 13.8.2 The assessment reported here is semi-qualitative and makes use of the data currently available at this stage of the DCO process. It is anticipated that additional data will be available to inform further assessment of potential likely impact and effects to be reported in the Environmental Statement.
- 13.8.3 Cumulative impacts on surrounding sensitive human and nature conservation receptors could arise as a result of other coastal and marine developments and activities in the Humber Estuary. These will be considered as necessary as part of the cumulative impacts and in-combination effects assessment, the approach to which is explained further in Chapter 20 of this PEIR.

Construction phase

- 13.8.4 This section contains an assessment of the potential impacts to air quality as a result of the construction phase of the IERRT project. The following impact pathways have been assessed:
- Construction dust and site plant emissions; and
 - Construction traffic and marine vessel emissions.

Construction Dust and Site Plant Emissions

13.8.5 As described in Section 13.3 and Appendix 13.1, the construction dust and particulate matter assessment follows the step-by-step approach set out in relevant IAQM guidance (Holman et al., 2014). This process is summarised in the sub-sections below.

Step 1 Screen the requirement for a detailed assessment

13.8.6 Step 1 of the IAQM construction dust guidance is to screen the requirement for a more detailed assessment. According to the guidance, no further assessment is required if there are no receptors within a specified distance of the works. The screening distances set by the IAQM guidance are:

- Receptors sensitive to amenity and human health impacts within 350 m of the construction site boundary and/or within 50 m of a public road used by construction traffic that is within 500 m of the site entrance; and
- Nature conservation receptors located within 50 m of the construction site boundary and/or within 50 m of a public road used by construction traffic that is within 500 m of the site entrance.

13.8.7 There are a number of high sensitivity amenity and human health sensitive receptors within 350 m of the construction site boundary. These include the residential dwellings off Queens Road, within 200 m south of the southern trailer park and container yard, and residential dwellings off Kings Road, within 300 m south of the western trailer park and container yard (see Figure 13.2 of Volume 2). There is also low sensitivity commercial and industrial land use adjacent to the site in all directions.

13.8.8 There are also a number of nature conservation receptors within 50 m of the construction site boundary, including the high sensitivity Humber Estuary SAC/SPA, which is immediately adjacent to the north and north-eastern sections of the site. There is also Priority Habitat to the south of the southern and western trailer park and container yards and the east of the eastern trailer park and container yard. These are shown on Figure 13.2.

13.8.9 Due to the presence of the high sensitivity amenity, human health and nature conservation sensitive receptors within the screening distances set by the guidance, the more detailed assessment is required and is set out below.

Step 2 Assess the Risk of Dust Impacts

Step 2A Determine the Dust Emissions Magnitude

13.8.10 Step 2A requires the determination of the dust emission magnitude, which the guidance states is based on the scale of the anticipated works with the following activities: demolition; earthworks; construction (i.e. the building and erection of structures); and trackout (the deposition of dust and particulate matter onto public roads by construction vehicles), and should be classified as Small, Medium, or Large. A description of the construction works is provided in Chapter 3.

Demolition

- 13.8.11 Demolition work is limited to the deconstruction of the old Drury Engineering Services buildings. The aggregate volume of buildings and structures to be demolished is less than 20,000 m³, the building and structures are predominantly of a material with low potential to generate dust and demolition activities should not be required at a height of 10 m or more above ground. In light of the above, and in line with the IAQM guidance criteria (2014) summarised in Appendix 13.1, the dust emission magnitude for the proposed demolition works is Small.

Earthworks

- 13.8.12 The site is anticipated to require earthworks associated with soil-stripping, ground levelling and excavation works. For the purpose of this assessment, the area of earthworks is considered to exceed 10,000 m² and require the handling of a large mass of materials and multiple earth-moving vehicles. of material. As such, the dust emissions magnitude of effect for earthworks is Large.

Construction

- 13.8.13 Potentially dusty materials that may be in use during construction works are concrete (if delivered dry), sand and hard core, which will be stored and handled at the site throughout the construction phase. Other construction materials are likely to be prefabricated with little dust emissions potential. For the purpose of this assessment, the volume of construction work is considered to be between 25,000 and 100,000 m³ and require the storage and handling of potentially dusty material. As such, the dust emissions magnitude for construction is Medium.

Trackout

- 13.8.14 Trackout is associated with the deposition of mud and potentially dusty material onto the public network from construction vehicles leaving site. On average there is anticipated to be more than 50 outward construction related HDV (all vehicles >3.5 tonnes) movements per day, although the access road surface used by these vehicles will be paved. To be precautionary, the dust emission magnitude for trackout is assigned as Large.

Step 2B Determine the Sensitivity of the Area

- 13.8.15 Step 2B of the IAQM construction dust guidance requires the determination of the sensitivity of the area to construction dust impacts. According to the guidance, this is based on the sensitivity of individual receptors, the proximity and number of those receptors, background PM₁₀ concentrations and site-specific factors, such as local terrain, meteorology and natural and existing windbreaks.
- 13.8.16 In this instance, there are between 10 and 100 high sensitivity amenity and human health receptors between 200 and 350 m of the construction site boundary and or site access point, and a number of low sensitivity industrial/commercial receptors within 20 m of the site boundary. This equates to an area of Low sensitivity for dust soiling amenity impacts.

- 13.8.17 Background PM₁₀ concentrations are estimated to be around 17 µg/m³ and this, coupled with the limited number of receptors and their proximity to the construction site, means that the sensitivity of the area to health impacts is also Low.
- 13.8.18 The proximity of the Humber Estuary SAC/SPA means that there is a high sensitivity nature conservation receptor within 20 m of the construction site boundary. However, the areas of the SAC/SPA that are within 20 m of the construction site boundary are tidal mudflats and not considered sensitive to construction dust impacts. Priority Habitats located adjacent to the trailer park and container yard have been identified due to vegetation species and these are potentially sensitive to construction dust impacts. The IAQM guidance does not specifically refer to Priority Habitats when describing the sensitivity of nature conservation sites, but does state that habitat where *“there is a particularly important plant species, where its dust sensitivity is uncertain or unknown”* these should be classed as having medium sensitivity. A medium sensitivity receptor within 20 m of the construction site boundary means that the sensitivity of the area to ecological impacts is Medium.

Step 2C Determine the Risk of Dust Impacts

- 13.8.19 Step 2C of the IAQM construction guidance concerns the determination of the risk of dust impacts, which is informed by the dust emission magnitude identified in Step 2A and the sensitivity of the area identified in Step 2B.
- 13.8.20 For dust soiling amenity and human health impacts, the Large dust emission magnitude identified for earthworks and trackout, in an area of Low sensitivity, equates to a Low risk of dust impacts during those activities. The Medium dust emission magnitude identified for construction works also equates to a Low risk of dust impacts. The Small dust emission magnitude identified for demolition equates to a Negligible risk of dust impacts.
- 13.8.21 For dust impacts on ecology, the Large dust emission magnitude identified for earthworks and trackout, in an area of Medium sensitivity, equates to a Medium risk of dust impacts during those activities. The Medium dust emission magnitude identified for construction works also equates to a Medium risk of dust impacts on ecology. The Small dust emission magnitude identified for demolition equates to a Low risk of dust impacts.

Site Plant Emissions

- 13.8.22 According to the IAQM guidance (2014) exhaust emissions from on-site plant (NRMM) and site traffic are unlikely to make a significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed. This is considered to be the case for the construction of the proposed development, due to the distance between the working areas of the construction site and nearest high sensitivity human health and nature conservation receptors (residential dwellings on Queens Road and salt marsh habitat northwest of the ABP Humber International Terminal respectively).

13.8.23 Emissions from site plant and NRMM are often transient and intermittent in nature, operating as and when and where required, and therefore do not impact on the same location for any prolonged period of time.

Construction traffic and marine vessel emissions

13.8.24 There is anticipated to be the potential for a maximum of 336 construction phase two-way vehicle movements on the day of peak construction activity, 196 of which are LGVs (vehicles <3.5 tonnes) and 140 are HGVs (vehicles >3.5 tonnes, not including buses or coaches).

13.8.25 The number of additional HGV movements exceeds the criteria given in IAQM/EPUK guidance (Moorcroft and Barrowcliffe. et al., 2017) to suggest that detailed modelling may be required to demonstrate if there are significant effects or not.

13.8.26 A screening assessment of construction phase road traffic emissions impacts has been undertaken to consider the potential effect of this emission source on air quality sensitive human health receptors adjacent to the construction traffic route between the A180 and the IERRT project construction site.

13.8.27 In reality, daily average movements will be less than the figure referred to in the paragraphs above, although for the screening assessment set out below, the peak daily movements have been precautionarily used to estimate potential impacts.

13.8.28 For the purpose of the screening assessment, two scenarios have been considered – one that assumes all construction traffic will access and leave the construction site via the Port of Immingham west gate, via the A160, and one that assumes construction traffic will access and leave the construction site via the Port of Immingham east gate, via Queens Road. In reality, it is anticipated that construction traffic will use both the east and west gates when accessing and leaving the site. However, the approach taken for the screening assessment will provide a precautionary estimate of impacts on both routes between the construction site and the A180. Table 13.8 provides the results of the screening assessment.

13.8.29 Table 13.8 shows the total pollutant concentrations for NO₂, PM₁₀ and PM_{2.5} in future baseline and future construction phase scenarios, the magnitude of change between those scenarios, and the impact descriptor in line with IAQM and EPUK guidance (Moorcroft and Barrowcliffe et al., 2017). An imperceptible increase in pollutant concentrations equates to negligible impact at receptors adjacent to both construction traffic routes considered.

Table 13.8. Construction phase road traffic impacts

Receptors	Future Baseline			Future Construction			Impact ¹		
	NO ₂	PM ₁₀	PM _{2.5}	NO ₂	PM ₁₀	PM _{2.5}	NO ₂	PM ₁₀	PM _{2.5}
Residential properties adjacent to Queens Road	18.8	15.8	9.2	19.1	15.9	9.3	+0.3 (N)	+0.1 (N)	+0.1 (N)
Residential properties adjacent to Humber Road (A160)	25.3	17.2	10.2	25.7	17.4	10.3	+0.3 (N)	+0.1 (N)	<0.1 (N)

¹ IAQM/EPUK impact descriptors in parenthesis:
N = Negligible; SI = Slight; M = Moderate; Su = Substantial

13.8.30 Table 13.8 shows that the impact on annual mean concentrations of NO₂ at locations adjacent to Queens Road and Humber Road will be negligible, as will be impacts from annual mean PM₁₀ and PM_{2.5}. Annual mean concentrations of NO₂ and PM₁₀ are such that there is considered no risk of an exceedance of either the hourly mean NO₂ air quality objective, or the daily mean PM₁₀ air quality objective. The negligible impact from construction phase vehicle movement emissions is temporary and not considered to have a significant effect.

13.8.31 Construction traffic movements will also pass within 200 m of two areas consisting of Priority Habitat. However, in line with IAQM guidance on air quality impacts on nature conservation sites (Holman et al., 2020), the number of construction phase vehicle movements falls below the screening criteria referenced in that guidance – National Highways DMRB criteria (a change in two-way traffic flow of 1000 or more AADT and/or 200 or more annual average daily HDVs (all vehicles >3.5 tonnes) (Highways England, 2019)). As such, it is considered unlikely that any impact from construction phase vehicle movements would have a significant effect on any sensitive habitats close to roads used by construction traffic.

13.8.32 The number and type of construction phase vessel movements is currently under consideration, but the activity of these vessels at the construction site will likely be around 1.5 km away from the nearest human health sensitive receptors (residential dwellings on Queens Road) and around 3 km from the nearest air quality sensitive habitat within the Humber Estuary SAC/SPA (salt marsh to the northwest of the ABP Humber International Terminal).

13.8.33 Construction vessels are likely to be active within a few hundred metres of the Priority Habitat located east of the eastern trailer park and container yard. There is the potential for construction phase vessels to impact on this habitat, although construction phase impacts will be transient and intermittent – limited to periods when construction vessels are in operation close to the habitat – and for the duration of the construction phase only (c.2 years). It is reasonable to assume that emissions from vessel movements

associated with the construction of the proposed development will not adversely affect the Priority Habitats, given that these habitats are already present in the context of a busy operational port environment. However, this will be examined as necessary and reported in the EIA.

13.8.34 With regards to the impact on human health, Defra's LAQM-TG(16) (Defra, 2021) guidance states that for the purposes of LAQM, emissions from port expansions may need to be considered where:

- There are more than 5,000 large ship movements (i.e. cross-channel ferries, roll on-roll off ships, bulk cargo, container ships, cruise liners, etc – one ship generating two movements (arrival and departure)) per year, with relevant exposure within 250 m of the berths and main areas of manoeuvring; or
- There are more than 15,000 large ship movements per year, with relevant exposure within 1 km of these areas.

13.8.35 The construction phase vessels do not fall under the description of 'large ships' given in the Defra guidance (2021) (i.e. cross-channel ferries, roll on-roll off ships, bulk cargo, container ships, cruise liners, etc) and the number of construction phase vessel movements per year will fall well below the number of vessel movements listed in the guidance criteria. Given the distance between the likely area of activity for construction phase vessel movements and the nearest human health sensitive receptors, it is considered unlikely that construction phase vessel movements could contribute to a significant effect on local air quality at human health sensitive receptors.

Operational phase

13.8.36 This section contains an assessment of the potential impacts to air quality as a result of the operational phase of the IERRT project. The following impact pathways have been assessed:

- Operational traffic and marine vessel emissions.

Operational traffic and marine vessel emissions

13.8.37 It is anticipated that the operation of the proposed development will introduce an additional 2,592 two-way HGV movements (vehicles >3.5 tonnes, not including buses or coaches) per average day onto the local road network, as well as additional LGV movements (vehicles <3.5 tonnes) associated with the arrival and departure of operational staff each day.

13.8.38 The number of additional HGV movements exceeds the criteria given in IAQM/EPUK guidance (Moorcroft and Barrowcliffe. et al., 2017) to suggest that detailed modelling may be required to demonstrate if there are significant effects or not adjacent to local roads in the vicinity of the Port. The number of additional total vehicles and HGV movements also exceed the criteria given in National Highways guidance (Highways England, 2019)

to suggest that detailed modelling may be required to demonstrate if the effect is significant or not adjacent to the SRN.

- 13.8.39 Detailed modelling of road traffic emissions impacts will be reported in the air quality chapter of the Environmental Statement when a full traffic dataset will be available to inform the assessment. For this PEIR, the potential impact of road traffic emissions has been considered in a semi-qualitative manner.
- 13.8.40 Due to the nature of the proposed development, operational vehicle movements generated by the proposed development will be more dispersed the further they are away from the proposed IERRT. The greatest increase in traffic flow is therefore likely to occur on roads approaching the Port, including Queens Road and the route to and from the Port's eastern gate to and from the A180, via the A1173, Humber Road and the route to and from the Port's western gate to and from the A180, via the A160, and the section of SRN on the A180 and M180, between Immingham and the M18.
- 13.8.41 A screening assessment of operational phase road traffic emissions impacts has been undertaken to consider the potential effect of this emission source on air quality sensitive human health receptors adjacent to the operational traffic route between the A180 and the IERRT project construction site.
- 13.8.42 The screening assessment is based on the assumption that 15 % of operational traffic will access and leave the Port via the Port of Immingham west gate, via the A160, and that 85 % of operational traffic will access and leave the Port site via the Port of Immingham east gate, via Queens Road. Table 13.9 provides the results of the screening assessment.

Table 13.9. Operational phase road traffic impacts

Receptors	Future Baseline			Future Operation			Impact ¹		
	NO ₂	PM ₁₀	PM _{2.5}	NO ₂	PM ₁₀	PM _{2.5}	NO ₂	PM ₁₀	PM _{2.5}
Residential properties adjacent to Queens Road	18.8	15.8	9.2	23.5	16.9	9.9	+4.6 (M)	+1.1 (N)	+0.6 (N)
Residential properties adjacent to Humber Road (A160)	25.3	17.2	10.2	26.3	17.5	10.4	+0.9 (N)	+0.3 (N)	+0.2 (N)

¹ IAQM/EPUK impact descriptors in parenthesis:
N = Negligible; SI = Slight; M = Moderate; Su = Substantial

- 13.8.43 Table 13.9 shows the total pollutant concentrations for NO₂, PM₁₀ and PM_{2.5} in future baseline and future operational phase scenarios, the magnitude of change between those scenarios, and the impact descriptor in line with IAQM and EPUK guidance (Moorcroft and Barrowcliffe et al., 2017). A Moderate adverse impact is identified for annual mean NO₂ on Queens

- Road, due to the magnitude of change predicted (>10 % of the air quality objective). The impact affects approximately 10 residential dwellings and increases annual mean concentrations to 23.5 µg/m³.
- 13.8.44 The Moderate adverse NO₂ impact from operational phase vehicle movements emissions is not considered to have a significant effect. Whilst receptors adjacent to Queens Road will experience a Large increase in annual mean NO₂, annual mean concentrations there will remain well below the air quality objective value for that pollutant with no risk of an exceedance. Impacts are also limited by the number of residential dwellings exposed to these impacts (c.10 properties). With the development in operation, annual mean concentrations of NO₂ experienced on Queens Road will remain less than the NO₂ concentrations experienced by receptors on Humber Road in the future baseline scenario.
- 13.8.45 The impact on annual mean concentrations of NO₂ at locations adjacent to Humber Road are Negligible, as are impacts from annual mean PM₁₀ and PM_{2.5} on Humber Road and Queens Road. Annual mean concentrations of NO₂ and PM₁₀ are such that there is considered to be no risk of an exceedance of either the hourly mean NO₂ air quality objective, or the daily mean PM₁₀ air quality objective.
- 13.8.46 A review has also been undertaken of potential air quality impacts within the nearest AQMAs that are located on roads anticipated to be used by operational phase vehicle movements. This includes consideration of the following AQMAs:
- Grimsby AQMA (A180);
 - Hull AQMA (A63);
 - Lincoln AQMA (A15);
 - Doncaster AQMA No.4 (M18); and
 - Wakefield A1 (and M62) AQMA.
- 13.8.47 On roads within the AQMAs in Grimsby, Hull and Lincoln, operational phase vehicle movements, including HGVs, are anticipated to be below the screening criteria given in both IAQM/EPUK guidance (Moorcroft and Barrowcliffe. et al., 2017) and National Highways guidance (Highways England, 2019). In line with guidance, the detailed assessment of impacts at these areas is not required and the effect is considered to be not significant.
- 13.8.48 On roads within the Doncaster AQMA No.4 and Wakefield A1 AQMA, which are sections of the SRN, operational phase HGV movements are anticipated to exceed the screening criteria given in National Highways guidance (Highways England, 2019). There is the potential that the impact of additional road traffic emissions generated by the proposed development on sensitive human health receptors adjacent to these sections of the SRN could have a significant effect, where movements exceed the screening criteria given in relevant guidance. This will be determined by detailed modelling and reported in the Environmental Statement.

- 13.8.49 A review has also been undertaken of nature conservation sites located adjacent to roads to be used by operational phase vehicle movements, where relevant screening criteria suggests detailed assessment is required (Holman et al., 2020 and Highways England, 2019). This includes consideration of the following sites:
- Hatfield Chase Ditches SSSI, adjacent to the M180; and
 - Potteric Carr SSSI, adjacent to the M18.
- 13.8.50 Hatfield Chase Ditches SSSI is located adjacent to the M180 and has been designated predominantly due to the presence of freshwater vegetation. Most freshwater habitat in the UK is phosphate sensitive, due to agricultural pollution and, therefore, is not considered sensitive to nitrogen-based pollutants.
- 13.8.51 Potteric Carr SSSI is located some distance from the site, but the adjacent M18 is expected to experience an increase in HGV movements above the screening criteria described in guidance. This SSSI was designated for multiple features, including wet grassland and wet woodland species that may be sensitive to nitrogen-based pollutants. As such, there is the potential that the impact of additional road traffic emissions generated by the proposed development on this habitat could have a significant effect. This will be determined by detailed modelling and reported in the Environmental Statement.
- 13.8.52 With regards to marine vessel emissions during operation, there are currently anticipated to be 8 operational vessel movements (4 in and 4 out) per day. These movements will involve '4,050 LM ROPAX' vessels, which include the running of two 10.8 MWe main engines when sailing, and two 1.54 MWe auxiliary engines when docked.
- 13.8.53 When operating under motion, emissions from each vessel movement will be transient and will only impact on any one location for the limited period of time when each vessel movement passes by that location (and then only when the wind is blowing from the vessel towards that location). For eight vessel movements per day and vessel speeds of around 20 knots, any one location is only likely to be impacted by emissions from the sailing vessels for a period of less than an hour per day. Transient and intermittent impacts over such a limited duration is unlikely to have an impact that would cause significant effects.
- 13.8.54 When the vessels are docked, any emissions from them are not transient. As a maximum, there will 4 vessels docked at the same time, from 0700 hours to 1900 hours on most days of the year. which would equate to 4,710 hours of time in dock per vessel per year. Should the vessels be required to operate on their two 1.54 MWe auxiliary engines when docked, there is the potential for aggregate emissions associated with approximately 12.3 MW of electrical output for up to 4,710 hours per year. It is intended, however, that in due course, a shore to ship power connection will provide a good proportion of the energy required by each vessel when docked and the

actual operation of the on-board engines during this time will be limited and intermittent.

13.8.55 The vessels will dock at a distance of around 3 km away from the nearest air quality sensitive habitat within the Humber Estuary SAC/SPA (salt marsh to the northwest of the ABP Humber International Terminal) and a few hundred metres away from the Priority Habitat located east of the eastern trailer park and container yard. Should the vessels be predominantly powered by the onboard auxiliary engines when docked, there is the potential for operational phase vessel emissions to impact on the nature conservation habitats, and whether or not impacts have a significant effect will be considered further in the Environmental Statement. Should the vessels be predominantly powered by a shore to ship connection, then emissions associated with the onboard auxiliary engines will be limited and intermittent and unlikely to impact on the nearby areas of nature conservation to the extent that the effect is significant.

13.8.56 With regards to the impact on human health, the vessels will dock at a distance of around 1.5 km away from the nearest human health sensitive receptors (residential dwellings on Queens Road). Defra's LAQM-TG(16) guidance states that for the purposes of LAQM, emissions from port expansions may need to be considered where:

- There are more than 5,000 large ship movements (i.e. cross-channel ferries, roll on-roll off ships, bulk cargo, container ships, cruise liners, etc – one ship generating two movements (arrival and departure)) per year, with relevant exposure within 250 m of the berths and main areas of manoeuvring; or
- There are more than 15,000 large ship movements per year, with relevant exposure within 1 km of these areas.

13.8.57 The operational phase vessels do fall under the description of 'large ships' given in the Defra guidance (2021), but the number of operational phase vessel movements per year will fall well below the number of vessel movements listed in the guidance criteria. Given the distance between the likely area of operation of vessel movements and the nearest human health sensitive receptors, and the limited number of vessel movements (relative to the criteria set by the Defra guidance) per year, it is considered unlikely that operational phase vessel movements could contribute to a significant effect on local air quality at human health receptor locations.

13.9 Mitigation measures

Construction phase

Step 3 Site Specific Mitigation

13.9.1 Step 3 of the IAQM construction dust guidance uses the risk of dust impacts identified in Step 2C to compile an appropriate list of dust mitigation to offset that risk and ensure that a significant effect does not occur. The IAQM

guidance relevant to the construction dust assessment (IAQM, 2014) lists measures that should be applied, if practical, relative to the risk identified.

13.9.2 In this instance, a Medium risk of dust impacts was identified due the potential dust emission magnitude and the sensitivity of the area. Therefore, the list of IAQM recommended mitigation measures provided below is proportionate to the risk identified. The final list of mitigation measures to be taken forward during the construction works will be defined within the Construction Environmental Management Plan (CEMP) for the proposed development which will be submitted in support of the application .

13.9.3 IAQM recommended dust (and particulate matter) mitigation measures for medium risk sites are as follows:

- 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;
- Display the head or regional office contact information;
- Develop and implement a Dust Management Plan (DMP), which will form part of the CEMP;
- 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 logbook;
- Undertake daily onsite and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked;
- Carry out regular site inspections to monitor compliance with the DMP, record inspection results;
- Increase the frequency of site inspections by the person accountable for air quality and dust issues onsite 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 possible;
- Erect solid screens/barriers or enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period;
- Fully enclose site or specific operations where there is a high potential for dust production and where the site is active for an extensive period;
- Avoid 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, unless being re-used on site. If they are being re-used on-site cover as described below;
- Cover, seed or fence long-term stockpiles to prevent wind whipping;

- Ensure all vehicles switch off engines when stationary - no idling vehicles;
- Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable;
- Impose and signpost maximum-speed-limits on surfaced and unsurfaced haul roads and work areas;
- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression technique;
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation;
- 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 if it is fitted;
- Ensure equipment is readily available onsite to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods;
- Avoid bonfires and burning of waste materials;
- Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust);
- Ensure effective water suppression is used during demolition operations;
- Avoid explosive blasting, using appropriate manual or mechanical alternatives;
- Bag and remove any biological debris or damp down such material before demolition;
- Avoid scabbling (roughening of concrete surfaces) if possible;
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out;
- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site;
- 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 logbook;
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). Ensuring that there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits;
- 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; and
- Access gates to be located at least 10 m from receptors where possible.

Operational phase

13.9.4 The need for operational phase mitigation, if any, will be confirmed and reported within Environmental Statement, after detailed modelling of operational emissions has been undertaken to confirm whether or not potential impacts are likely to have a significant effect or not.

13.10 Limitations

13.10.1 The assessment has been undertaken based on the following assumptions:

- In the absence of alternative data, monitoring data gathered by Local Authorities represents existing baseline air quality within the study area. A baseline NO₂ diffusion tube survey is being undertaken to provide more site-specific data in the study area, including at locations in Immingham, South Killingholme and locations adjacent to the M180. This data will be used to inform the air quality assessment reported in the Environmental Statement;
- In the absence of the required data to model future baseline air quality, the standard of future air quality has been estimated in a qualitative manner. Future baseline air quality will be modelled and reported in the Environmental Statement, when a future baseline traffic dataset is available;
- In the absence of alternative data, Defra background data (Defra, 2021) has been used to represent background pollutant concentration data in the study area. Such an approach is not considered unreasonable and is common practice. The baseline nitrogen dioxide diffusion tube survey also includes monitoring at a background location, to supplement the Defra background data in the assessment to be reported in the Environmental Statement;
- The screening assessment of construction and operational phase road traffic emissions on local roads near the Port makes use of existing baseline traffic data (2019) and not future baseline traffic data, to represent the year of peak construction and the year of opening. In reality, a future baseline dataset is likely to have marginally higher flows than the existing baseline, due to traffic growth, but this will be offset to some extent by the use of 2019 emissions data, which will not account for any improvement in vehicle emission rates or evolution of the vehicle fleet;
- The Screening assessment of construction phase vehicle emissions is based on the precautionary assumption that 100 % of construction traffic will access the construction site via the Port of Immingham west gate, via Humber Road, and that 100 % of construction traffic will access the construction site via the Port of Immingham east gate, via Queens Road. In reality this is clearly not possible and it is likely that the construction traffic will be distributed between both gates;

- The screening assessment of operational phase vehicle emissions is based on the informed assumption that 15 % of operational vehicle movements will access/leave the proposed IERRT by the west gate and Humber Road, and 85 % of operational vehicle movements will access/leave by the east gate and Queens Road;
- The screening assessments reported in this PEIR are informed by hourly sequential meteorological data from Humberside Airport for 2019. It is assumed that this data is representative of meteorological conditions experienced in the vicinity of the Port of Immingham. In the absence of a nearer publicly available source of hour sequential data, this is considered the most appropriate approach.

13.10.2 Where assumptions have been due to the absence of available data, these will be addressed for the assessment to accompany the Environmental Statement. Other assumptions will be agreed with relevant stakeholders and justified in air quality chapter of the Environmental Statement.

13.11 Preliminary Conclusions on Residual Effects

13.11.1 A summary of the impact pathways that have been assessed, the identified residual impacts and level of confidence is presented in Table 13.10.

13.11.2 The assessment of construction phase dust impacts has identified a number of measures that could be implemented to reduce emissions and offsite impacts. The measures listed in Section 13.9 are best practice measures defined by the IAQM (Holman et al., 2014)

13.11.3 Mitigation measures relating to operational measures will be considered following detailed assessment of those emissions, where required, and reported in the Environmental Statement.

13.11.4 Residual effects after the application of mitigation measures identified in the assessment are provided below.

Construction Phase

Construction Dust and Site Plant Emissions

Step 4 Determine Significant Effects

13.11.5 Step 4 of the IAQM construction dust guidance is to determine whether or not the effects, after the application of the identified level of mitigation are, significant or not. The IAQM guidance states that:

“For almost all construction activity, the aim should be to prevent significant effects on receptors through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be ‘not significant’”.

- 13.11.6 Therefore, providing a sufficient level of dust mitigation is implemented on site throughout the works, with reference to those recommended by the IAQM, which are considered standard practice on all well managed construction sites, it is considered that the residual effects from the proposed development are not significant.
- 13.11.7 A review of site plant and NRMM machines has deemed that impacts are unlikely to have a significant effect, in line with the IAQM guidance (2014), for the following reasons:
- The transient and intermittent nature of emissions;
 - The distance between emission sources and the nearest high sensitivity receptors; and
 - The effectiveness of standard practice emission control measures.

Construction traffic and marine vessel emissions

- 13.11.8 A screening assessment of construction vehicle emissions has been undertaken utilising the data and information available at this time. The assessment concerned construction vehicle emissions on the local roads between the proposed development construction site and the A180.
- 13.11.9 The screening assessment identified that peak construction would not have a significant effect on local air quality at human health sensitive receptors
- 13.11.10 Construction phase vehicle emissions impacts on nature conservation sites have not been considered in the assessment described in this PEIR. More detailed traffic data is expected to feed into further assessment and impacts at these locations will be considered and reported within the Environmental Statement.
- 13.11.11 Construction phase vessel emissions have not been considered in the assessment described for this PEIR. More detail on construction vessel emissions will be provided in the Environmental Statement, which will also include detailed assessment of these emissions, if it is required.

Operational Phase

- 13.11.12 A screening assessment of operation vehicle movement emissions has been undertaken utilising the data and information available at this time. The assessment concerned operational vehicle emissions on the local roads between the proposed development and the A180.
- 13.11.13 The magnitude of change in annual mean concentrations of NO₂ was found to be Large and the impact at a limited number of residential dwellings on Queens Road was determined to be Moderate adverse. This is not considered to represent a significant effect, due to total annual mean NO₂ concentrations remaining well below the air quality objective and the limited number of dwellings affected.

- 13.11.14 Operational phase vehicle emissions impacts on human health sensitive receptors adjacent to the SRN (and AQMAs) and nature conservation receptors have not been considered in the assessment described in this PEIR. More detailed traffic data is expected to feed into further assessment and impacts at these locations will be considered and reported within the Environmental Statement.
- 13.11.15 Operational phase vessel emissions have been considered with the level of detail available at the time for the assessment described for this PEIR. More consideration of operational vessel emissions will be provided in the Environmental Statement.

Table 13.10. Summary of potential impact, mitigation measures and residual impacts

Receptor	Impact pathway	Impact Significance	Mitigation measure	Residual Impact	Confidence
Construction Phase					
Human health and amenity sensitive receptors	Construction dust and site plant emissions	Negligible to Slight adverse	Standard practice dust mitigation as recommended by the IAQM	Negligible	High
	Construction traffic and marine vessel emissions.	Negligible	Construction travel plan and use of designated construction routes	Negligible	Medium – Assessment to be updated and impacts confirmed for the Environmental Statement
Nature conservation receptors	Construction dust and site plant emissions	Negligible to Slight adverse	Standard practice dust mitigation as recommended by the IAQM	Negligible	High
	Construction traffic and marine vessel emissions.	Considered qualitatively at this PEIR stage, but likely to be Negligible to Slight adverse	Construction travel plan and use of designated construction routes	Considered qualitatively at this PEIR stage, but likely to be Negligible to Slight adverse	Medium – Assessment to be updated and impacts confirmed for the Environmental Statement

Receptor	Impact pathway	Impact Significance	Mitigation measure	Residual Impact	Confidence
Operational Phase					
Human health sensitive receptors	Operational traffic and marine vessel emissions.	Moderate adverse but not likely to be significant on local roads close to the proposed development. Impacts on the SRN and within the nearest AQMAs not assessed at this PEIR stage, but could potentially be significant	Operational travel plan. Onsite speed limits. Prohibit idling engines. Selective Catalytic Reduction on vessels main engine emissions.	Moderate adverse but not likely to be significant on local roads close to the proposed development. Impacts on the SRN and within the nearest AQMAs not assessed at this PEIR stage, but could potentially be significant	Medium – Assessment on local road to be updated and impacts confirmed for the Environmental Statement. Low – for impacts on SRN and affected AQMAs. Assessment to be undertaken and reported in the Environmental Statement
Nature conservation receptors	Operational traffic and marine vessel emissions.	Considered qualitatively at this PEIR stage, but could potentially be significant	Operational travel plan. Onsite speed limits. Prohibit idling engines. Selective Catalytic Reduction on vessels main engine emissions.	Considered qualitatively at this PEIR stage, but could potentially be significant	Low –Further assessment to be undertaken and reported in the Environmental Statement

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13.13 Abbreviations/Acronyms

Acronym	Definition
AADT	Annual Average Daily Traffic
ABP	Associated British Ports
AQS	Air Quality Strategy
AQMA	Air Quality Management Area
AURN	Automatic Urban and Rural Network
BAMs	Beta Attenuation (Particulate) Monitors
CAFE	Clean Air For Europe
CAZ	Clean Air Zones
CO	Carbon monoxide
DCLG	Department for Communities and Local Government
DCO	Development Consent Order
DEFRA	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges
EIA	Environmental Impact Assessment
EPUK	Environmental Protection UK
EPA	Environmental Protection Act
ES	Environmental Statement
EU	European Union
HCs	Hydrocarbons
HGV	Heavy Goods Vehicle
HDV	Heavy Duty Vehicle
HIT	Humber International Terminal
IAQM	Institute of Air Quality Management
IERRT	Immingham Eastern Ro-Ro Terminal
LAQM	Local Air Quality Management
LDf	Local Development Framework
LDV	Light Duty Vehicle
M	Moderate
MGO	Marine Gas Oil
MHCLG	Ministry of Housing, Communities and Local Government
MMO	Marine Management Organisation
MPS	Marine Policy Statement
MW	Megawatts
N	Negligible
NPPF	National Planning Policy Framework

NPSfP	National Policy Statement for Ports
NO ₂	Nitrogen dioxide
NRMM	Non-Road Mobile Machinery
NSIP	Nationally Significant Infrastructure Projects
NO	Nitrous oxide
NO _x	Oxides of nitrogen
PEIR	Preliminary Environmental Information Report
PINS	Planning Inspectorate
PM ₁₀	Particulate matter
PM _{2.5}	Fine particulate matter
PPG	Planning Practice Guidance
SAC	Special Area of Conservation
SI	Slight
SPA	Special Protection Area
SO	Strategic Objective
SO ₂	Sulphur dioxide
SRN	Strategic Road Network
SSSI	Site of Special Scientific Interest
Su	Substantial

Cardinal points/directions are used unless otherwise stated.

SI units are used unless otherwise stated.

13.14 Glossary

Term	Definition
Air Quality Management Area	Zones declared by Local Authorities where areas of relevant exposure exceed or are at risk of exceeding an air quality objective
Carbon monoxide (CO)	Carbon monoxide, a by-product of fossil fuel combustion
Heavy Good Vehicle	Any truck with a weight greater than 3.5 tonnes
Heavy Duty Vehicle	Any vehicle with a weight greater than 3.5 tonnes
Hydrocarbons (HCs)	Hydrocarbons, an organic compound consisting entirely of hydrogen and carbon, and a by-product of fossil fuel combustion
µg/m ³	Micrograms per metre cubed
µm	Micrometres
MW _e	Megawatts of electrical output generated

Nitrogen dioxide (NO ₂)	Nitrogen dioxide, a by-product of fossil fuel combustion
Oxides of nitrogen (NO _x)	Oxides of nitrogen, a mixture of gases that are composed of nitrogen and oxygen, and a by-product of fossil fuel combustion
Particulate matter (PM ₁₀)	Particles with an aerodynamic diameter of less than 10 µm, and a by-product of combustion of some fossil fuels
Particulate matter (PM _{2.5})	Particles with an aerodynamic diameter of less than 2.5 µm, a by-product of combustion of some fossil fuels
Priority Habitat	A range of semi-natural habitat types that were identified by the UK Biodiversity Group as being the most threatened and requiring conservation action
Sulphur dioxide (SO ₂)	Sulphur dioxide, a by-product of combustion of some fossil fuels
Trackout	The deposition of material onto the public road network by construction vehicles leaving site

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