2.20

Rampion 2 WIND FARM

Volume 2, Chapter 20

# Air Quality

GoBe wood.

# Contents

## Volume 3: Figures



## Volume 4: Appendices

# 20. Air quality

## 20.1 Introduction

20.1.1 This chapter of the Preliminary Environmental Information Report (PEIR) presents the preliminary results of the assessment of the likely significant effects of Rampion 2 with respect to air quality, including dust and odour. Specifically, this chapter considers the air quality effects landward of Mean High Water Springs (MHWS) during construction, operation and maintenance and decommissioning phases where appropriate. It should be read in conjunction with the project description provided in **Chapter 4: The Proposed Development** and the relevant parts of **Chapter 24: Transport** (due to the effect of road traffic on air quality).

20.1.2 Air quality can affect ecological receptors, and where impacts exceed established screening criteria, best practice is for such impacts to be assessed by specialist ecologists and included in the relevant part of the report. In the present case, no such impacts have been identified, and therefore **Chapter 23: Terrestrial ecology and nature conservation** does not need to present further information relating to air quality.

20.1.3 This chapter describes:

- the legislation, planning policy and other documentation that has informed the assessment (**Section 20.2: Relevant legislation, planning policy, and other information and guidance**);
- the outcome of consultation engagement that has been undertaken to date, including how matters relating to air quality within the Scoping Opinion received in August 2020 have been addressed (**Section 20.3: Consultation and engagement**);
- the scope of the assessment for air quality (**Section 20.4: Scope of the assessment**);
- the methods used for the baseline data gathering (**Section 20.5: Methodology for baseline data gathering**);
- the overall baseline (**Section 20.6: Baseline conditions**);
- embedded environmental measures relevant to air quality and the relevant maximum design scenario (**Section 20.7: Basis for PEIR assessment**);
- the assessment methods used for the PEIR (**Section 20.8: Methodology for PEIR assessment**);
- the assessment of air quality effects (**Section 20.9 - 20.11: Preliminary assessment** and **Section 20.12: Preliminary assessment: Cumulative effects**);
- consideration of transboundary effects (**Section 20.13: Transboundary effects**);
- consideration of inter-related effects (**Section 20.14: Inter-related effects**);

- a summary of residual effects for air quality (**Section 20.15: Summary of residual effects**);
- an outline of further work to be undertaken for the Environmental Statement (ES) (**Section 20.16: Further work to be undertaken for ES**);
- a glossary of terms and abbreviations is provided in **Section 20.17: Glossary of terms and abbreviations**; and
- a references list is provided in **Section 20.18: References**.

20.1.4 This chapter is also supported by the following appendices:

- **Appendix 20.1: Full results of construction road traffic modelling, Volume 4**; and
- **Appendix 20.2: Full results of construction plant modelling, Volume 4**.

## 20.2 Relevant legislation, policy and other information and guidance

### Introduction

20.2.1 This section identifies the legislation, policy and other documentation that has informed the assessment of effects with respect to air quality. Further information on policies relevant to the Environmental Impact Assessment (EIA) and their status is provided in **Chapter 2: Policy and legislative context** of this PEIR.

### Legislation and national planning policy

20.2.2 **Table 20-1** lists the legislation relevant to the assessment of the effects on air quality receptors.

Table 20-1 Legislation relevant to air quality

| Legislation description | Relevance to assessment |
|---|---|
| Directive 2008/50/EC on ambient air quality and cleaner air for Europe (the 'Ambient Air Directive') | Consolidates previously existing European Union (EU)-wide air quality legislation (with the exception of Directive 2004/107/EC relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air) and provides a new regulatory framework for particulate matter (PM) smaller than 2.5 µm ($PM_{2.5}$). The Ambient Air Directive sets limit values (for the protection of human health) and critical levels (for the protection of vegetation and ecosystems) for selected pollutants that are to be achieved by specific dates, and details procedures EU Member States should take in assessing ambient air quality. Regulated pollutants include sulphur dioxide ($SO_2$), nitrogen dioxide ($NO_2$), oxides of nitrogen ($NO_x$), particulate matter smaller than |

| Legislation description | Relevance to assessment |
|---|---|
| | 10 µm ($PM_{10}$), particulate matter smaller than 2.5 µm ($PM_{2.5}$), lead (Pb), benzene ($C_6H_6$) and carbon monoxide (CO).<br><br>The limit values and critical levels are legally binding limits on concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The values are based on the assessment of the effects of each pollutant on human health, taking into account the effects on sensitive groups such as children, the elderly and those with health conditions, or on vegetation and ecosystems.<br>The limit values and critical levels relate to concentrations in ambient air. The Ambient Air Directive defines ambient air as outdoor air, and explicitly excludes workplaces and other places to which members of the public do not have regular access.<br><br>EU legislation which applied directly or indirectly to the UK before 11.00 p.m. on 31 December 2020 has been retained in UK law as a form of domestic legislation known as 'retained EU legislation'. This is set out in sections 2 and 3 of the European Union (Withdrawal) Act 2018 (c. 16)[1]. Section 4 of the 2018 Act ensures that any remaining EU rights and obligations, including directly effective rights within EU treaties, continue to be recognised and available in domestic law after the UK's exit from the European Union.<br><br>Rampion 2 has the potential for effects on human receptors covered by the Ambient Air Directive. The protection conferred to these receptors through legislation is accounted for within the scope of the assessment (see **Section 20.4**) and the environmental measures embedded within the design detailed in **Table 20-16.** |
| The Environmental Protection Act 1990 | Provides the framework for the control of nuisance from dust and odour. |
| The Environment Act 1995 | Requires that local authorities periodically review air quality within their individual areas. This process of Local Air Quality Management (LAQM) is an integral part of delivering the Government's Air Quality Strategy and the Air Quality Objectives (AQOs) contained in the Strategy. The Environment Act 1995 sets the framework for setting criteria against which the air quality impacts of Rampion 2 should be assessed. In addition, the LAQM process is |

| Legislation description | Relevance to assessment |
|---|---|
| | key to the provision of baseline air quality data for the assessment (see **Section 20.6**). |
| The Air Quality Standards Regulations 2010 | These came into force on 11 June 2010 and transpose Directive 2008/50/EC, including the limit values, into UK legislation. The Air Quality Standards Regulations 2010 impose a duty on the Secretary of State to meet these limit values.<br><br>Similar to Directive 2008/50/EC, the Air Quality Standards Regulations 2010 define ambient air as outdoor air, and explicitly exclude workplaces and other places to which members of the public do not have regular access. |
| Wildlife and Countryside Act 1981 | This provides the basis for the regulatory framework for the designation of Sites of Special Scientific Interest (SSSIs). Sites in England are designated by Natural England (NE) if they have special interest by reason of any of their flora, fauna, or geological or physiographical features.<br><br>Rampion 2 has the potential for air quality effects on SSSIs. The protection conferred to these sites through legislation is accounted for within the scope of the assessment (see **Section 20.4**) and the environmental measures embedded within the design detailed in **Table 20-16**. |

20.2.3 **Table 20-2** lists the national planning policy relevant to the assessment of the effects on air quality receptors.

Table 20-2 National policy relevant to air quality

| Policy description | Relevance to assessment |
|---|---|
| Overarching National Policy Statement for Energy (EN-1) (2011) | Sets out overarching guidance and requirements for nationally significant energy infrastructure projects.<br><br>Section 5.2 discusses air quality and emissions, and notes the variety of potential pollutants and impacts on human health and on ecological sites. Section 5.2.6 states: *"Where the project is likely to have adverse effects on air quality the applicant should undertake an assessment of the impacts of the proposed project as part of the Environmental Statement (ES)."* This paragraph identifies what the ES should describe. Section 5.2 also explains how the Planning Inspectorate should take air quality into account when |

| Policy description | Relevance to assessment |
|---|---|
| | making a decision, and how they should consider requirements for mitigation.<br><br>Section 5.2.7 outlines what the ES should describe in relation to air quality including:<br>• "*any significant air emissions, their mitigation and any residual effects distinguishing between the project stages and taking account of any significant emissions from any road traffic generated by the project;*<br>• *the predicted absolute emission levels of the proposed project, after mitigation methods have been applied;*<br>• *existing air quality levels and the relative change in air quality from existing levels; and*<br>• *any potential eutrophication impacts.*"<br><br>In addition, section 4.10.2 says: *"Pollution control is concerned with preventing pollution through the use of measures to prohibit or limit the releases of substances to the environment from different sources to the lowest practicable level. It also ensures that ambient air and water quality meet standards that guard against impacts to the environment or human health."*<br><br>Section 5.6.1 says: *"During the construction, operation and decommissioning of energy infrastructure there is potential for the release of a range of emissions such as odour, dust, steam, smoke, artificial light and infestation of insects. All have the potential to have a detrimental impact on amenity or cause a common law nuisance or statutory nuisance under Part III, Environmental Protection Act 1990."*<br><br>As an offshore wind project of more than 100 MW, Rampion 2 falls under this NPS. Embedded environmental measures are presented in **Section 20.7**. These are designed to ensure that there are no significant air quality, dust or odour impacts. |
| The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (2007) | Provides a framework for improving air quality at a national and local level and supersedes the previous strategy published in 2000. It imposes a number of obligations on local authorities to manage air quality but does not directly impose obligations on developers.<br>To carry out an air quality review and assessment under the LAQM process, local authorities produce an Annual Status Report which describes areas identified to be at potential risk of exceeding the objectives in the regulations, and |

| Policy description | Relevance to assessment |
|---|---|
| | progress towards meeting the objectives. Review and assessments of local air quality aim to identify areas where national policies to reduce vehicle and industrial emissions are unlikely to result in air quality meeting the Government's AQOs by the required dates.<br><br>For the purposes of determining the focus of review and assessment, local authorities should have regard to those locations where members of the public are likely to be regularly present and are likely to be exposed over the averaging period of the objective.<br><br>Where the assessment indicates that some or all of the objectives may be potentially exceeded, the local authority has a duty to declare an Air Quality Management Area (AQMA). The declaration of an AQMA requires the local authority to implement an Air Quality Action Plan, to reduce air pollution concentrations so that the required AQOs are met.<br>The LAQM process is key to the provision of baseline air quality data for the assessment (see **Section 20.6**). |
| Clean Air Strategy 2019 | Describes the Government's approach to tackling air pollution in England. |
| National Planning Policy Framework (NPPF) (2019) | A key part of the Government's reforms to make the planning system less complex and more accessible. The NPPF acts as guidance for local planning authorities and decision-takers, both in drawing up plans and making decisions about planning applications. Paragraph 181 states that policies and plans should sustain and improve air quality. In addition, paragraph 170(e) indicates that developments should, wherever possible, help to improve local environmental conditions such as air quality. |

## Local planning policy

20.2.4 **Table 20-3** lists the local planning policy relevant to the assessment of the effects on air quality receptors.

Table 20-3 Local planning policy relevant to air quality

| Policy description | Relevance to assessment |
|---|---|
| Air quality and emissions mitigation guidance for Sussex (2020) | Provides clarity on how local authorities in Sussex intend interpreting relevant Local Plan policies. Provides advice for developers and their consultants |

| Policy description | Relevance to assessment |
|---|---|
| | on how to assess and mitigate the impact that new developments may have on local air quality. This guidance details a consistent approach by developers and local planning authorities to manage of air quality issues in planning applications. |
| Adoption Arun Local Plan 2011-2031 (July 2018) | Section 21.4 and Policy QE DM3 of the Arun Local Plan address air quality. Policy QE DM3 requires that: "*All major development proposals will be required to assess the likely impacts of the development on air quality and mitigate any negative impacts.*"<br><br>This chapter presents an assessment of the air quality impacts of Rampion 2. Embedded environmental measures are presented in **Section 20.7**. These are designed to ensure that there are no significant air quality, dust or odour impacts. |
| Horsham District Planning Framework (2015) | Policy 24: Strategic Policy: Environmental Protection addresses air quality, and states:<br>"*Developments will be expected to minimise exposure to and the emission of pollutants including noise, odour, air and light pollution and ensure that they:...*<br>*4. Minimise the air pollution and greenhouse gas emissions in order to protect human health and the environment;*<br>*5. Contribute to the implementation of local Air Quality Action Plans and do not conflict with its objectives;*<br>*6. Maintain or reduce the number of people exposed to poor air quality including odour. Consideration should be given to development that will result in new public exposure, particularly where vulnerable people (e.g. the elderly, care homes or schools) would be exposed to the areas of poor air quality.*"<br>Embedded environmental measures are presented in **Section 20.7**. These are designed to ensure that there are no significant air quality, dust or odour impacts, and so be consistent with the Air Quality Management Plan. |
| Mid Sussex District Plan 2014 – 2031 (2018) | DP29: Noise, Air and Light Pollution states:<br>*"The environment, including nationally designated environmental sites, nationally protected landscapes, areas of nature conservation or geological interest, wildlife habitats, and the quality of people's life will be protected from unacceptable levels of noise, light and air pollution by only permitting development where:...* |

| Policy description | Relevance to assessment |
|---|---|
| | *It does not cause unacceptable levels of air pollution;... Development proposals (where appropriate) are consistent with Air Quality Management Plans."*<br>This PEIR presents an assessment of the air quality impacts of Rampion 2. Embedded measures are presented in **Section 20.7**. These are designed to ensure that there are no significant air quality, dust or odour impacts, and so be consistent with the Air Quality Management Plan. |
| South Downs Local Plan (2019) | Development Management Policy SD54: Pollution and Air Quality states:<br>*"1. Development proposals will be permitted provided that levels of air, noise, vibration, light, water, odour or other pollutants do not have a significant negative affect on people and the natural environment now or in the foreseeable future, taking into account cumulative impacts and any mitigation.*<br>*2. Development proposals that by virtue of their location, nature or scale could impact on an existing AQMA, as shown on the Policies Map, will be required to:*<br>*a) Have regard to any relevant Air Quality Action Plan (AQAP) and to seek improvements in air quality through implementation of measures in the AQAP; and*<br>*b) Provide mitigation measures where the development and/or associated traffic would adversely affect any declared AQMA.*<br>*3. Development proposals will be required to provide mitigation measures where the development and/or its associated traffic could lead to a declaration of a new or extended AQMA.*<br>*4. Development proposals will be permitted where they follow best practice methods to reduce levels of dust and other pollutants arising during a development from demolition through to completion."*<br>This PEIR presents an assessment of the air quality impacts of Rampion 2 that demonstrates that no significant adverse effects are likely, including within AQMAs. Embedded environmental measures are presented in **Section 20.7**. A commitment to follow best practice methods to reduce levels of dust is given as commitment C-24 (see **Table 20-16**). |

## Other relevant information and guidance

20.2.5 A summary of other relevant information and guidance relevant to the assessment undertaken for air quality is provided in **Table 20-4**.

Table 20-4 Other guidance relevant to air quality

| Policy description | Relevance to assessment |
|---|---|
| World Health Organization (WHO), Air Quality Guidelines for Europe (2000, 2006) | Aims to provide a basis for protecting public health from adverse effects of air pollutants and to eliminate or reduce exposure to those pollutants that are known or likely to be hazardous to human health or well-being. These guidelines are intended to provide guidance and information to international, national and local authorities making risk management decisions, particularly in setting air quality standards. |
| Environment Agency (EA), Air emissions risk assessment for your environmental permit (2020) | Contains long- and short-term assessment levels for releases to air derived from a number of published UK and international sources.<br><br>Gives criteria for screening out source contributions in the context of environmental permit applications. Although intended for use in evaluating permit applications, it is often used for planning applications where no better guidance is available (particularly for ecological receptors).<br><br>This guidance also introduces the terms 'process contribution' (PC), meaning the concentration or deposition rate resulting from the development activities only, excluding other sources, and 'predicted environmental contribution' (PEC), meaning the total modelled concentration, equal to the PC plus the background contribution from all other sources. These terms are commonly used in air quality assessments, even where the term 'process' is not strictly accurate, and so are used in this assessment with 'process' referring to the Proposed Development. |
| Institute of Air Quality Management (IAQM) and Environmental Protection UK (EPUK), Land-use Planning and Development Control: Planning for Air Quality (2017) | Suggests how to classify the magnitude and significance of air quality effects from a new development for planning purposes.<br><br>This guidance also promulgates the term air quality assessment level (AQAL) as a generic term for the various standards, objectives, limit values etc. against which impacts need to be assessed. |

| Policy description | Relevance to assessment |
|---|---|
| IAQM, A guide to the assessment of air quality impacts on designated nature conservation sites (2020) | Provides guidance on the assessment of air quality impacts at designated nature conservation sites. |
| IAQM, Guidance on the assessment of dust from demolition and construction (2016) | Provides guidance on the assessment of dust from construction activities. |
| IAQM, Guidance on the assessment of odour for planning (2018) | Provides guidance on the assessment of odour. |

## 20.3 Consultation and engagement

### Overview

20.3.1 This section describes the outcome of, and response to, the Scoping Opinion in relation to the air quality assessment and also provides details of the ongoing informal consultation that has been undertaken with stakeholders and individuals. An overview of engagement undertaken can be found in **Section 1.5** of **Chapter 1: Introduction**.

20.3.2 Given the restrictions which have been in place due to the COVID-19 pandemic during this period, all consultation has taken the form of conference calls using Microsoft Teams.

### Early engagement

20.3.3 Early engagement was undertaken with a number of prescribed and non-prescribed consultation bodies and local authorities in relation to air quality. This engagement was undertaken to introduce the Proposed Development and the proposed approach to scoping the EIA.

20.3.4 Early engagement with Worthing Borough Council (WBC), Arun District Council (ADC), Horsham District Council (HDC) and Mid Sussex District Council (MSDC) was undertaken, as these are the local authorities with responsibility for onshore air quality. Engagement took the form of an exchange of emails and a conference call with MSDC in May 2020, and a conference call with WBC in March 2021. The Proposed Development was presented and comments invited. Key themes included:

- potential impacts from road traffic, in particular on AQMAs;
- local circumstances which may affect air quality conditions, especially in the Worthing AQMA and monitoring data; and
- potential environmental measures proposed.

20.3.5 In addition, early engagement was undertaken with Natural England as part of the terrestrial ecology and nature conservation aspect in April 2020. No particular issues relating to air quality were raised. Further details on consultation with Natural England is provided in **Chapter 23: Terrestrial ecology and nature conservation**.

## Scoping opinion

20.3.6 RED submitted a Scoping Report (RED, 2020) and request for a Scoping Opinion to the Secretary of State (administered by the Planning Inspectorate (PINS)) on 2 July 2020. A Scoping Opinion was received on 11 August 2020 (Planning Inspectorate, 2020). The Scoping Report set out the proposed air quality assessment methodologies, outline of the baseline data collected to date and proposed, and the scope of the assessment. **Table 20-5** sets out the comments received in Section 5 of the PINS Scoping Opinion 'Aspect based scoping tables – Onshore' that relate to air quality, and how these have been addressed in this PEIR. A full list of the PINS Scoping Opinion comments and responses is provided in **Appendix 5.1: Response to the Scoping Opinion, Volume 4**. Regard has also been given to other stakeholder comments that were received in relation to the Scoping Report.

20.3.7 The information provided in the PEIR is preliminary and therefore not all the Scoping Opinion comments have been able to be addressed at this stage, however all comments will be addressed within the ES.

Table 20-5 PINS Scoping Opinion responses – air quality

| PINS ID number | Scoping Opinion comment | How this is addressed in this PEIR |
|---|---|---|
| **5.2.1** | **Emissions of air pollutants from construction and decommissioning equipment on site.**<br>The Scoping Report proposes to scope out an assessment of air quality impacts from the on-site construction and decommissioning equipment. This conclusion is not justified through the provision of mobile plant and construction equipment numbers and details. The Applicant should provide specific details of the equipment required on site with justification for scoping them out of the assessment against relevant guidance and criteria. The Inspectorate also notes that there is further work to be done in terms of refinement of the route, | Further information on the mobile plant and construction equipment required is presented along with an assessment of likely impacts on receptors in **Section 20.9** and **Section 20.11**. |

| PINS ID number | Scoping Opinion comment | How this is addressed in this PEIR |
|---|---|---|
| | locations of construction compounds and the location of the substation. Whilst these (and thus proximity to air quality sensitive receptors) are uncertain, the Inspectorate considers it premature to rule out likely significant effects during construction and decommissioning. | |
| 5.2.2 | **Emissions of odour from construction, operation and decommissioning**<br>The Inspectorate is content that there is unlikely to be significant emissions of odour during construction and therefore agrees that this matter can be scoped out of the air quality assessment.<br>The Inspectorate notes the Applicant's intention at commitment C-6 to avoid areas of historic landfill through the design and DCO [Development Consent Order] order limits and the agreement that this can be scoped out is on this basis. | Acknowledged. Further refinement of the Proposed Development has resulted in the potential for construction activity to take place in/close to areas of historic landfill, and therefore an odour assessment has been carried out where appropriate.<br><br>Impacts from odour during the operational and decommissioning phases remain scoped out. |
| 5.2.3 | **Emissions of air pollutants during operation.**<br>The Inspectorate is content that there will be no significant emissions associated with the onshore cable or substation during operation and maintenance and this matter to be scoped out of the air quality assessment.<br>However specific details should be provided on the amount of road traffic associated with the operational Proposed Development and how these relate to the IAQM/EPUK screening values set out in paragraph 6.3.3. | Further information on the mobile plant and construction equipment required is presented along with an assessment of likely impacts on receptors in **Section 20.10**. |
| 5.2.3 | **Emissions of air pollutants during operation.**<br>With reference to the description of the Proposed Development, any | No sources of emissions to air from the operation of the proposed onshore substation have been identified, therefore significant |

| PINS ID number | Scoping Opinion comment | How this is addressed in this PEIR |
|---|---|---|
| | potential sources of emissions from the proposed substation should also be set out in demonstrating significant effects on receptors sensitive to air quality can be ruled out. | effects on receptors sensitive to air quality can be ruled out. For this reason, air quality impacts from the operational phase of the onshore substation have been scoped out. |
| **5.2.4** | **Emissions of dust during operation**<br>The Inspectorate is content that there is unlikely to be significant emissions of dust during operation and therefore agrees that this matter can be scoped out of the air quality assessment. | Acknowledged. |
| **5.2.5** | **Sensitive ecological receptors**<br>The ES should set out the relevant ZoIs within which ecological effects from the construction works will be considered (both in terms of the cable route and substation works). | Zones of Influence (ZOIs) are presented in **Section 20.8**. |
| **5.2.6** | **Study area/AQMAs**<br>The Inspectorate agrees with the methodology for designating the proposed study area set out in paragraph 6.3.3. The study area for the assessment should be sufficiently broad to ensure that all receptors which could experience a significant effect are captured within the assessment. The ES should consider how traffic and transport due to construction of the Proposed Development would contribute to air quality levels in the relevant AQMAs. Effort should be made to agree the extent of the study area with relevant consultation bodies and justified within the ES. | Acknowledged. The study area is detailed in **Section 20.4**. Locations likely to be affected by air quality impacts have been discussed with consultation bodies to ensure they are included in the assessment. |
| **5.2.7** | **Baseline/monitoring**<br>The Scoping Report provides limited information regarding the need for surveys in order to characterise the baseline environment or otherwise | Acknowledged. Further details on the existing baseline information are provided in **Section 20.6**. |

| PINS ID number | Scoping Opinion comment | How this is addressed in this PEIR |
|---|---|---|
| | inform the Air Quality Assessment. Paragraph 6.3.15 claims that existing data sources are sufficient to characterise the baseline air quality, without the need for further monitoring. Effort should be made to agree the requirement for additional baseline survey data with the relevant consultation bodies. The Applicant should set out in the ES any proposals for air quality monitoring of emissions from the Proposed Development during construction. | |
| **5.2.8** | **Mitigation** The Inspectorate would expect an Air Quality Management Plan to form part of the CoCP [Code of Construction Practice]. The Applicant should ensure that drafts of these documents, demonstrating the minimum measures relied upon as mitigation, are submitted with the ES and appropriately secured. | Acknowledged. An Air Quality Management Plan will be included within the COCP (Commitment C-24). |
| **5.2.9** | **Emissions of dust from construction/decommissioning** The Inspectorate is satisfied with the methodology proposed, which is based on the Institute of Air Quality Management's (IAQM) (2016) Guidance on the assessment of dust from decommissioning and construction. The assessment should include an examination of effects on both human and ecological receptors. | Acknowledged. The assessment of emissions of dust from construction/decommissioning is presented in **Section 20.9**. |
| **5.2.10** | **Emissions of air pollutants from construction/decommissioning traffic on roads** The Inspectorate is satisfied with the methodology proposed, which is based on industry standard guidance (IAQM and Environmental Protection UK (EPUK)) and includes | An assessment of the air quality impacts of road traffic associated with the construction phase is given in **Section 20.9.** |

| PINS ID number | Scoping Opinion comment | How this is addressed in this PEIR |
|---|---|---|
| | the assessment of effects on both human and ecological receptors. Paragraph 6.3.46 states that 'It is likely that the construction and decommissioning road traffic will be below IAQM thresholds for scoping out.' If this is the case the ES should include justification for its exclusion from the ES. | |
| **5.2.11** | **Relationship between air quality assessment and TA [Transport Assessment]** The air quality assessment should be informed by the TA and the projects transport consultants particularly with regards to defining the study area and the potential impact from vehicle movements during both construction and operation. | It is not proposed to carry out a full Transport Assessment for the Proposed Development. However, the traffic characteristics are being evaluated and assessed as part of the EIA (**Chapter 24: Transport**) and the air quality assessment is being informed by this as the traffic modelling progresses. This PEIR includes an assessment based on the current traffic information at the PEIR stage in **Section 20.9** and **Section 20.10**. |

## Evidence Plan Process (EPP)

### Overview

20.3.8 The EPP has been set up to provide a formal, non-legally binding, independently chaired forum to agree the scope of the EIA and Habitats Regulations Assessment (HRA), and the evidence required to support the DCO Application.

### October 2020

20.3.9 For air quality, further engagement has been undertaken via Evidence Plan Process (EPP) Expert Topic Group (ETG) 'Traffic, Air Quality, Noise, Health and Socio-economics' meeting held by conference call on 27 October 2020. The conference call was attended by the following stakeholders:

- West Sussex County Council (WSCC);
- South Downs National Park (SDNPA);
- Highways England;
- ADC;
- HDC; and

- MSDC.

20.3.10 The air quality section of the ETG meeting covered the scope of the air quality assessment, the proposed methodology, the proposed study area and the key datasets to stakeholders. RED stated that no site-specific air quality monitoring is planned. MSDC asked RED for confirmation that there would be no significant air quality impacts from the operational phase of Rampion 2, which was given. MSDC suggested that RED should consider providing charging points for electric vehicles at the onshore substation. No other substantive points around air quality were raised.

### March 2021

20.3.11 A second ETG meeting was held for Traffic, Air Quality, Noise and Socio-economics on 16 March 2021 with the same key stakeholders as the meeting in October 2020.

20.3.12 The air quality section of the ETG meeting covered an update on progress since scoping, consultation progress, and initial feedback on the air quality assessment in the PEIR.

## Informal consultation and further engagement

### Overview

20.3.13 A summary of the informal consultation undertaken between the completion of the Scoping Report and up to and including March 2021 is outlined in this section.

### Informal consultation – January / February 2021

20.3.14 RED carried out an Informal Consultation exercise for a period of four weeks from 14 January 2021 to 11 February 2021. This Informal Consultation exercise aimed to engage with a range of stakeholders including the prescribed and non-prescribed consultation bodies, local authorities, Parish Councils and general public with a view to introducing the Proposed Development and seeking early feedback on the emerging designs.

20.3.15 The key themes emerging from Informal Consultation relating to air quality are:

- concerns over the location of the Wineham Lane substation search areas and their proximity to nearby properties;
- concerns over the use of Wineham Lane for construction traffic;
- concerns over minimising impacts on sensitive sites including ancient hedgerows, ancient woodland, trees, SSSIs and areas of high biodiversity;
- limiting working hours onshore;
- traffic management during construction and the capacity of local roads;
- details around construction programming and phasing; and
- limiting working hours onshore for noisy equipment.

20.3.16 Further detail about the results of the Informal Consultation exercise can be found in **Informal Consultation Analysis**.

## 20.4 Scope of the assessment

### Overview

20.4.1 This section sets out the scope of the PEIR assessment for air quality. This scope has been developed as the Rampion 2 design has evolved and responds to feedback received to-date as set out in **Section 20.3**. As outlined in the PINS Advice Note Seven: Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements (Version 7, Planning Inspectorate, 2020), information presented in the PEIR is preliminary, therefore this scope will be reviewed and may be refined as Rampion 2 evolves and as a result of ongoing consultation.

### Spatial scope and study area

20.4.2 The study area for the air quality assessment is defined as the area of the Proposed Development together with the Zones of Influence (ZOIs). ZOIs for air quality are the area immediately around the Proposed Development (for a distance based on expert judgement and recognised guidance), plus roads on which traffic related to the Proposed Development may travel.

20.4.3 Guidance published by IAQM (2016) suggests dust impacts may extend up to 350m from temporary construction site boundaries, and up to 500m from the temporary construction site entrance/exit along roads on which construction traffic is travelling.

20.4.4 Guidance published jointly by the IAQM and EPUK (2017) recommends a ZOI extending for a distance of 200m from roads on which a significant increase in traffic would occur as a result of the development. The guidance further defines a significant increase in traffic as follows:

- cause a significant change in Light Duty Vehicle (LDV)[1] traffic flows on local roads with relevant receptors:
  - more than 100AADT[2] within or adjacent to an AQMA; or
  - more than 500AADT elsewhere.
- cause a significant change in Heavy Duty Vehicle (HDV)[3] flows on local roads with relevant receptors:
  - more than 25AADT within or adjacent to an AQMA; or

[1] LDV = cars and small vans less than 3.5 t gross vehicle weight.

[2] AADT = annual average daily traffic flow (24-hour).

[3] HDV =goods vehicles and buses greater than 3.5 t gross vehicle weight.

- more than 100AADT elsewhere.

- realign roads, for instance changing the proximity of receptors to traffic lanes, where the change is 5m or more and the road is within an AQMA; or
- introduce a new junction or remove an existing junction near to relevant receptors. This applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate (for example, traffic lights, or roundabouts).

20.4.5 Odour sources are sufficiently variable that there are no recognised quantitative criteria for determining ZOIs. The IAQM (2018) risk-based assessment methodology, used here, relies on professional judgement.

20.4.6 The Proposed Development will not feature any road realignments or new junctions.

## Temporal scope

20.4.7 The temporal scope of the assessment of air quality is the entire lifetime of Rampion 2 which therefore covers the construction, operation and maintenance, and decommissioning phases.

20.4.8 The peak of construction road traffic is taken to occur in 2026 for the purpose of determining vehicle emission factors.

## Potential receptors

20.4.9 The spatial and temporal scope of the assessment enables the identification of receptors which may experience a change as a result of Rampion 2. The receptors identified that may experience likely significant effects for air quality are outlined in **Table 20-6**.

Table 20-6 Receptors requiring assessment for air quality

| Receptor group | Receptors included within group |
|---|---|
| **Human receptors** | A number of human receptors are located close to the onshore part of the PEIR Assessment Boundary. Receptors include residential properties, schools, medical facilities, prisons and commercial properties. For assessing impacts from dust, it is sufficient to count the number of receptors within various distance bands of the onshore part of the PEIR Assessment Boundary. For air quality impacts, notional receptors have been used to demonstrate that there are negligible impacts from construction. For the road traffic assessment, specific receptors have been identified within the Worthing AQMA. For odour impacts, receptors potentially most affected by emissions from historic landfill sites that may be disturbed by construction works have been identified. These are described in detail in **Section 20.8.** |

| Receptor group | Receptors included within group |
|---|---|
| **Ecological receptors** | One Site of Special Scientific Interest (SSSIs) has the potential to be affected by air quality impacts from the Proposed Development, namely Amberley Mount to Sullington Hill SSSI, which lies within the ZOI for dust impacts. |

20.4.10 The list of receptors will be kept under review during the EIA as more detailed information is obtained during baseline surveys and other forms of data collection by other aspects and will be reflected in the final ES.

## Potential effects

20.4.11 Potential effects on air quality receptors that have been scoped in for assessment are summarised in **Table 20-7**.

Table 20-7 Potential effects on air quality receptors scoped in for further assessment

| Receptor | Activity or impact | Potential effect |
|---|---|---|
| **Construction** | | |
| Residential properties and other locations where people may be exposed over relevant time periods, within 200m of affected roads and especially in AQMAs. Sensitive ecological receptors within 200m of affected roads. | Emissions of air pollutants from construction traffic on roads. | Health effects on human receptors. Damage to ecological receptors. |
| Residential properties and other locations where people may be exposed over relevant time periods, within 200m of a temporary construction site and especially in AQMAs. Sensitive ecological receptors within 200m of a temporary construction site. | Emissions of air pollutants from construction equipment on site. | Health effects on human receptors. Damage to ecological receptors. |
| Residential properties and other locations with public access, and ecological sites, within 350m from the | Emissions of dust from construction | Loss of amenity at human receptors. Damage to ecological receptors. |

| Receptor | Activity or impact | Potential effect |
|---|---|---|
| temporary construction site boundaries, and up to 500m from the temporary construction site entrance/exit along roads on which construction traffic is travelling. | | |
| Residential properties and other locations with public access near the temporary construction site. | Emissions of odour from construction | Loss of amenity. |
| **Operation and maintenance** | | |
| Residential properties and other locations where people may be exposed over relevant time periods, within 200m of affected roads and especially in AQMAs. Sensitive ecological receptors within 200m of affected roads. | Emissions of air pollutants from road traffic during operational phase | Health effects on human receptors. Damage to ecological receptors. |
| **Decommissioning** | | |
| Residential properties and other locations where people may be exposed over relevant time periods, within 200m of affected roads and especially in AQMAs. Sensitive ecological receptors within 200m of affected roads. | Emissions of air pollutants from decommissioning traffic on roads | Health effects on human receptors. Damage to ecological receptors. |
| Residential properties and other locations where people may be exposed over relevant time periods, especially in AQMAs. Sensitive ecological receptors. | Emissions of air pollutants from equipment on site | Health effects on human receptors. Damage to ecological receptors. |

| Receptor | Activity or impact | Potential effect |
|---|---|---|
| Residential properties and other locations with public access, and ecological sites, within 350m from temporary construction site boundaries, and up to 500m from the temporary construction site entrance/ exit along roads on which construction traffic is travelling. | Emissions of dust from decommissioning activities | Loss of amenity at human receptors. Damage to ecological receptors. |

20.4.12 The only air pollutants that have been scoped into the assessment are $NO_2$, $PM_{10}$, $PM_{2.5}$ and (for ecological receptors only) $NO_x$. Both emissions and background concentrations of other pollutants are extremely low and there is no risk of any exceedance of any assessment levels for other pollutants.

## Activities or impacts scoped out of assessment

20.4.13 A number of potential effects have been scoped out from further assessment, resulting from a conclusion of no likely significant effect. These conclusions have been made based on the knowledge of the baseline environment, the nature of planned works and the wealth of evidence on the potential for impact from such projects more widely. The conclusions follow (in a site-based context) existing best practice. Each scoped out activity or impact is considered in turn below and an indication given of whether the scope has evolved since Scoping.

Table 20-8 Activities or impacts scoped out of assessment

| Activity or impact | Rationale for scoping out |
|---|---|
| **Emissions of air pollutants from plant and equipment during operation and maintenance** | Emissions of air pollutants from plant and equipment during the operational phase have been scoped out because the amount of such plant or equipment associated with the operation of Rampion 2 is extremely small and there will be no significant emissions.<br><br>PINS agreed that this can be scoped out of the EIA in the Scoping Opinion with further detail provided in ID 5.2.3 in **Table 20-5**. |
| **Emissions of dust during operation and maintenance** | Emissions of dust during operational phase have been scoped out because there are no dust sources associated with the operation of Rampion 2. |

| Activity or impact | Rationale for scoping out |
|---|---|
| | PINS agreed that this can be scoped out of the EIA in the Scoping Opinion with further detail provided in ID 5.2.2 in **Table 20-5**. |
| **Emissions of odour during operation and maintenance** | Emissions of odour during operational phase have been scoped out because there are no odour sources associated with the operation of Rampion 2.<br><br>PINS agreed that this can be scoped out of the EIA in the Scoping Opinion with further detail provided in ID 5.2.2 in **Table 20-5**. |
| **Emissions of odour during decommissioning** | Emissions of odour during the decommissioning phase have been scoped out because there are no odour sources identified apart from the historic landfill. Because the decommissioning strategy is to leave the trench in place, there will be no additional disturbance to the landfill and therefore no odour source (see **Section 4.7** in **Chapter 4**). |

## 20.5 Methodology for baseline data gathering

### Overview

20.5.1 Baseline data collection has been undertaken to obtain information over the study areas described in **Section 20.4: Scope of the assessment**. The current baseline conditions presented in **Section 20.6: Baseline conditions** sets out data currently available information from the study area/s.

### Desk study

20.5.2 The data sources that have been collected and used to inform this air quality assessment are summarised in **Table 20-9**.

Table 20-9 Data sources used to inform the air quality PEIR assessment

| Source | Date | Summary | Coverage of study area |
|---|---|---|---|
| **Department for Environment, Food and Rural Affairs (Defra) (2020)** | 30 November 2020 | Background maps of forecast air quality concentrations | Full coverage of study area |

| Source | Date | Summary | Coverage of study area |
|---|---|---|---|
| **ADC (2020)** | 30 November 2020 | Monitoring data and supporting information on AQMAs | Monitoring sites in ADC area. |
| **HDC (2020)** | 30 November 2020 | Monitoring data and supporting information on AQMAs | Monitoring sites in HDC area. |
| **MSDC (2020)** | 30 November 2020 | Monitoring data and supporting information on AQMAs | Monitoring sites in MSDC area. |
| **WBC (2020)** | 30 November 2020 | Monitoring data and supporting information on AQMAs | Monitoring sites in WBC area. |
| **Defra (2021)** | 1 February 2021 | Locations of AQMAs | Full coverage of study area |

### Data limitations

20.5.3 There are no data limitations relating to air quality that affect the robustness of the assessment of this PEIR. It is considered that the data sources provided in **Table 20-9** are sufficient to characterise the baseline air quality, without the need for further air quality monitoring.

## 20.6 Baseline conditions

### Current baseline

#### AQMAs

20.6.1 The onshore part of the PEIR Assessment Boundary (**Figure 1.1, Volume 3**) lies within the administrative areas of three District Councils: Arun, Horsham and Mid Sussex. Each district council produces an Annual Status Report which describes air quality in its administrative area, including any AQMAs in force, and the results of air quality monitoring.

20.6.2 There are two AQMAs within 5km of the onshore part of the PEIR Assessment Boundary, both for annual mean $NO_2$ (**Figure 20.1, Volume 3**):

- Storrington AQMA: a 540m length of the A283 through Storrington, including properties close to the road. This AQMA is approximately 1.9km north of the onshore part of the PEIR Assessment Boundary at its closest point; and

- Cowfold AQMA: a 700m length of the A272 through Cowfold, including properties close to the road. This AQMA is approximately 800m west of the onshore part of the PEIR Assessment Boundary at its closest point.

20.6.3 In addition, road traffic associated with the onshore elements of the Proposed Development will pass through the administrative areas of other local authorities. In particular, an appreciable amount of traffic during the construction phase will pass through Worthing Borough Council AQMA No. 2, which is a 2.5km length of the A27 centred on the Grove Lodge roundabout. This AQMA lies approximately 7km south of the onshore part of the PEIR Assessment Boundary at its closest point.

20.6.4 Within all three AQMAs, monitoring of concentrations of $NO_2$ shows that levels are very sensitive to location, especially distance from the road and amount of vehicle queuing and congestion on the nearest part of the road. Monitored concentrations in the Storrington AQMA in 2019 vary between 22.0 µg $m^{-3}$ and 47.7 µg $m^{-3}$. Monitored concentrations in the Cowfold AQMA in 2019 vary between 23.6 µg $m^{-3}$ and 36.1 µg $m^{-3}$. Monitored concentrations in the Worthing AQMA vary between 15.4 µg $m^{-3}$ and 56.6 µg $m^{-3}$. In each case there are localised exceedances of the limit value of 40 µg $m^{-3}$ close to areas where traffic queues and accelerates, and a wider area where concentrations are close to the limit value.

### Defra background maps

20.6.5 Defra maintains a nationwide model (the Pollution Climate Mapping (PCM) model) of current and future background air quality concentrations at a 1km grid square resolution. The datasets include annual average concentration estimates for NO2, as well as other pollutants. The PCM model is semi-empirical in nature: it uses data from the National Atmospheric Emissions Inventory (NAEI) to model the concentrations of pollutants at the centroid of each 1km grid square but then calibrates these concentrations in relation to actual monitoring data. Concentrations represent background locations, not roadside locations or those particularly influenced by point sources.

20.6.6 The dataset was updated in 2020 for a reference year of 2018. Data is available for years covering 2018 to 2030, with modelled concentrations generally decreasing over that time period. The range of background concentrations of air pollutants across the seventy grid squares in which the onshore part of the PEIR Assessment Boundary lies are given in **Table 20-10**. These are taken from the Defra maps for 2021 and they represent concentrations at locations away from major roads or point sources of emissions. **Table 20-10** shows that all air quality pollutants are well below their respective assessment levels.

Table 20-10 Background concentrations across the onshore part of the PEIR Assessment Boundary (µg $m^{-3}$)

| Pollutant | $NO_x$ | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|
| **Minimum** | 8.5 | 6.7 | 11.7 | 8.1 |

| Pollutant | $NO_x$ | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|
| **Maximum** | 13.4 | 10.2 | 14.6 | 9.0 |
| **Assessment level** | 30* | 40 | 40 | 25 |
| **Grid square of maximum concentration** | 512500, 114500 | 512500, 114500 | 524500, 122500 | 524500, 122500 |

** At ecological receptors*

20.6.7 Concentrations at background locations in grid squares covering the Worthing AQMA according to the Defra maps for 2021 are given in **Table 20-11**. Again, all air quality pollutants are well below their respective assessment levels at background locations. Concentrations close to major roads will be higher.

Table 20-11 Background concentrations across the Worthing AQMA (µg $m^{-3}$)

| Grid square | $NO_x$ | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|
| **509500, 105500** | 12.9 | 9.9 | 13.5 | 9.0 |
| **510500, 104500** | 11.3 | 8.7 | 13.8 | 9.3 |
| **511500, 102500** | 12.1 | 9.3 | 13.7 | 9.7 |
| **512500, 103500** | 12.9 | 9.8 | 14.3 | 10.2 |
| **512500, 105500** | 13.7 | 10.4 | 14.6 | 10.3 |
| **513500, 102500** | 13.1 | 10.0 | 13.6 | 9.4 |
| **513500, 103500** | 14.4 | 10.9 | 14.7 | 10.5 |
| **513500, 104500** | 14.5 | 11.0 | 14.8 | 10.4 |
| **513500, 105500** | 14.2 | 10.8 | 14.4 | 10.0 |
| **514500, 102500** | 15.1 | 11.3 | 13.4 | 9.3 |
| **514500, 103500** | 16.2 | 12.1 | 15.1 | 10.6 |
| **514500, 104500** | 15.9 | 11.9 | 14.9 | 10.5 |
| **514500, 105500** | 13.0 | 9.9 | 13.7 | 9.5 |
| **515500, 102500** | 13.1 | 10.0 | 13.0 | 9.0 |
| **515500, 103500** | 16.0 | 11.9 | 14.6 | 10.4 |
| **515500, 105500** | 13.6 | 10.3 | 14.6 | 9.6 |

| Grid square | $NO_x$ | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|
| **Assessment level** | 30* | 40 | 40 | 25 |

** At ecological receptors*

## Monitoring data

20.6.8 Monitored concentrations of $NO_2$ in the Cowfold AQMA in 2019 are up to 30.6 µg $m^{-3}$ (distance corrected to nearest exposure), or 77% of the AQO of 40 µg $m^{-3}$. In 2018, the corresponding figure was 38.4 µg $m^{-3}$, and generally concentrations have been close to or above the AQO in recent years, with 2019 being by some way the lowest measurement. Concentrations within the Cowfold AQMA are strongly influenced by congested road traffic where the A272 and A281 roads cross.

20.6.9 Monitored concentrations of $NO_2$ in the Storrington AQMA in 2019 are up to 47.7 µg $m^{-3}$ (representative of relevant exposure), or 119% of the AQO of 40 µg $m^{-3}$. This is also lower than in recent years (monitoring at this location began in 2016), with the highest monitored value here being 59.8 µg $m^{-3}$. Concentrations within the Storrington AQMA are strongly influenced by congested road traffic at the roundabout between the A283 and B2139.

20.6.10 Monitored concentrations of $NO_2$ in the Worthing AQMA in 2019 are up to 55.7 µg $m^{-3}$ (distance corrected to nearest exposure), or 139% of the AQO of 40 µg $m^{-3}$. This is also lower than in recent years. This is measured at the N33A diffusion tube 2.2 m from the kerb south of the A27 where westbound traffic is queuing to enter the Grove Lodge roundabout. Interestingly, the continuous monitor located on the north side of the road, directly opposite and 2.9 m from the kerb, gives consistently much lower measurements, of just 32.9 µg $m^{-3}$ in 2019. Full monitoring data for sites within the Worthing AQMA are given **in Table 20-12 to Table 20-14** (not distance corrected).

20.6.11 **Table 20-13** shows that concentrations of $NO_2$ at roadside locations within the Worthing AQMA are mostly comfortably below the AQO of 40 µg $m^{-3}$. Exceptions are at the continuous monitor WT2 and the diffusion tubes collated with it (N44A, N44B and N44C), which show concentrations hovering around the AQO. More exceptional is N30A, which consistently records annual mean $NO_2$ over 60 µg $m^{-3}$. This monitor is located directly across the A27 road from the continuous monitor WT2, and at a similar distance from the kerb, so the difference in concentrations is striking. Possible reasons for the difference are that N30A is closer to queuing traffic, and N30A is against the wall of a building whereas WT2 is open, allowing more air flow.

20.6.12 At all monitors except N53, the trend is that annual mean $NO_2$ concentrations are falling, typically by around 1–2 µg $m^{-3}$ per year. At N53 the trend is an increase of about 0.5 µg $m^{-3}$ per year. These trends are within considerable year-to-year variability, so should be interpreted with caution, but they are typical of what is observed at monitoring locations across the country.

20.6.13 Monitored $PM_{2.5}$ concentrations at the continuous monitor WT2 are only available since 2018. Concentrations are well below the AQO of 25 µg $m^{-3}$, and around or above the WHO guideline of 10 µg $m^{-3}$.

Table 20-12 Monitors in the Worthing AQMA

| Site ID | Site Name | Site Type | X OS Grid Ref | Y OS Grid Ref | Inlet Height (m) | Pollutants monitored | Distance to relevant exposure (m) | Distance to kerb (m) |
|---|---|---|---|---|---|---|---|---|
| **WT2** | Grove Lodge | Roadside | 514184 | 104963 | 1.8 | $NO_2$; $PM_{2.5}$ | 18.3 | 2.9 |
| **N30A** | Grove Lodge Cottages | Roadside | 514183 | 104948 | 2.5 | $NO_2$ | 0.2 | 2.2 |
| **N35** | 30 Upper Brighton Road House | Roadside | 514266 | 104961 | 2 | $NO_2$ | 0 | 11.2 |
| **N39** | SW of roundabout at Grove Lodge | Roadside | 514088 | 104906 | 4 | $NO_2$ | 47.8 | 2.2 |
| **N43** | 23 Upper Brighton Road | Suburban | 514199 | 104982 | 2 | $NO_2$ | 0 | 19.2 |
| **N44A** | NOx Analyser, 21 Upper Brighton Road | Roadside | 514184 | 104963 | 2 | $NO_2$ | 18.4 | 2.8 |
| **N44B** | NOx Analyser, 21 Upper | Roadside | 514184 | 104963 | 2 | $NO_2$ | 18.4 | 2.8 |

| Site ID | Site Name | Site Type | X OS Grid Ref | Y OS Grid Ref | Inlet Height (m) | Pollutants monitored | Distance to relevant exposure (m) | Distance to kerb (m) |
|---|---|---|---|---|---|---|---|---|
| | Brighton Road | | | | | | | |
| **N44C** | NOx Analyser, 21 Upper Brighton Road | Roadside | 514184 | 104963 | 2 | $NO_2$ | 18.4 | 2.8 |
| **N45** | 11 Hill Barn Lane | Suburban | 514126 | 105063 | 2 | $NO_2$ | 0 | 13 |
| **N53** | Offington Corner | Roadside | 513278 | 105623 | 2 | $NO_2$ | 20.5 | 6 |

Table 20-13 Monitored annual mean $NO_2$ concentrations in the Worthing AQMA (µg $m^{-3}$)

| Site ID | 2015 | 2016 | 2017 | 2018 | 2019 | Average |
|---|---|---|---|---|---|---|
| **WT2** | 37.4 | **48.0** | 35.8 | 36.8 | 32.9 | 38.18 |
| **N30A** | **66.1** | **64.1** | **68.2** | **60.1** | **56.6** | **63.02** |
| **N35** | 29.9 | 28.6 | 28.5 | 26.2 | 24.4 | 27.52 |
| **N39** | 31.1 | 33.5 | 32 | 32.7 | 28.5 | 31.56 |
| **N43** | 21.2 | 23.1 | 23.1 | 22.3 | 19.9 | 21.92 |
| **N44A** | 39.2 | **42** | **40.5** | 39.8 | 36.2 | 39.54 |
| **N44B** | **40.3** | **41.5** | **40.3** | **41.6** | 35.7 | 39.88 |
| **N44C** | 39.8 | **41.6** | **41.2** | **40.8** | 36.3 | 39.94 |
| **N45** | 16 | 17.2 | 17.2 | 16.2 | 15.4 | 16.4 |
| **N53** | 29 | 32.1 | 34.9 | 33.9 | 30.7 | 32.12 |

Table 20-14 Monitored annual mean $PM_{2.5}$ concentrations in the Worthing AQMA (µg $m^{-3}$)

| Site ID | 2015 | 2016 | 2017 | 2018 | 2019 | Average |
|---|---|---|---|---|---|---|
| **WT2** | N/A | N/A | N/A | 10.6 | 9.9 | 10.25 |

## Dust

20.6.14 Ambient dust deposition rates are not monitored extensively in the UK. Monitoring that is undertaken is usually connected with specific activities such as mining and mineral extraction operations or specific large-scale construction programmes. Dust monitoring may also be undertaken to investigate specific complaints received by local authorities, who are then empowered to investigate dust nuisance under the Environmental Protection Act 1990.

20.6.15 Dust deposition rates are not currently monitored in the area of the onshore part of the PEIR Assessment Boundary.

## Odour

20.6.16 Ambient levels of odour are typically very low and are not routinely monitored in the UK. Elevated levels of odour can result in complaints which may then result in monitoring taking place in the local area to determine if a nuisance is present. Potential sources of odour in the vicinity of the Proposed Development may include agriculture, roads and light industry. Consultees have not identified any

concerns that may suggest there are existing odour problems in the vicinity of the Proposed Development.

### Future baseline

20.6.17 In general, air quality is improving in the UK. Background concentrations of key pollutants, including $NO_2$, $PM_{10}$ and $PM_{2.5}$, are expected to decline steadily over the next ten years or so in response to measures to reduce emissions from a range of key sources, including domestic, industrial and transport sources.

20.6.18 At roadside locations, concentrations of $NO_2$ are expected to fall considerably as an improvement in emission factors following the introduction of Euro 6 engine controls in 2016 outweighs the projected increase in vehicle numbers. For PM, future changes at roadside locations are more balanced, as there has been less focus on reducing emissions of this family of pollutants in recent years; however, emission factors are still expected to improve by around 2% per year over the next few years, which will outweigh the likely increase in vehicle numbers.

20.6.19 Dust and odour are associated with local sources so there are no particular trends or expected changes to the future baseline.

## 20.7 Basis for PEIR assessment

### Maximum design scenario

20.7.1 Assessing using a parameter-based design envelope approach means that the assessment considers a maximum design scenario whilst allowing the flexibility to make improvements in the future in ways that cannot be predicted at the time of submission of the DCO Application. The assessment of the maximum adverse scenario for each receptor establishes the maximum potential adverse impact and as a result impacts of greater adverse significance would not arise should any other development scenario (as described in **Chapter 4: The Proposed Development**) to that assessed within this Chapter be taken forward in the final scheme design.

20.7.2 The maximum assessment assumptions that have been identified to be relevant to air quality are outlined in **Table 20-15** below and are in line with the Project Design Envelope (**Chapter 4**).

Table 20-15 Maximum assessment assumptions for impacts on air quality

| Project phase and activity/impact | Maximum assessment assumptions | Justification |
|---|---|---|
| **Construction** | | |
| **Emissions of air pollutants from** | The maximum design scenario consists of the maximum rolling 52-week AADT, generated as part of | This provides a worst case for this source of emissions. |

| Project phase and activity/impact | Maximum assessment assumptions | Justification |
|---|---|---|
| **construction traffic on roads** | the transport assessment (**Chapter 24**). | Details of the traffic flows are given in **Section 20.9**. |
| **Emissions of air pollutants from construction equipment on site** | The maximum design scenario is based on the plant list described in the Noise and vibration assessment, particularly the design assumptions summarised in **Chapter 22**, **Table 22-10** and the detailed plant lists in **Appendix 22.1, Volume 4** **Table 4-1** to **4-6**. | These design assumptions represent a reasonable worst case for the amount of plant required. |
| **Emissions of dust from construction** | **Landfall:**<br>Horizontal direction drilling (HDD) to be used to connect offshore cables with the onshore cable corridor.<br>**Onshore cable corridor:**<br>Typical 50m wide corridor for construction works, including four trenches, temporary spoil heaps, and access track; this may be expanded at discrete locations to accommodate working area for example for HDD (see **Chapter 4**). Area of search width 100m.<br>Length approximately 36km.<br>Temporary construction compounds and laydown areas as shown within the onshore part of the PEIR Assessment Boundary. HDD sites as detailed in **Chapter 4**. | These design assumptions represent the greatest dust generation potential that may affect relevant receptors. |

| Project phase and activity/impact | Maximum assessment assumptions | Justification |
|---|---|---|
| | Total installation duration up to three years.<br>**Onshore substation:**<br>Overall built site footprint: 5.9 hectares within the onshore part of the PEIR Assessment Boundary.<br>Maximum number of buildings 12.<br>Maximum building height 12m.<br>Duration of construction three years. | |
| **Emissions of odour from construction** | Onshore part of the PEIR Assessment Boundary as defined in Chapter 4. | Combined with historic landfill data, this ensures that any locations where construction works may involve passing through and disturbing historic landfills are identified and assessed. |
| **Operation and maintenance** | | |
| **Emissions of air pollutants during operational phase** | Road traffic generated during operational phase: Occasional site visits by road only, with AADT of below five. No other potentially significant sources of emissions. | There is no demand for significant road traffic or other sources of emissions during the operational phase. |
| **Decommissioning** | | |
| **Emissions of air pollutants from decommissioning traffic on roads** | At most the same as those for construction phase, since the decommissioning plan is to reverse the construction of above-ground structures and leave | These design assumptions represent the greatest dust generation potential that may affect relevant receptors. |

| Project phase and activity/impact | Maximum assessment assumptions | Justification |
|---|---|---|
| | below-ground structures in place. | |
| **Emissions of air pollutants from equipment on site** | At most the same as those for construction phase, since the decommissioning plan is to reverse the construction of above-ground structures and leave below-ground structures in place. | These design assumptions represent the greatest dust generation potential that may affect relevant receptors. |
| **Emissions of dust from decommissioning activities** | At most the same as those for construction phase, since the decommissioning plan is to reverse the construction of above-ground structures and leave below-ground structures in place. | These design assumptions represent the greatest dust generation potential that may affect relevant receptors. |

20.7.3 Air quality issues have been considered when evaluating different options located within the onshore part of the PEIR Assessment Boundary for onshore cable routing and onshore substation location. Each of the onshore cable corridor and onshore substation location options under consideration are located in a largely rural area with scattered residential properties, with few air quality receptors close to sources of emissions to air. It is therefore considered that air quality is of only minor importance when differentiating between options.

## Embedded environmental measures

20.7.4 As part of the Rampion 2 design process, a number of embedded environmental measures have been adopted to reduce the potential for impacts on air quality. These embedded environmental measures will evolve over the development process as the EIA progresses and in response to consultation. They will be fed iteratively into the assessment process.

20.7.5 These measures typically include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislation requirements. As there is a commitment to implementing these embedded environmental measures, and also to various standard sectoral practices and procedures, they are considered inherently part of the design of Rampion 2 and are set out in this PEIR.

20.7.6 **Table 20-16** sets out the relevant embedded environmental measures within the design and how these affect the air quality assessment.

Table 20-16 Relevant air quality embedded environmental measures

| ID | Environmental measure proposed | Project phase measure introduced | How the environmental measures will be secured | Relevance to air quality assessment |
|---|---|---|---|---|
| **C-6** | Where practical, sensitive sites will be avoided by the temporary and permanent onshore project footprint including SSSIs, Local Nature Reserves, Local Wildlife Sites, ancient woodland, areas of consented development, areas of historic and authorised landfills and other known areas of potential contamination, National Trust Land, Listed Buildings, Scheduled monuments, and mineral resources (including existing mineral sites, minerals sites allocated in development plans and mineral safeguarding areas). | Scoping - updated at PEIR | DCO works plans and order limits | Reduces risk of adverse air quality effects on sensitive sites. Avoiding areas of historic and authorised landfills and other contamination reduces risk of odour impacts. |
| **C-19** | The onshore cable will be constructed in discrete sections. The trenches will be excavated, the cable ducts will be laid, the trenches backfilled and the reinstatement process commenced in as short a timeframe as practicable. At regular intervals (typically 600m – 1,000m) along the route joint bays/pits will be installed to enable the cable installation and connection process. | Scoping | Outline Code of Construction Practice (COCP) and DCO requirement | Reduces risk of adverse air quality effects on sensitive human and ecological receptors. |

| ID | Environmental measure proposed | Project phase measure introduced | How the environmental measures will be secured | Relevance to air quality assessment |
|---|---|---|---|---|
| **C-20** | The typical construction working area will be 50m along the onshore cable corridor to minimise the construction footprint. At other discrete locations this may be expanded to accommodate working area for example for Horizontal Directional Drilling (HDD). | Scoping | Outline COCP and DCO articles/ requirement | Reduces risk of adverse air quality effects on sensitive human and ecological receptors. |
| **C-22** | Core working hours for construction of the onshore components will be 07:00 to 19:00 Monday to Friday, and 08:00 to 13:00 on Saturdays, apart from specific circumstances to be set out and agreed in the Outline COCP. | Scoping | Outline COCP and DCO requirement | Reduces risk of adverse air quality effects on sensitive human and ecological receptors. |
| **C-24** | Best practice air quality management measures will be applied as described in Institute of Air Quality Management (IAQM) guidance on the Assessment of Dust from Demolition and Construction 2014, version 1.1. | Scoping - updated at PEIR | Outline COCP and DCO requirement | Reduces risk of adverse dust effects on sensitive human and ecological receptors. |
| **C-33** | An Outline COCP will be adopted to minimise temporary disturbance to residential properties, recreational users and existing land users. It will provide details of measures to protect environmental receptors. | Scoping | Outline COCP and DCO requirement | Reduces risk of adverse dust and air quality effects on sensitive human and ecological receptors. |

| ID | Environmental measure proposed | Project phase measure introduced | How the environmental measures will be secured | Relevance to air quality assessment |
|---|---|---|---|---|
| **C-72** | Prior to construction, an unexpected contamination protocol will be produced in line with Environment Agency (2020) guidance (LCRM) to minimise the potential risks to human health and controlled waters from any unexpected ground contamination. The protocol will take into account the requirements for the use of Personal Protective Equipment (PPE) and adoption of best practice methods during construction. | Scoping - updated at PEIR | Outline COCP and DCO requirement | Reduces risk of odour impacts. |
| **C-114** | Sullington Hill Local Wildlife Site will be crossed using a trenchless method such as HDD. | PEIR | Outline COCP and DCO requirement | Reduces risk of adverse air quality effects on sensitive ecological receptors. |
| **C-158** | The proposed heavy goods vehicle (HGV) routing during the construction period to individual accesses will avoid the Air Quality Management Area (AQMA) in Cowfold where possible. | PEIR | Proposed routing in agreed Outline CTMP | Reduces risk of adverse air quality effects on sensitive human receptors. |

## 20.8 Methodology for PEIR assessment

### Introduction

20.8.1 The project-wide generic approach to assessment is set out in **Chapter 5: Approach to the EIA**. The assessment methodology for air quality for the PEIR is consistent with that provided in in the Scoping Report (RED, 2020) and no changes have been made since the scoping phase.

## Modelling and assessing air quality impacts from construction road traffic

20.8.2 Road traffic for the construction phase has been modelled as part of the transport assessment (**Chapter 24: Transport**). The transport assessment calculated road traffic on a selection of key road links affected by the Proposed Development, for three scenarios:

- 2019 baseline;
- 2024 without the Proposed Development; and
- 2024 with the Proposed Development.

20.8.3 Traffic flows are available on a 24-hour basis (i.e. all traffic regardless of time of day) and are split into light duty vehicles (LDVs; under 3.5 tonnes) and Heavy Goods Vehicles (HGVs; over 3.5 tonnes). In the Transport Assessment, modelled road links were divided into those that directly provide access to parts of the temporary construction site, and those that provide more general distribution of traffic on primary routes.

20.8.4 For the former, weekly flows were generated representing the various stages of the construction project. Although long-term air quality assessment criteria strictly apply to calendar years, for these road links, the worst-case rolling 52-week average was chosen to represent the worst-case year and was used to calculate the 24-hour Annual Average Daily Traffic (AADT) used in the assessment. This ensures that the worst case is assessed if the schedule changes in such a way that the worst rolling 52-week period coincides with a calendar year. Road links that pass through the Cowfold and Storrington AQMAs fall into this group.

20.8.5 For the more general distributor roads, it was not practical for the Traffic Assessment to calculate weekly flows for each week of the construction phase, as traffic on these links serves many different stages of the construction phase. Instead, the single worst case weekly flow was calculated. For the purposes of the air quality assessment, this worst case weekly total flow was assumed to continue for the full year. This therefore represents a highly conservative estimate of the worst-case AADT on these road links. Road links that pass through the Worthing AQMA fall into this group.

20.8.6 IAQM (2017) provides guidance on when it is appropriate to carry out a detailed air quality assessment of a development that generates road traffic. The key criteria for the present assessment are that a detailed assessment may be required if there is:

- a change in LDV flows of:
  - more than 100AADT within or adjacent to an AQMA;
  - more than 500AADT elsewhere; or
- a change in HGV flows of:
  - more than 25AADT within or adjacent to an AQMA;
  - more than 100AADT elsewhere.

20.8.7 Examination of the traffic data showed that the only road links where these criteria are exceeded are the A27 through the Worthing AQMA, where the increase in HGVs due to the construction phase of the Proposed Development is 102 AADT. Therefore, these road links (only) were brought forward for detailed assessment.

20.8.8 **Figure 20.2, Volume 3** shows the modelled road links, along with the AQMA and the locations of monitoring carried out by WBC (2020). The road was modelled for several hundred metres beyond the extent of the AQMA to ensure that there are no "end effects". Concentrations were modelled at 37 receptors representing the WBC monitors, and 193 receptors representing the facades of each property closest to the A27 road (also shown on **Figure 20.2, Volume 3**). Pollutants modelled are $NO_x$, $NO_2$, $PM_{10}$ and $PM_{2.5}$.

20.8.9 The model used in this assessment is the latest version of the ADMS-Roads 5.0 atmospheric dispersion model developed and validated by Cambridge Environmental Research Consultants (CERC). ADMS-Roads is a version of the ADMS software tool adapted for modelling air quality impacts from roads. The model has been used extensively throughout the UK for regulatory compliance purposes and is accepted as an appropriate air quality modelling tool by the EA and local authorities.

20.8.10 For each of the three scenarios, emissions were calculated within ADMS-Roads, which uses emission factors from Defra's Emission Factors Toolkit (EFT) version 10.1. ADMS-Roads was then used to model the dispersion of the emissions and calculate the resulting concentrations at the specified receptors. Meteorological data from the Shoreham Airport station for 2019 were used; this year was chosen to allow for the model verification and adjustment described in **paragraph 20.8.12**.

20.8.11 Concentrations from the road sources, as output from ADMS-Roads, were added to background concentrations from the Defra background maps (see **Section 20.6**) to obtain total concentrations of $NO_x$, $PM_{10}$ and $PM_{2.5}$. Concentrations of $NO_2$ were determined using Defra's $NO_x$ to $NO_2$ Calculator, which is consistent with the use of the background maps and the EFT 10.1.

20.8.12 In accordance with Defra's guidance (2017), a model verification and adjustment was carried out. This used a comparison of $NO_2$ concentrations from the modelled 2019 scenario with monitoring data for the same year from WBC to evaluate the performance and adjust the model to provide an optimal fit. Examination of the monitoring data indicated that the N33A receptor consistently experiences very high concentrations of $NO_2$, apparently for reasons to do with the exact location of the monitor (see **Section 20.6** for more discussion), so separate adjustment factors were derived for N33A. The N33A adjustment factor was determined to be 5.47, and the adjustment factor for other locations was determined to be 2.80. These are not unusual adjustment factors for this type of assessment, although the N33A adjustment factor is on the high side, reflecting the high monitored concentrations at this location. Adjustment factors were applied to $NO_x$, $PM_{10}$ and $PM_{2.5}$ emissions. Concentrations of $NO_2$ were determined after applying the adjustment to the $NO_x$ roads contribution.

20.8.13 IAQM (2017) provides guidance on the assessment of the significance of impacts of a development. This provides a quantitative method to assign standard

descriptors to impacts depending on the magnitude of the change and the background concentration, in relation to the relevant assessment level. These are shown in **Table 20-13**. Although these descriptors have no official status, they are widely used and accepted.

20.8.14 The IAQM (2017) guidance then goes on to provide qualitative guidance on the assessment of significance. The descriptors above feed into this assessment, but not in a rigorously prescribed way. Rather, the assessment of significance is based on professional judgement, taking into account the guidance and the various relevant factors. The relevant factors it identifies as needing to be taken into account are:

- "the existing and future air quality in the absence of the development;
- the extent of current and future population exposure to the impacts; and
- the influence and validity of any assumptions adopted when undertaking the prediction of impacts."

Table 20-17 Impact descriptors for increases in annual mean concentrations

| **Absolute concentration with scheme, relative to assessment level** | **Increase in concentration relative to assessment level** | | | | |
|---|---|---|---|---|---|
| | **0%** | **1%** | **2–5%** | **6–10%** | **>10%** |
| **75% or less** | Negligible | Negligible | Negligible | Slight | Moderate |
| **76–94%** | Negligible | Negligible | Slight | Moderate | Moderate |
| **95–102%** | Negligible | Slight | Moderate | Moderate | Substantial |
| **103–109%** | Negligible | Moderate | Moderate | Substantial | Substantial |
| **110% or more** | Negligible | Moderate | Substantial | Substantial | Substantial |

NB. The table is intended to be used by calculating percentages relative to the assessment level and then rounding the percentages to whole numbers.

## Modelling and assessing air quality impacts from construction plant and equipment on site

20.8.15 Construction plant data assumed for the calculation of air quality impacts is summarised in **Table 20-18**. Power ratings for each plant type are taken from public sources for representative equipment of each type.

20.8.16 Emission factors for $NO_x$, $PM_{10}$ and $PM_{2.5}$ are taken from the EU directive (Official Journal of the European Union, 2004b) setting regulatory limits for emissions from non-road mobile machinery. These depend on engine power rating and the age of the plant. All new plant sold since 2011 must meet at least Stage IIIB, and as a worst case it is assumed that plant used for the proposed Development do not meet the newer, tighter standards of Stage IV or Stage V.

Dispersion modelling of emissions will be carried out using the ADMS software tool (see **paragraph 20.8.9**).

20.8.17 For modelling purposes, works have been divided into trenching, HDD, landfall and onshore substation works. For each site, it is assumed that all plant items present operate continuously for the 12 hours a day, five days a week, for the duration of works at each temporary construction site (C-22, **Table 20-16**), or 24 hours a day, seven days a week for HDD and landfall works. This provides a worst-case assessment which is likely to be highly conservative.

Table 20-18 Construction plant list

| Plant | Quantity | On time (%) | Total power (kW) | $NO_x$ emission factor (g/kWh) | PM emission factor (g/kWh) |
|---|---|---|---|---|---|
| ***Trenching*** | | | | | |
| **Topsoil stripping** | | | | | |
| **Dumper** | 3 | 83% | 306 | 2 | 0.025 |
| **Bulldozer** | 1 | 83% | 142 | 2 | 0.025 |
| **Excavator** | 1 | 83% | 102 | 3.3 | 0.025 |
| **Benching / levelling, grading of working area** | | | | | |
| **Grader** | 2 | 100% | 205 | 2 | 0.025 |
| **Duct delivery and stringing** | | | | | |
| **HGV** | 1 | 10% | 0 | 4.7 | 0.025 |
| **Trench excavation** | | | | | |
| **Trenching machines/ mechanical excavators** | 2 | 83% | 102 | 3.3 | 0.025 |
| **Compressor** | 1 | 20% | 45 | 4.7 | 0.025 |
| **Dewatering** | 1 | 10% | 20 | 4.7 | 0.025 |
| **Lower and lay** | | | | | |
| **Excavators / sideboom tractors** | 2 | 100% | 102 | 3.3 | 0.025 |
| **Backfilling** | | | | | |

| Plant | Quantity | On time (%) | Total power (kW) | $NO_x$ emission factor (g/kWh) | PM emission factor (g/kWh) |
|---|---|---|---|---|---|
| **HGV delivering CBS** | 1 | 10% 0 4.7 | | 0.025 | |
| **ADT** | 2 | 80% 187 2 | | 0.025 | |
| **Roller** | 2 | 10% 145 2 | | 0.025 | |
| **Grader** | 2 | 100% 205 2 | | 0.025 | |
| ***Landfall works / HDD crossings*** | | | | | |
| **Excavator** | 2 | 10% | 127 | 3.3 | 0.025 |
| **Dump truck** | 1 | 10% | 85 | 3.3 | 0.025 |
| **Mobile crane** | 1 | 0% | 205 | 2 | 0.025 |
| **HDD Drill rig** | 1 | 90% | 560 | 2 | 0.025 |
| **Water pump** | 1 | 100% | 0 | 4.7 | 0.025 |
| **Generator** | 1 | 100% | 128 | 3.3 | 0.025 |
| ***Substation construction*** | | | | | |
| **Site preparation (topsoil stripping)** | | | | | |
| **Dumper** | 2 | 50 | 306 | 2 | 0.025 |
| **Bulldozer** | 2 | 83 | 142 | 2 | 0.025 |
| **Wheeled loader backhoe loader - Clearing Site** | 2 | 40 | 170 | 2 | 0.025 |
| **Wheeled loader (backhoe) loading lorries** | 2 | 40 | 193 | 2 | 0.025 |
| **Excavator** | 2 | 83 | 102 | 3.3 | 0.025 |
| **Dump truck (tipping fill)** | 2 | 2 | 306 | 2 | 0.025 |
| **Dozer** | 2 | 50 | 142 | 2 | 0.025 |
| **Groundwork (pre-earthworks drainage)** | | | | | |

| Plant | Quantity | On time (%) | Total power (kW) | $NO_x$ emission factor (g/kWh) | PM emission factor (g/kWh) |
|---|---|---|---|---|---|
| **Dumper** | 2 | 50 | 306 | 2 | 0.025 |
| **Bulldozer** | 2 | 83 | 142 | 2 | 0.025 |
| **Wheeled loader (backhoe) loading lorries** | 2 | 40 | 193 | 2 | 0.025 |
| **Excavator - trenching** | 2 | 83 | 102 | 3.3 | 0.025 |
| **Wheeled backhoe loader - trenching** | 2 | 40 | 62 | 3.3 | 0.025 |
| **Dump truck (tipping fill)** | 2 | 5 | 306 | 2 | 0.025 |
| **Dozer** | 2 | 50 | 142 | 2 | 0.025 |
| **Lorries** | 1 | 10 | 0 | 4.7 | 0.025 |
| **Dewatering** | 1 | 10 | 20 | 4.7 | 0.025 |
| **Large concrete mixer (mixing concrete)** | 1 | 73 | 216 | 2 | 0.025 |
| **Truck mounted concrete truck with Boom arm (pumping concrete)** | 1 | 10 | 216 | 2 | 0.025 |
| **Groundwork (excavation and installation of below ground cables ducts and pipes** | | | | | |
| **Dumper** | 2 | 50 | 306 | 2 | 0.025 |
| **Bulldozer** | 2 | 83 | 142 | 2 | 0.025 |
| **Wheeled loader (backhoe) loading lorries** | 2 | 40 | 193 | 2 | 0.025 |
| **Excavator - trenching** | 2 | 83 | 102 | 3.3 | 0.025 |

| Plant | Quantity | On time (%) | Total power (kW) | $NO_x$ emission factor (g/kWh) | PM emission factor (g/kWh) |
|---|---|---|---|---|---|
| **Wheeled backhoe loader - trenching** | 2 | 40 | 102 | 3.3 | 0.025 |
| **Dump truck (tipping fill)** | 2 | 5 | 306 | 2 | 0.025 |
| **Dozer** | 2 | 10 | 142 | 2 | 0.025 |
| **Lorries** | 1 | 10 | 0 | 4.7 | 0.025 |
| **Dewatering** | 1 | 10 | 20 | 4.7 | 0.025 |
| **Vibratory compactor** | 1 | 50 | 0 | 4.7 | 0.025 |
| **Civils (piling)** | | | | | |
| **Directional drill (Generator)** | 1 | 50 | 106 | 3.3 | 0.025 |
| **Mobile crane** | 1 | 50 | 132 | 2 | 0.025 |
| **Piling** | 1 | 83 | 106 | 3.3 | 0.025 |
| **Drop hammer pile rig power pack** | 1 | 83 | 23 | 4.7 | 0.025 |
| **Civils (trench excavation and laying concrete foundations)** | | | | | |
| **Excavator - trenching** | 2 | 83 | 102 | 3.3 | 0.025 |
| **Large concrete mixer (mixing concrete)** | 1 | 73 | 216 | 2 | 0.025 |
| **Truck mounted concrete truck with Boom arm (pumping concrete)** | 1 | 10 | 216 | 2 | 0.025 |
| **Lorries** | 2 | 10 | 0 | 4.7 | 0.025 |
| **Dewatering** | 1 | 10 | 20 | 4.7 | 0.025 |
| **Civils (backfilling)** | | | | | |

| Plant | Quantity | On time (%) | Total power (kW) | $NO_x$ emission factor (g/kWh) | PM emission factor (g/kWh) |
|---|---|---|---|---|---|
| **Heavy Goods Vehicle (HGV) delivering CBS** | 1 | 10 | 0 | 4.7 | 0.025 |
| **ADT** | 2 | 80 | 187 | 2 | 0.025 |
| **Excavator** | 2 | 83 | 102 | 3.3 | 0.025 |
| **Wheeled backhoe loader - trenching** | 2 | 40 | 102 | 3.3 | 0.025 |
| **Roller** | 2 | 10 | 145 | 2 | 0.025 |
| **Grader** | 2 | 100 | 205 | 2 | 0.025 |
| **Civils (pits, chambers, troughs, trays and ducting)** | | | | | |
| **Dumper** | 2 | 50 | 306 | 2 | 0.025 |
| **Bulldozer** | 2 | 83 | 142 | 2 | 0.025 |
| **Wheeled loader (backhoe) loading lorries** | 2 | 40 | 193 | 2 | 0.025 |
| **Excavator - Trenching** | 2 | 83 | 102 | 3.3 | 0.025 |
| **Wheeled backhoe loader - trenching** | 2 | 40 | 102 | 3.3 | 0.025 |
| **Dump truck (tipping fill)** | 2 | 5 | 306 | 2 | 0.025 |
| **Dump truck (empty) - moving** | 2 | 10 | 306 | 2 | 0.025 |
| **Lorries** | 1 | 10 | 0 | 4.7 | 0.025 |
| **Dewatering** | 1 | 10 | 20 | 4.7 | 0.025 |
| **Mobile crane** | 1 | 20 | 132 | 2 | 0.025 |
| **Vibratory compactor** | 1 | 50 | 0 | 4.7 | 0.025 |
| **Finishing (topsoil replacement and landscape implementation)** | | | | | |

| Plant | Quantity | On time (%) | Total power (kW) | $NO_x$ emission factor (g/kWh) | PM emission factor (g/kWh) |
|---|---|---|---|---|---|
| **Dumper** | 2 | 50 | 306 | 2 | 0.025 |
| **Bulldozer** | 2 | 83 | 142 | 2 | 0.025 |
| **Wheeled loader backhoe loader - Clearing Site** | 2 | 40 | 62 | 3.3 | 0.025 |
| **Wheeled loader (backhoe) loading lorries** | 2 | 40 | 193 | 2 | 0.025 |
| **Excavator** | 2 | 83 | 102 | 3.3 | 0.025 |
| **Dump truck (tipping fill)** | 2 | 2 | 306 | 2 | 0.025 |
| **Dozer** | 2 | 50 | 107 | 3.3 | 0.025 |

### Trenching

20.8.18 As trenching will take place along the approximately 36km length (depending on final onshore cable corridor selection) of the onshore temporary construction corridor, it is not practical to model the full length in detail. Instead, a simple straight-line 1km length of trench has been modelled, with a width of 50m corresponding to the actual onshore temporary trenching construction area. Receptors have been placed immediately next to, and at various distances from, the boundary of the works area. This provides a good worst-case estimate of the impact at receptors located along the trenching activity.

20.8.19 The trenching works occur in a number of successive stages at each point of the onshore cable corridor:

- topsoil stripping;
- benching / levelling, grading of working area;
- duct delivery and stringing;
- trench excavation;
- lower and lay; and
- backfilling.

20.8.20 These are assumed to be non-overlapping. The greatest emission rate was estimated to be during the topsoil stripping stage. Exact durations of each stage are not known at this time. For the purpose of determining annual mean concentrations, it was assumed that the emission rate corresponding to the

topsoil stripping stage applies to all the trenching works stages. This is a conservative assumption.

20.8.21 The workfront is assumed to proceed at a rate of 35m, based on 150m per trench and four trenches. This implies that it will take 27 working days, or 0.073 years, to complete the modelled 1km length, so the average emission rate while plant is operating has been multiplied by 0.073 to obtain an annual average emission rate that can be used to obtain the annual average concentrations for comparison against the AQOs.

### HDD

20.8.22 HDD construction compounds have been modelled individually as volume sources, typically about 75m × 50m. Concentrations have been calculated at relevant receptors near to each HDD site.

20.8.23 Works at each location are expected to last considerably less than a year, typically about six weeks depending on the length of the bore. To obtain the annual average concentrations for comparison against the AQOs, the assessment has followed standard procedure (e.g. Environment Agency, 2020) and modelled emissions for a full calendar year, and then scaled the resulting concentrations in proportion to the expected emission duration. Durations and annualisation factors for each HDD site are given in **Table 20-19**.

Table 20-19 HDD durations and annualisation factors

| HDD Location | Drilling duration (weeks) | Annualisation factor |
|---|---|---|
| **Landfall** | 26 | 0.50 |
| **RDX-01, DTX-01, RDX-02** | 7.2 | 0.14 |
| **RVX-01, DTX-05, RLX-01** | 5.6 | 0.11 |
| **RLX-02, DTX-08** | 3.2 | 0.06 |
| **RDX-03** | 1.6 | 0.03 |
| **RDX-04, RDX-05** | 6.4 | 0.12 |
| **RDX-WE01, RDX-WE02** | 6.4 | 0.12 |
| **TRX-13** | 9 | 0.17 |
| **RDX-07, RDX-08, STX-02** | 4.8 | 0.09 |
| **RDX-09, TRX-17** | 2.4 | 0.05 |
| **RDX-B01** | 1.6 | 0.03 |
| **DTX-14, RVX-02** | 4 | 0.08 |

| HDD Location | Drilling duration (weeks) | Annualisation factor |
|---|---|---|
| **RDX-15** | 1.6 | 0.03 |
| **STX-BHL01** | 9 | 0.17 |
| **STX-OD03** | 9 | 0.17 |

### Landfall

20.8.24 The landfall works are assumed to require a temporary construction compound of 75m × 100m, with the bulk of the works lasting six months. The HDD works are expected to operate for less than this time, but have been assumed to last for six months for conservatism. The actual location of the compound, and actual receptors in the vicinity, have been modelled. The concentrations have been annualised in the same way as for HDD sites (see **paragraph 20.8.23** and **Table 20-19**).

### Onshore substation

20.8.25 Both of the onshore substation search areas have been modelled, with actual receptors in the vicinity of each onshore substation search area. Eight stages of onshore substation construction were identified, namely:

- site preparation (topsoil stripping);
- groundwork (pre-earthworks drainage);
- groundwork (excavation and installation of below ground cables ducts and pipes);
- civils (piling);
- civils (trench excavation and laying concrete foundations);
- civils (backfilling);
- civils (pits, chambers, troughs, trays and ducting); and
- finishing (topsoil replacement and landscape implementation).

20.8.26 These are assumed to be largely non-overlapping. The greatest emission rate was determined to be during the groundwork (pre-earthworks drainage) stage. Overall onshore substation construction is expected to take up to three years, but exact durations of each stage are not known at this time. For the purpose of determining annual mean concentrations, it was assumed that the groundwork (pre-earthworks drainage) stage lasts for a full calendar year. This is a conservative assumption.

## Modelling and assessing dust impacts from construction activities

20.8.27 The IAQM guidance (2016) provides a method to assess the significance of construction effects by considering the annoyance due to dust soiling as well as

harm to ecological receptors and the risk of health effects due to any significant increases to $PM_{10}$ or $PM_{2.5}$.

20.8.28 A detailed assessment is deemed to be required as described in the IAQM guidance (2016) where there is:

- a 'human receptor' located within: 350m from the temporary construction site boundary; and/ or within 50m of the route(s) used by vehicles on the public highway, up to 500m from the temporary construction site entrance(s); or
- an 'ecological receptor' located within: 200m of the boundary of the temporary construction site; or 200m of the route(s) used by construction vehicles on the public highway, up to 500m from the temporary construction site entrance.

20.8.29 The temporary construction site has been classified according to the risk of effects (based upon the scale and nature of the works, plus the proximity of sensitive receptors), appropriate site-specific environmental measures have been identified and the significance of effects has been determined.

20.8.30 The IAQM dust assessment methodology starts by determining the risk of significant impacts, starting with the assumption that there will be no dust mitigation measures, in other words the counterfactual case in which the embedded measures does not exist[4]. The resulting level of risk is then used to determine the level of environmental measures required to ensure that actual impacts are not significant.

20.8.31 In the IAQM methodology, site activities are divided into four types to reflect their different potential effects:

- Demolition: an activity involved with the removal of an existing structure or structures;
- Earthworks: the processes of soil-stripping, ground-levelling, excavation and landscaping;
- Construction: an activity involved in the provision of a new structure; and
- Trackout: the transport of dust and dirt from the site onto the public road network. This arises when vehicles leave site with dusty materials or transfer dust and dirt onto the road having travelled over muddy ground on-site.

20.8.32 The methodology addresses three types of impact:

- dust soiling effects on people and property;
- human health impacts; and
- ecological impacts.

20.8.33 The IAQM methodology for determining the risk of dust impacts proceeds through a number of steps. These are summarised briefly as follows:

[4] NB: This approach is used for the dust assessment only. Other parts of the assessment assume embedded environmental measures are in place.

- determine the potential dust emission magnitude (classified as large, medium or small). That is, how much dust is the activity likely to generate, without mitigation. This is done for each of the four types of activity (demolition, earthworks, construction and trackout);
- determine the sensitivity of receptors that may be affected by dust (classified as high, medium or low), for each of the three impact types. For example, residential receptors are high sensitivity for dust soiling while footpaths are low sensitivity;
- define the sensitivity of the area (classified as high, medium or low), for each of the three impact types. This is determined by considering how many receptors there are, and how sensitive the receptors are, at various distances from the source. Background levels of $PM_{10}$ also affect the sensitivity of the area;
- define the risk of impacts in the absence of mitigation (classified as high risk, medium risk, low risk or negligible risk). This is determined by combining the dust emission magnitude with the sensitivity of the area. This is done for each of the four types of activity (demolition, earthworks, construction and trackout) and each of the three impact types (dust soiling, health and ecological) in combination; and
- determine the necessary mitigation to reduce the risk of impacts to a negligible level.

## Modelling and assessing odour impacts from construction

20.8.34 There is a risk of temporary odour from the construction phase due to excavation works encroaching on two areas of historic landfill, as shown in **Figure 20.3, Volume 3**. These are the Brookbarn Farm Landfill, which took non-biodegradable wastes between 1996–2016, and Old Mead Road Tip, which took inert industrial, commercial, household special and liquid sludge waste between 1977–1984 (see **Appendix 25.1: Phase 1 Geo-environmental desk study, Volume 4**).

20.8.35 A simple risk-based assessment based on IAQM (IAQM, 2018) guidance has therefore been carried out. A more sophisticated assessment is not practical given the poor characterisation of the potential odour source at this stage, but the simple approach is considered adequate in view of the low risk of significant impacts and the temporary nature of any impacts.

20.8.36 The IAQM risk-based odour approach uses a Source–Pathway–Receptor approach to consider the strength of the odour source, how the odour will be diluted and dispersed in the open air, the resulting concentration of odour at receptors, and the sensitivity of affected receptors. The IAQM guidance offers suggestions for rating the source odour potential, the pathway effectiveness (i.e. how much odour is likely to arrive at the receptors), and the sensitivity of the receptors. The guidance then provides tables to combine these elements to obtain a qualitative estimate of the likely odour effect.

20.8.37 The next step is the assessment procedure is to consider the sensitivity of the receptors. Finally, the guidance provides tables to combine the likely odour effect

with the sensitivity of the receptors to determine the final odour effect at the receptors.

20.8.38 A further application of professional judgement then needs to be applied to conclude the significance of the odour effect from the development as a whole, taking into account the possibly different magnitude of effects that occur at different receptors.

## 20.9 Preliminary assessment: Construction phase

### Emissions of air pollutants from construction traffic on roads

#### Magnitude of impact

20.9.1 Full quantitative results of the modelling are given in **Appendix 20.1: Full results of construction road traffic modelling, Volume 4**. Key results are summarised here.

20.9.2 The following discussion uses terminology promulgated by the Environment Agency (2020) but widely used in air quality assessments. The Process Contribution (PC) is the contribution to the concentration of pollutant arising from the Proposed Development, in this case from road traffic generated by construction activity. The Predicted Environmental Contribution (PEC) is the total concentration, including the contribution from the Proposed Development plus the contribution from all other sources, including background sources and road traffic not associated with the Proposed Development.

20.9.3 Results are presented to several decimal places. This is to aid comparison against AQOs, between receptors and between the With Proposed Development and Without Proposed Development scenarios. The number of decimal places should not be interpreted as an indication of the accuracy of the results.

20.9.4 For annual mean $NO_2$, the greatest PC at any of the modelled human receptors is 0.30µg $m^{-3}$ at the H138 receptor, representing a property on the south side of the A27 Upper Brighton Road, near where westbound traffic queues to enter the Grove Lodge roundabout. This is the location of the N33A diffusion tube, which consistently reports very high concentrations, and so a large roads model adjustment factor was applied to this receptor to reflect the local conditions. The PEC here is modelled to be 40.1µg $m^{-3}$, or slightly over the AQO of 40µg $m^{-3}$. Under IAQM (2017) guidance, this impact is classified as **slight adverse**.

20.9.5 At all other modelled human receptors, the greatest modelled annual mean $NO_2$ PC is 0.15µg $m^{-3}$ and the greatest PEC is 23.5µg $m^{-3}$, in both cases at the H137 receptor, representing the same building as H138 but set back further from the road. At all receptors other than H138, the impact is classified as **negligible**.

20.9.6 Because the annual mean $NO_2$ is well below 60µg $m^{-3}$, Defra guidance (2018) suggests that there is no risk of an exceedance of the hourly mean $NO_2$ AQO of 200µg $m^{-3}$ at any of the modelled receptors.

20.9.7 For annual mean $PM_{10}$, the greatest PC at any of the modelled human receptors is 0.22µg $m^{-3}$, again at the H138 receptor. The PEC here is modelled to be

28.9µg $m^{-3}$, or 72% of the AQO of 40µg $m^{-3}$. Under IAQM (2017) guidance, the impact at all modelled human receptors is classified as **negligible**.

20.9.8 Using the formula in Defra (2018) to estimate daily mean $PM_{10}$ concentrations, it is estimated that there will be at most 24 days in the year when the hourly $PM_{10}$ is above 50µg $m^{-3}$, compared with a limit in the AQO of 35 days per year. Again, this is at the H138 receptor. At all other modelled human receptors, there are no more than five days per year above 50µg $m^{-3}$. There is therefore no risk of an exceedance of the AQO for daily mean $PM_{10}$.

20.9.9 For annual mean $PM_{2.5}$, the greatest PC at any of the modelled human receptors is 0.12µg $m^{-3}$, again at the H138 receptor. The PEC here is modelled to be 18.3µg $m^{-3}$, or 73% of the AQO of 25µg $m^{-3}$. Under IAQM (2017) guidance, the impact at all modelled human receptors is classified as **negligible**.

20.9.10 At all modelled human receptors, the annual mean $PM_{2.5}$ concentration is above the WHO guideline of 10µg $m^{-3}$, although this is the case even without the Proposed Development.

### Sensitivity or value of receptor

20.9.11 Impacts have been assessed at human receptors with relevant exposure in accordance with Defra guidance (2018). AQOs are set with such receptors in mind. The sensitivity of the receptors is therefore aligned with the assessment criteria.

### Significance of residual effect

20.9.12 All impacts from the construction traffic are classified as **negligible**, except at one receptor where the impact on annual mean $NO_2$ is classified as **slight adverse**. In view of the small overall impacts, the highly conservative way in which traffic flows on these road links were estimated, and the temporary nature of the construction phase, the residual effect is judged to be of **minor adverse direct temporary significance**, which is **Not Significant** in EIA terms. This applies to all onshore cable corridor options and all onshore substation search areas.

## Emissions of air pollutants from construction equipment on site

### Magnitude of impact

20.9.13 Full quantitative results of the modelling are given in **Appendix 20.2: Full results of construction plant modelling, Volume 4**. Key results are summarised here.

20.9.14 The following discussion uses terminology promulgated by the Environment Agency (2020) but widely used in air quality assessments. The PC is the contribution to the concentration of pollutant arising from the Proposed Development, in this case from road traffic generated by construction activity. The PEC is the total concentration, including the contribution from the Proposed Development plus the contribution from all other sources, including background sources and road traffic not associated with the Proposed Development.

20.9.15 Results are presented to several decimal places. This is to aid comparison against AQOs, between receptors and between the With Proposed Development and Without Proposed Development scenarios. The number of decimal places should not be interpreted as an indication of the accuracy of the results.

## Trenching

20.9.16 The greatest annual mean $NO_x$ concentration from the modelled trench source is predicted to be 2.0µg $m^{-3}$, immediately adjacent to the temporary construction site boundary. With the maximum $NO_x$ background anywhere along the length of the onshore temporary construction corridor being 13.4µg $m^{-3}$ (**Table 20-10**), this evaluates to an annual mean $NO_2$ PC of 1.1µg $m^{-3}$ and a PEC of 10.8µg $m^{-3}$. This is the worst-case impact from the trenching works, and the impact is classified as **negligible** under IAQM (2017) criteria.

20.9.17 The greatest annual mean $PM_{10}$ concentration from the modelled trench source is predicted to be 0.02µg $m^{-3}$, immediately adjacent to the temporary construction site boundary. With the maximum $PM_{10}$ background anywhere along the length of the onshore temporary construction corridor being 14.6µg $m^{-3}$ (**Table 20-10**), this evaluates to an annual mean $PM_{10}$ PC of 0.02µg $m^{-3}$ and a PEC of 14.6µg $m^{-3}$. This is the worst-case impact from the trenching works, and the impact is classified as **negligible** under IAQM (2017) criteria.

20.9.18 The greatest annual mean $PM_{2.5}$ concentration from the modelled trench source is predicted to be 0.02µg $m^{-3}$, immediately adjacent to the temporary construction site boundary. With the maximum $PM_{2.5}$ background anywhere along the length of the onshore temporary construction corridor being 9.0µg $m^{-3}$ (**Table 20-10**), this evaluates to an annual mean $PM_{2.5}$ PC of 0.02µg $m^{-3}$ and a PEC of 9.0µg $m^{-3}$. This is the worst-case impact from the trenching works, and the impact is classified as **negligible** under IAQM (2017) criteria.

## HDD

20.9.19 The greatest PC for annual mean $NO_2$ at any of the modelled receptors around the HDD sites is 4.2µg $m^{-3}$ at Crossbush Lodge, at national grid coordinates 503691, 106045. The PEC here is modelled to be 11.4µg $m^{-3}$ or 29% of the AQO of 40µg $m^{-3}$, and the impact here is classified as **moderate adverse** under IAQM (2017) criteria. The greatest PEC at any of the modelled receptors is 11.4 µg $m^{-3}$ at a semi-detached property in Crossbush, west of the A284 Lyminster Road at national grid coordinates 502833, 105656. The impact here is classified as **slight adverse** under IAQM (2017) criteria. Two other modelled receptors (at 502840, 105655 and 503199, 105546) experience **slight adverse** impacts. The impact at all other modelled receptors is classified as **negligible**.

20.9.20 The greatest PC for annual mean $PM_{10}$ at any of the modelled receptors around the HDD sites is 0.08µg $m^{-3}$ at Crossbush Lodge, where the PEC is modelled to be 12.3µg $m^{-3}$ or 31% of the AQO of 40µg $m^{-3}$. The greatest modelled PEC is modelled to be 14.1µg $m^{-3}$ or 35% of the AQO at Calceto Farm, Crossbush at national grid coordinates 503199, 105546. The impact at all modelled receptors is classified as **negligible** under IAQM (2017) criteria.

20.9.21 The greatest PC for annual mean $PM_{2.5}$ at any of the modelled receptors around the HDD sites is 0.08 µg $m^{-3}$ at Crossbush Lodge, where the PEC is modelled to be 8.1µg $m^{-3}$ or 32% of the AQO of 25µg $m^{-3}$. The greatest modelled PEC is modelled to be 8.6µg $m^{-3}$ or 34% of the AQO at Calceto Farm, Crossbush, at national grid reference 503199,105546. The impact at all modelled receptors is classified as **negligible** under IAQM (2017) criteria.

### Landfall

20.9.22 The greatest PC for annual mean $NO_2$ at any of the modelled receptors around landfall is 1.1µg $m^{-3}$ at The Mill (coordinates 501551, 101248), where the PEC is modelled to be 8.1µg $m^{-3}$ or 20% of the AQO of 40µg $m^{-3}$. The greatest modelled PEC is modelled to be 8.5 µg $m^{-3}$ or 21% of the AQO at Marina View (coordinates 501620, 102212). The impact at all modelled receptors is classified as **negligible** under IAQM (2017) criteria.

20.9.23 The greatest PC for annual mean $PM_{10}$ at any of the modelled receptors around landfall is 0.02µg $m^{-3}$ at The Mill, where the PEC is modelled to be 12.6µg $m^{-3}$ or 31% of the AQO of 40µg $m^{-3}$. The greatest modelled PEC is modelled to be 13.0µg $m^{-3}$ or 32% of the AQO at Marina View. The impact at all modelled receptors is classified as **negligible** under IAQM (2017) criteria.

20.9.24 The greatest PC for annual mean $PM_{2.5}$ at any of the modelled receptors around landfall is 0.02µg $m^{-3}$ at The Mill, where the PEC is modelled to be 8.1µg $m^{-3}$ or 32% of the AQO of 25µg $m^{-3}$. The greatest modelled PEC is modelled to be 8.4µg $m^{-3}$ or 33% of the AQO at Marina View. The impact at all modelled receptors is classified as **negligible** under IAQM (2017) criteria.

20.9.25 Regarding ecological impacts, the $NO_x$ PC at the Climping Beach SSSI (coordinates 501325, 101019) is 2.6 µg $m^{-3}$, and the PEC is 11.1 µg $m^{-3}$ or 28% of the AQO of 30 µg $m^{-3}$. Under EA criteria, this impact is classified as **insignificant**.

### Bolney Road / Kent Street substation search area

20.9.26 The greatest PC for annual mean $NO_2$ at any of the modelled receptors around this substation search area is 1.0µg $m^{-3}$ at Twineham Court Farm, where the PEC is modelled to be 8.2µg $m^{-3}$ or 20% of the AQO of 40µg $m^{-3}$. This is the greatest modelled PEC at any of the modelled receptors. The impact at all modelled receptors is classified as **negligible** under IAQM (2017) criteria.

20.9.27 The greatest PC for annual mean $PM_{10}$ at any of the modelled receptors around this substation search area is 0.02µg $m^{-3}$ at Twineham Court Farm, where the PEC is modelled to be 12.8µg $m^{-3}$ or 32% of the AQO of 40µg $m^{-3}$. The greatest modelled PEC is 13.2µg $m^{-3}$ or 33% of the AQO at Coombe House Farm. The impact at all modelled receptors is classified as **negligible** under IAQM (2017) criteria.

20.9.28 The greatest PC for annual mean $PM_{2.5}$ at any of the modelled receptors around this substation search area is 0.02µg $m^{-3}$ at Twineham Court Farm, where the PEC is modelled to be 8.2µg $m^{-3}$ or 33% of the AQO of 25µg $m^{-3}$. The greatest modelled PEC is 8.4µg $m^{-3}$ or 34% of the AQO at Combe House Farm. The

impact at all modelled receptors is classified as **negligible** under IAQM (2017) criteria.

### Wineham Lane North substation search area

20.9.29 The greatest PC for annual mean $NO_2$ at any of the modelled receptors around this substation search area is 2.9µg $m^{-3}$ at Southlands, where the PEC is modelled to be 10.3µg $m^{-3}$ or 26% of the AQO of 40µg $m^{-3}$. This is the greatest PEC at any of the modelled receptors. The impact at this receptor is classified as **slight** under IAQM (2017) criteria. The impact at all other receptors is classified as **negligible**.

20.9.30 The greatest PC for annual mean $PM_{10}$ at any of the modelled receptors around this substation search area is 0.06µg $m^{-3}$ at Southlands, where the PEC is modelled to be 13.0µg $m^{-3}$ or 32% of the AQO of 40µg $m^{-3}$. The greatest modelled PEC is 13.5µg $m^{-3}$ or 34% of the AQO at Field House Farm. The impact at all modelled receptors is classified as **negligible** under IAQM (2017) criteria.

20.9.31 The greatest PC for annual mean $PM_{2.5}$ at any of the modelled receptors around this substation search area is 0.06µg $m^{-3}$ at Southlands, where the PEC is modelled to be 8.4µg $m^{-3}$ or 33% of the AQO of 25µg $m^{-3}$. The greatest modelled PEC is 9.0µg $m^{-3}$ or 36% of the AQO at Field House Farm. The impact at all modelled receptors is classified as **negligible** under IAQM (2017) criteria.

### Sensitivity or value of receptor

20.9.32 Impacts have been assessed at human receptors with relevant exposure in accordance with Defra guidance (2018). AQOs are set with such receptors in mind. The sensitivity of the receptors is therefore aligned with the assessment criteria.

### Significance of residual effect

20.9.33 All impacts from the construction plant activity are classified as negligible, except:

- one receptor where the impact on annual mean $NO_2$ is classified as moderate adverse due to HDD works;
- three receptors where the impact on annual mean $NO_2$ is classified as slight adverse due to HDD works; and
- one receptor where the impact on annual mean $NO_2$ is classified as slight adverse due to substation construction works.

20.9.34 In view of the small overall impacts, the highly conservative way in which plant emissions and concentrations from these sources were estimated (for example, the assumption that plant only meets Stage IIIB emission standards), and the temporary nature of the construction phase, the residual effect is judged to be of **minor adverse direct temporary significance**, which is **Not Significant** in EIA terms. This applies to all temporary onshore cable corridor options and all onshore substation search areas.

## Emissions of dust from construction

### Dust emission magnitude (without embedded environmental measures)

20.9.35 The potential dust emission magnitude for each of the four types of activity is judged to be as follows. Reasons for the choice of magnitude are given with reference to IAQM (2016) guidance, where appropriate. Note that these emission magnitudes assume, counterfactually, that no mitigation is in place; this is part of the IAQM assessment process and in reality, all necessary mitigation against construction dust is a commitment (C-24; see **Table 20-16**).

- Demolition: Negligible. Few or no existing structures are expected to be demolished.
- Earthworks: Large. Total site area > 10,000m$^2$, total material moved > 100,000t.
- Construction: Large. Several structures to be constructed, including the onshore substation, construction compounds and junction boxes.
- Trackout: Large. The Transport Assessment indicates that there will be more than50 outward HDV movements per day from some parts of the site during some phases of the construction works, although not all sites and not for the full duration of construction works.

### Sensitivity of the area

20.9.36 Receptors potentially affected by dust include residential properties, schools, prisons, medical facilities and so on, which have high sensitivity to dust soiling and health effects. The IAQM guidance works in terms of residential properties, with other types of receptor being expressed as equivalent to a certain number of residential properties based on the judgement of the assessor. Between 10 and 100 residential properties lie within 20m of the onshore part of the PEIR Assessment Boundary (making the worst-case assumption that construction activity may take place anywhere up to the onshore part of the PEIR Assessment Boundary), so the area is classified as having high sensitivity to dust soiling from earthworks and construction. Over 100 residential properties lie within 20m of roads up to 500m from the onshore part of the PEIR Assessment Boundary, so the area is classified as having high sensitivity to dust soiling from trackout.

20.9.37 The background annual mean $PM_{10}$ concentration is below 24µg $m^{-3}$ (see **Section 20.6**), so considering the number of residential properties near to the works as above, the area is classified as having medium sensitivity to human health.

20.9.38 Regarding ecological sites, the Amberley Mount to Sullington Hill SSSI is judged to be of medium sensitivity (Natural England 2020). The SSSI lies within 20m of the onshore part of the PEIR Assessment Boundary and trackout zone, but no building construction activity will take place within 50m of the SSSI. No sites of high sensitivity have been identified within 50m of the onshore part of the PEIR Assessment Boundary or trackout zone. The area is therefore considered to be of medium sensitivity to ecological impacts from earthworks and trackout.

20.9.39 The sensitivity of the area with respect to the various activities and impacts is summarised in **Table 20-20**.

Table 20-20 Sensitivity of the area

| | Demolition | Earthworks | Construction | Trackout |
|---|---|---|---|---|
| **Dust soiling** | N/A | High | High | High |
| **Human health** | N/A | Medium | Medium | Medium |
| **Ecological** | N/A | Medium | Negligible | Medium |

### Risk of impacts (without embedded environmental measures)

20.9.40 Combining the dust emission magnitude with the sensitivity of the area, the risk of dust impacts in the absence of embedded environmental measures is determined as shown in **Table 20-21**. Earthworks, construction and trackout activities would carry a high risk of significant dust soiling impacts, and a medium risk of human health and ecological impacts.

Table 20-21 Summary dust risk (without embedded environmental measures)

| | Demolition | Earthworks | Construction | Trackout |
|---|---|---|---|---|
| **Dust soiling** | Negligible | High risk | High risk | High risk |
| **Human health** | Negligible | Medium risk | Medium risk | Medium risk |
| **Ecological** | Negligible | Medium risk | Negligible | Medium risk |

### Appropriate environmental measures

20.9.41 As stated in **Section 20.7**, there is a commitment, to be secured through a Outline COCP and DCO requirement, that best practices air quality management measures will be applied as described in Institute of Air Quality Management (IAQM) guidance on the Assessment of Dust from Demolition and Construction, version 1.1 (2014) (C-24, **Table 20-16**).

20.9.42 Given the risks of impacts modelled above, it is possible to determine the specific environmental measures required to ensure that the overall impacts are negligible. These are given in **Table 20-22**. These are reproduced directly from IAQM guidance (2016), so some measures may not be relevant to the Proposed Development (e.g. where there are references to requirements specific to London). IAQM measures specific to demolition (IAQM Numbers 32 to 35) are not needed, but all other IAQM measures are highly recommended or (IAQM Number 42 only) desirable. These measures therefore constitute the best practice air quality management measures referred to in commitment C-24 in

relation to the construction phase of the onshore elements of the Proposed Development.

Table 20-22 Specific environmental measures to be applied for construction dust management (from IAQM 2014)

| IAQM number | Environmental measure |
|---|---|
| **Mitigation for all sites: Communications** | |
| **1.** | Develop and implement a stakeholder communications plan that includes community engagement before work commences on site. |
| **2.** | Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager. |
| **3.** | Display the head or regional office contact information |
| **Mitigation for all sites: Dust management** | |
| **4.** | Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk, and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site. In London additional measures may be required to ensure compliance with the Mayor of London's guidance. The DMP may include monitoring of dust deposition, dust flux, real-time $PM_{10}$ continuous monitoring and/or visual inspections. |
| **Site management** | |
| **5.** | 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. |
| **6.** | Make the complaints log available to the Local Authority when asked. |
| **7.** | Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book. |
| **8.** | Hold regular liaison meetings with other high risk construction sites within 500m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes. |

| IAQM number | Environmental measure |
|---|---|
| **Monitoring** | |
| **9.** | Undertake daily on-site 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. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of site boundary, with cleaning to be provided if necessary. |
| **10.** | Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked |
| **11.** | Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. |
| **12.** | Agree dust deposition, dust flux, or real-time $PM_{10}$ continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction. |
| **Preparing and maintaining the site** | |
| **13.** | Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. |
| **14.** | Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site. |
| **15.** | Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period |
| **16.** | Avoid site runoff of water or mud. |
| **17.** | Keep site fencing, barriers and scaffolding clean using wet methods. |
| **18.** | 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. |
| **19.** | Cover, seed or fence stockpiles to prevent wind whipping. Operating vehicle/machinery and sustainable travel |
| **20.** | Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London Non-Road Mobile Machinery (NRMM) standards, where applicable |

| IAQM number | Environmental measure |
|---|---|
| **21.** | Ensure all vehicles switch off engines when stationary - no idling vehicles. |
| **22.** | Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable. |
| **23.** | Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate) |
| **24.** | Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials. |
| **25.** | Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing) |
| **Operations** | |
| **26.** | Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems. |
| **27.** | Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate. |
| **28.** | Use enclosed chutes and conveyors and covered skips. |
| **29.** | Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate. |
| **30.** | Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods. |
| **Waste management** | |
| **31.** | Avoid bonfires and burning of waste materials. |
| **Measures specific to earthworks** | |
| **36.** | Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable. |
| **37.** | Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable |

| IAQM number | Environmental measure |
|---|---|
| **38.** | Only remove the cover in small areas during work and not all at once |
| **Measures specific to construction** | |
| **39.** | Avoid scabbling (roughening of concrete surfaces) if possible |
| **40.** | Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place. |
| **41.** | Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery. |
| **42.** | For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust. |
| **Measures specific to trackout** | |
| **43.** | Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use. |
| **44.** | Avoid dry sweeping of large areas. |
| **45.** | Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. |
| **46.** | Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable. |
| **47.** | Record all inspections of haul routes and any subsequent action in a site log book. |
| **48.** | Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned. |
| **49.** | Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). |
| **50.** | 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. |
| **51.** | Access gates to be located at least 10m from receptors where possible. |

### Significance of residual effect

20.9.43 In the IAQM methodology, once the risk of dust impacts has been determined and the appropriate dust mitigation measures identified, the final step is to determine whether there are significant effects arising from the construction phase of the Proposed Development.

20.9.44 IAQM guidance (2016) 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'.*"

20.9.45 No reasons have been identified why this should not apply to the Proposed Development. The Rampion 2 commitments (as shown in **Table 20-16**) include a commitment to embed the measures recommended by IAQM guidance under commitment C-24. The residual effect is therefore of **negligible direct temporary adverse significance**, which is **Not Significant** in EIA terms. This applies to all onshore temporary cable corridor options and all onshore substation search areas.

## Emissions of odour from construction

### Magnitude of impact

20.9.46 The exact nature of the landfills is not known for certain at present. However, the Brookbarn Farm Landfill was authorised for non-biodegradable waste only and is therefore considered to have a Small source odour potential. The contents of the Old Mead Road Tip are more mixed, although older therefore, the source odour potential for this site is conservatively judged to be Large, given that odour from landfill is potentially in the "Most Offensive" category.

20.9.47 Receptors potentially most affected by the works through landfill are residential properties on Battin Lane, which lie 200m east of the Brookbarn Farm Landfill site at the closest point, and properties at Brook Barn Farm, which lie about 150m south of the Old Mead Road site at the closest point, as shown in **Figure 20.3, Volume 3**. In addition, there are allotments which lie about 50m east of the Brookbarn Farm Landfill site at the closest point. There is no other public access close to the landfill locations (e.g. public footpaths). Other land use in the area is primarily agricultural.

20.9.48 The pathway effectiveness to residential receptors is considered to be Ineffective, for the following reasons. Brook Barn Farm is about 150m from the Old Mead Road site, but upwind in the prevailing wind direction. Battin Lane and Brook Barn Farm are broadly downwind from the Brookbarn Farm Landfill site, at distances of at least 200m. At these distances, there is likely to be considerable dilution before any emitted odour reaches the receptors.

20.9.49 The pathway effectiveness to the allotments is considered to be moderately effective, in view of the relatively short distance (50m) broadly downwind. There is no other public access close to the potential odour source.

20.9.50 In addition, the sources of odour will be in a confined underground space, which will reduce wind flow across the surfaces, so that passive diffusion is the main

way of transporting odours from the source to the ambient air. This will tend to reduce the pathway effectiveness.

20.9.51 **Table 20-23** summarises the source odour potentials and pathway effectiveness ratings, and the resulting risk of odour exposure according to IAQM guidance. The risk of odour exposure from the Brookbarn Farm Landfill site is judged to be Negligible at all receptors, so impacts from this site are not considered further.

Table 20-23 Risk of odour exposure

| Landfill site | Receptor | Source odour potential | Pathway effectiveness | Risk of odour exposure |
|---|---|---|---|---|
| **Brookbarn Farm Landfill site** | Battin Lane properties | Small | Ineffective | Negligible Risk |
| **Brookbarn Farm Landfill site** | Allotments | Small | Moderately effective | Negligible Risk |
| **Old Mead Road** | Brook Barn Farm | Large | Ineffective | Low Risk |

### Sensitivity or value of receptor

20.9.52 The receptor sensitivity for residential receptors is considered to be High sensitivity, since these are locations where people would expect a high level of amenity and to be present for long periods.

### Significance of residual effect

20.9.53 Given the Low risk of odour exposure and the high receptor sensitivity, the likely magnitude of odour effect at Brook Barn Farm is categorised as Slight Adverse in the IAQM (2018) guidance.

20.9.54 The odour source will only be present temporarily, during that part of construction work between excavating and refilling the trench. This is in contrast to the typical development for which the IAQM (2018) guidance is designed, which are permanent sources of odour. The residual effect is therefore judged to be of **slight temporary direct adverse significance**, which is **Not Significant** in EIA terms. This applies to all onshore temporary cable corridor options and all onshore substation search areas.

## 20.10 Preliminary assessment: Operation and maintenance phase

### Emissions of air pollutants from traffic on roads during operational phase

20.10.1 Road traffic during the operation phase is considered to be limited to occasional site visits and maintenance works. The AADT are therefore expected to be well below the IAQM criteria at which a detailed assessment should be considered (see **paragraph 20.8.6**). No further assessment is therefore necessary, and it is concluded that the residual effect is of **negligible permanent direct significance**, which is **Not Significant** in EIA terms.

## 20.11 Preliminary assessment: Decommissioning phase

### Emissions of air pollutants from decommissioning traffic on roads

20.11.1 Road traffic data is not available to permit the modelling and assessment of impacts from road traffic during the decommissioning phase. However, given the decommissioning plan is to reverse the construction phase for above-ground structures, and to leave underground structures in place, it is expected that decommissioning traffic will be less than construction traffic, which was shown above to have a negligible effect. In addition, decommissioning is expected to take place in about 2055, by which time it is highly unlikely that road vehicles will be a significant source of emissions.

20.11.2 It is therefore concluded that the residual effect is of **negligible temporary direct significance**, which is **Not Significant** in EIA terms. This applies to all onshore temporary cable corridor options and all onshore substation search areas.

### Emissions of air pollutants from decommissioning equipment on site

20.11.3 Plant data is not available in sufficient detail to permit the modelling and assessment of impacts from decommissioning equipment on site. However, given the decommissioning plan is to reverse the construction phase for above-ground structures, and to leave underground structures in place, it is expected that decommissioning activity will be less than construction activity, which was shown above to have a negligible effect. In particular, the only non-negligible impact from the construction phase was associated with HDD, which will not occur for decommissioning. In addition, decommissioning is expected to take place in about 2055, by which time it is highly unlikely that construction plant and equipment will be a significant source of emissions.

20.11.4 It is therefore concluded that the residual effect is of **negligible temporary direct significance**, which is **Not Significant** in EIA terms. This applies to all onshore temporary cable corridor options and all onshore substation search areas.

## Emissions of dust from decommissioning

### Dust emission magnitude (without embedded environmental measures)

20.11.5 The potential dust emission magnitude for each of the four types of activity is judged to be as follows. Reasons for the choice of magnitude are given with reference to IAQM (2016) guidance, where appropriate. Note that these emission magnitudes assume, counterfactually, that no mitigation is in place; this is part of the IAQM assessment process and in reality all necessary mitigation against construction dust is a commitment (C-24).

- Demolition: Medium. Several structures forming the onshore substation to be demolished.
- Earthworks: Negligible.
- Construction: Negligible.
- Trackout: Medium. It is conservatively assumed that there will be at most 10–50 outward HDV movements per day.

### Sensitivity of the area

20.11.6 Receptors potentially affected by dust include residential properties, schools, prisons, medical facilities and so on, which have high sensitivity to dust soiling and health effects. The IAQM guidance works in terms of residential properties, with other types of receptor being expressed as equivalent to a certain number of residential properties based on the judgement of the assessor. Between 10 and 100 residential properties lie within 50m of each of the onshore substation search areas, so the area is classified as having medium sensitivity to dust soiling from demolition. Between 10 and 100 residential properties lie within 20m of roads up to 500m from each of the onshore substation search areas, so the area is classified as having medium sensitivity to dust soiling from trackout.

20.11.7 The background annual mean $PM_{10}$ concentration is below 24 µg $m^{-3}$ (see **Section 20.6**), so considering the number of residential properties near to the works as above, the area is classified as having low sensitivity to human health from demolition and trackout.

20.11.8 Regarding ecological sites, no sensitive sites have been identified within 50 m of each of the onshore substation search areas or trackout zone. The area is therefore considered to be of negligible sensitivity to ecological impacts.

20.11.9 The sensitivity of the area with respect to the various activities and impacts is summarised in **Table 20-24.**

Table 20-24 Sensitivity of the area

| | Demolition | Earthworks | Construction | Trackout |
|---|---|---|---|---|
| **Dust soiling** | Medium | Negligible | Negligible | Medium |
| **Human health** | Low | Negligible | Negligible | Low |
| **Ecological** | Negligible | Negligible | Negligible | Negligible |

### Risk of impacts (without embedded environmental measures)

20.11.10 Combining the dust emission magnitude with the sensitivity of the area, the risk of dust impacts in the absence of embedded environmental measures is determined as shown in **Table 20-21**. Earthworks and construction activities would carry a high risk of significant dust soiling impacts. Several medium risk impacts would also result.

Table 20-25 Summary dust risk (without embedded environmental measures)

| | Demolition | Earthworks | Construction | Trackout |
|---|---|---|---|---|
| **Dust soiling** | Medium risk | Negligible | Negligible | Low risk |
| **Human health** | Low risk | Negligible | Negligible | Low risk |
| **Ecological** | Negligible | Negligible | Negligible | Negligible |

### Appropriate measures

20.11.11 As stated in **Section 20.7**, there is a commitment, to be secured through a Outline COCP and DCO requirement, that best practices air quality management measures will be applied as described in Institute of Air Quality Management (IAQM) guidance on the Assessment of Dust from Demolition and Construction 2014, version 1.1 (commitment C-24).

20.11.12 Given the risks of impacts modelled above, it is possible to determine the specific environmental measures required to ensure that the overall impacts are negligible. These are given in **Table 20-26**. These are reproduced directly from IAQM guidance (2016), so some measures may not be relevant to the Proposed Development (e.g. where there are references to requirements specific to London). These measures therefore constitute the best practice air quality management measures referred to in commitment C-24 for the decommissioning phase of the onshore elements of the Proposed Development.

Table 20-26 Specific environmental measures to be applied for decommissioning dust management (from IAQM 2014)

| IAQM number | Measure |
|---|---|
| **Mitigation for all sites: Communications** | |
| **1.** | Develop and implement a stakeholder communications plan that includes community engagement before work commences on site. |
| **2.** | Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager. |
| **3.** | Display the head or regional office contact information |
| **Mitigation for all sites: Dust Management** | |
| **4.** | Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk, and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site. In London additional measures may be required to ensure compliance with the Mayor of London's guidance. The DMP may include monitoring of dust deposition, dust flux, realtime $PM_{10}$ continuous monitoring and/or visual inspections. |
| **Site Management** | |
| **5.** | 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. |
| **6.** | Make the complaints log available to the Local Authority when asked. |
| **7.** | Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book. |
| **Monitoring** | |
| **9.** | Undertake daily on-site 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. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of site boundary, with cleaning to be provided if necessary. |
| **10.** | Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked |

| IAQM number | Measure |
|---|---|
| **11.** | Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. |
| **12.** | Agree dust deposition, dust flux, or real-time $PM_{10}$ continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction. |
| **Preparing and maintaining the site** | |
| **13.** | Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. |
| **14.** | Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site. |
| **15.** | Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period |
| **16.** | Avoid site runoff of water or mud. |
| **17.** | Keep site fencing, barriers and scaffolding clean using wet methods. |
| **18.** | 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. |
| **19.** | Cover, seed or fence stockpiles to prevent wind whipping. Operating vehicle/machinery and sustainable travel |
| **20.** | Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable |
| **21.** | Ensure all vehicles switch off engines when stationary - no idling vehicles. |
| **22.** | Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable. |
| **23.** | Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate) |

| IAQM number | Measure |
|---|---|
| **24.** | Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials. |
| **25.** | Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing) |
| **Operations** | |
| **26.** | Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems. |
| **27.** | Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate. |
| **28.** | Use enclosed chutes and conveyors and covered skips. |
| **29.** | Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate. |
| **30.** | Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods. |
| **Waste management** | |
| **31.** | Avoid bonfires and burning of waste materials. |
| **Measures specific to demolition** | |
| **32.** | Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust). |
| **33.** | Ensure effective water suppression is used during demolition operations. Handheld sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground. |
| **34.** | Avoid explosive blasting, using appropriate manual or mechanical alternatives. |
| **35.** | Bag and remove any biological debris or damp down such material before demolition. |

| IAQM number | Measure |
|---|---|
| **Measures specific to earthworks** | |
| **36.** | Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable. |
| **37.** | Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable |
| **38.** | Only remove the cover in small areas during work and not all at once. |
| **Measures specific to trackout** | |
| **43.** | Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use. |
| **44.** | Avoid dry sweeping of large areas. |
| **45.** | Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. |
| **46.** | Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable. |
| **47.** | Record all inspections of haul routes and any subsequent action in a site log book. |
| **48.** | Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned. |
| **49.** | Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). |
| **50.** | 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. |
| **51.** | Access gates to be located at least 10 m from receptors where possible. |

## Significance of residual effect

20.11.13 In the IAQM methodology, once the risk of dust impacts has been determined and the appropriate dust mitigation measures identified, the final step is to determine whether there are significant effects arising from the decommissioning phase of the Proposed Development.

20.11.14 IAQM guidance (2016) states that *"For almost all construction activity* [i.e. including demolition and related dust-generating activities]*, 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'."*

20.11.15 No reasons have been identified why this should not apply to the Proposed Development. The Rampion 2 commitments (as shown in **Table 20-16**) include a commitment, C-24, to embed the measures recommended by IAQM guidance. The residual effect is therefore of **negligible temporary direct adverse significance**, which is **Not Significant** in EIA terms. This applies to all onshore temporary cable corridor options and all onshore substation search areas.

## 20.12 Preliminary assessment: Cumulative effects

### Approach

20.12.1 A preliminary cumulative effects assessment (CEA) has undertaken for Rampion 2 which examines the result from the combined effects of Rampion 2 with other developments on the same single receptor or resource and the contribution of Rampion 2 to those impacts. The overall method followed when identifying and assessing potential cumulative effects in relation to the onshore environment, is set out in **Chapter 5** and **Appendix 5.3: Cumulative effects assessment detailed onshore search and screening criteria, Volume 4**.

20.12.2 The onshore screening approach will follow the PINS Advice Note Seventeen (Planning Inspectorate, 2019) which is an accepted process for NSIPs and will follow the four-stage approach set out in the guidance.

### Cumulative effects assessment

20.12.3 For air quality, a Zone of Influence (ZOI) as in **Section 20.4** has been applied for the CEA to ensure direct and indirect cumulative effects can be appropriately identified and assessed. The ZOI takes into consideration the areas/receptors likely to be affected by Rampion 2 activities and facilities. Effects from unplanned but predictable potential effects caused by Rampion 2 that may occur later or at a different location have also been considered.

20.12.4 A short list of 'other developments' that may interact with the Rampion 2 ZOIs during their construction, operation or decommissioning is presented in **Appendix 5.4: Cumulative effects assessment shortlisted developments, Volume 4** and on **Figure 5.4.2, Volume 4**. This short list has been generated applying criteria set out in **Chapter 5** and **Appendix 5.3: Cumulative effects assessment detailed onshore search criteria, Volume 4** and has been collated up to the finalisation of the PEIR through desk study, consultation and engagement.

20.12.5 Only those developments in the short list that fall within the air quality ZOI have the potential to result in cumulative effects with the Proposed Development. The air quality ZOI is shown in **Figure 20.4**, **Volume 3**. All developments falling outside the air quality ZOI are excluded from this assessment.

20.12.6 Other developments have the potential for generating cumulative impacts in a number of ways:

- Generation of additional road traffic. This has been taken into account in the air quality modelling by means of the traffic modelling (presented in **Chapter 24: Transport** which includes growth factors which represent the overall amount of growth in road traffic given expected developments on a wide scale. It is therefore not necessary to consider these separately in the CEA. This includes residential and commercial development that are not in the ZOI.
- Generation of dust during construction. The ZOI for this is 350m.
- Generation of air quality emissions from the other development, either during construction or operation. For these effects, the ZOI is less well defined, but based on the results of the main air quality assessment, may be conservatively taken as 200m.

20.12.7 On the basis of the above, the other developments which have the potential to have cumulative effects are summarised in **Table 20-27**.

Table 20-27 Other developments for CEA

| ID (Figure 5.4.2) | Development type | Project | Status | Confidence in assessment | Tier | Level of detail of CEA adopted |
|---|---|---|---|---|---|---|
| **1** | Transport | A27 Arundel Bypass project | Pre-application, no scoping report yet submitted.<br>Preferred alignment issued | Low | 3 | The A27 Arundel bypass project is at pre-application, options development stage with limited information available. The preferred alignment crosses the onshore part of the PEIR Assessment Boundary near Crossbush. The available information has informed a simple qualitative assessment carried out on the basis that successful implementation of embedded and standard good industry practice measures will offset any potential significant cumulative effects. |

20.12.8 In addition, the Highways England A27 Worthing and Lancing improvement Road and junction capacity improvements scheme could potentially have cumulative effects for air quality. However, the proposal is currently paused and it is currently uncertain whether it will proceed, so has not been included on the shortlist of developments for the CEA at PEIR stage. This will be reviewed during preparation of the ES.

20.12.9 The A27 Arundel Bypass scheme may entail works concurrently with the construction phase of the Proposed Development. This may result in cumulative effects on air quality and dust. In view of the negligible and temporary nature of the contribution from the Proposed Development, the cumulative effect is likely to be dominated by the other development. Note that there is a specific environmental measure for dust to hold regular liaison meetings with other high risk construction sites within 500m of the temporary construction site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised (**Table 20-22**, item 8); this is secured under commitment C-24 (**Table 20-16**).

20.12.10 There are therefore no cumulative effects anticipated at this preliminary stage for air quality.

20.12.11 Baseline data and further information on other developments will continue to be collected prior to the finalisation of the ES and iteratively fed into the assessment. An updated cumulative effects assessment will be reported in the ES.

## 20.13 Transboundary effects

20.13.1 Transboundary effects arise when impacts from a development within one European Economic Area (EEA) state affects the environment of another EEA state(s). A screening of transboundary effects has been carried out and is presented in Appendix B of the Scoping Report (RED, 2020).

20.13.2 There is no potential for significant transboundary effects upon the interests of European Economic Area (EEA) states. For this reason, it is not discussed further.

## 20.14 Inter-related effects

20.14.1 The inter-related effects assessment considers likely significant effects from multiple impacts and activities from the construction, operation and maintenance, and decommissioning of Rampion 2 on the same receptor, or group of receptors.

20.14.2 The potential inter-related effects include:

- Proposed Development lifetime effects: i.e., those arising throughout more than one phase of the Proposed Development (construction, operation and maintenance, and decommissioning) to interact to potentially create a more significant effect on a receptor than if just one phase were assessed in isolation; and
- Receptor-led effects: assessment of the scope for all effects to interact, spatially and temporally, to create inter-related effects on a receptor (or group).

Receptor-led effects might be short term, temporary or transient effects, or incorporate longer term effects.

20.14.3 The potential inter-related effects that could arise in relation to air quality are presented in **Table 20-28**. A description of the process to identify and assess these effects is presented in **Chapter 5**.

Table 20-28 Inter-related effects assessment for air quality

| Project phase(s) | Nature of inter-related effect | Assessment alone | Inter-related effects assessment |
|---|---|---|---|
| **Proposed Development lifetime effects** | | | |
| Construction, operation and maintenance, and decommissioning | Health effects (due to emissions from air pollutants) and loss of amenity (due to dust and odour) at human receptors.<br><br>Damage to ecological receptors from emissions from air pollutants and dust. | Air quality effects were assessed as being Not Significant in EIA terms for all phases.<br><br>Dust effects during construction and decommissioning were assessed as being Not Significant in EIA terms. Emissions of dust during operation and maintenance are scoped out.<br><br>Odour effects during construction were assessed as being Not Significant in EIA terms. Odour impacts during operation and maintenance, and decommissioning are scoped out. | Air quality, dust and odour effects described in this chapter will be confined to each phase of the Proposed Development. As the phases do not overlap temporally, there is no potential for any air quality inter-related lifetime effects. |
| **Receptor-led effects** | | | |
| Effects on human health due to emissions from air pollutants at human receptors, such as residential properties, schools, medical | | The construction phase has the highest likelihood of receptor-led effects as several activities take place during this | |

| Project phase(s) | Nature of inter-related effect | Assessment alone | Inter-related effects assessment |
|---|---|---|---|
| | facilities, prisons and commercial properties (refer to **Table 20-6**).<br><br>Loss of amenity due to dust and odour at human receptors, such as residential properties, schools, medical facilities, prisons and commercial properties (refer to **Table 20-6**).<br><br>Potential for inter-related effects with noise and vibration, transport and landscape and visual impact. | | phase (refer to **Chapter 4**). Although receptor-led effects will likely be short term and temporary depending on works being completed in vicinity of a receptor.<br><br>The implementation of the Outline COCP and other embedded environmental measures have been considered within the individual aspect assessments which conclude Not Significant effects for noise and vibration, air quality and transport.<br><br>Significant effects remain for the landscape and visual impact aspect as the PEIR is assessed at Year 1 of the Proposed Development only. In the ES, Year 1 and Year 15 of the Proposed Development will be assessed for landscape and visual impact. It is expected that environmental measures at Year 15 will materially reduce potential effects, compared to Year 1.<br><br>Overall, some inter-related effects on residents may arise at some locations on a temporary basis. However, embedded environmental measures are designed to reduce these effects and it is considered unlikely that any inter-related effects will exceed the significance reported in the individual aspect chapters for noise and vibration, air quality, transport or landscape and visual effects.<br><br>Operation and maintenance effects on air quality are expected to be limited to occasional site visits and maintenance works. These effects are not significant in EIA terms and are unlikely to generate any significant inter-related receptor-led effects. |

| Project phase(s) | Nature of inter-related effect | Assessment alone | Inter-related effects assessment |
|---|---|---|---|
| | | Decommissioning is expected to be broadly similar to the construction phase. | |
| Effects on designated ecological receptors (refer to **Table 20-6**). | | This chapter has assessed potential likely significant effects on ecological receptors, including the Amberley Mount to Sullington Hill SSSI and the Climping Beach SSSI. Impacts have been considered further on ecological receptors, where appropriate, in **Chapter 23: Terrestrial ecology and nature conservation**. | |

## 20.15 Summary of residual effects

20.15.1 **Table 20-29** presents a summary of the preliminary assessment of significant impacts, any relevant embedded environmental measures and residual effects on air quality receptors.

Table 20-29 Summary of preliminary assessment of residual effects

| Activity and impact | Magnitude of impact | Receptor and sensitivity or value | Embedded environmental measures | Preliminary assessment of residual effect (significance) |
|---|---|---|---|---|
| **Construction** | | | | |
| **Emissions of air pollutants from construction traffic on roads** | Minor adverse | In accordance with AQO | None | Minor adverse (Not Significant) |
| **Emissions of air pollutants from construction equipment on site** | Minor adverse | In accordance with AQO | None | Minor adverse (Not Significant) |

| Activity and impact | Magnitude of impact | Receptor and sensitivity or value | Embedded environmental measures | Preliminary assessment of residual effect (significance) |
|---|---|---|---|---|
| **Emissions of dust from construction** | Not applicable | Human receptors – High. Ecological receptors – Medium | C-24 and **Table 20-22**. | Negligible |
| **Emissions of odour from construction** | Low | Low | C-6 | Negligible |
| **Operation and maintenance** | | | | |
| **Emissions of air pollutants during operational phase** | Negligible | In accordance with AQO | None | Negligible |
| **Decommissioning** | | | | |
| **Emissions of air pollutants from traffic on roads** | Minor adverse | In accordance with AQO | None | Minor adverse (Not significant) |
| **Emissions of air pollutants from equipment on site** | Negligible | In accordance with AQO | None | Negligible |
| **Emissions of dust from decommissioning** | Not applicable | Human receptors – High. Ecological receptors – Medium | C-24 and **Table 20-26**. | Negligible |

## 20.16 Further work to be undertaken for ES

20.16.1 Assessments will be revised if required for the ES to reflect the design refinement work anticipated prior to the DCO Application submission.

## 20.17 Glossary of terms and abbreviations

Table 20-30 Glossary of terms and abbreviations

| Term (acronym) | Definition |
|---|---|
| **AADT** | Annual average daily traffic flow (24-hour). |
| **ADC** | Arun District Council. |
| **ADMS** | A software tool dispersion modelling marketed by Cambridge Environmental Research Consultants. |
| **Annual Mean** | The annual mean is the average concentration of a pollutant measured over one year. This is normally for a calendar year. |
| **AQAL** | Air quality assessment level. A generic term for the various standards, objectives, limit values etc. against which impacts need to be assessed. |
| **AQMA** | Air Quality Management Area. If a Local Authority identifies any locations within its boundaries where the Air Quality Objectives are not likely to be achieved, it must declare the area as an AQMA. The area may encompass just one or two streets, or it could be much bigger. The Local Authority is subsequently required to put together a plan to improve air quality in that area — a Local Air Quality Action Plan. |
| **AQO** | Air Quality Objective. The Air Quality Objectives are policy targets generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedances, within a specified timescale. The Objectives are set out in the UK Government's Air Quality Strategy for the key air pollutants. |
| **Automatic Monitoring** | Monitoring is usually termed "automatic" or "continuous" if it produces real-time measurements of pollutant concentrations. Automatic fixed point monitoring methods exist for a number of pollutants, providing high resolution data averaged over very short time periods. |
| **Baseline** | Refers to existing conditions as represented by latest available survey and other data which is used as a benchmark for making comparisons to assess the impact of development. |
| **Baseline conditions** | The environment as it appears (or would appear) immediately prior to the implementation of the Proposed Development together with any known or foreseeable future changes that will take place before completion of the Proposed Development. |
| **$C_6H_6$** | Benzene. |

| Term (acronym) | Definition |
|---|---|
| **CEA** | Cumulative Effects Assessment. |
| **CO** | Carbon monoxide. |
| **COCP** | Code of Construction Practice. |
| **Code of Construction Practice** | The code sets out the standards and procedures to which developers and contractors must adhere to when undertaking construction of major projects. This will assist with managing the environmental impacts and will identify the main responsibilities and requirements of developers and contractors in constructing their projects. |
| **Construction** | Used both to refer to the whole construction phase of a project, and more specifically to refer to an activity involved in the provision of a new structure (building, road, etc.). |
| **Construction Effects** | Used to describe both temporary effects that arise during the construction phases as well as permanent existence effects that arise from the physical existence of development (for example new buildings). |
| **Cumulative effects** | Additional changes caused by a Proposed Development in conjunction with other similar developments or as a combined effect of a set of developments, taken together' (SNH, 2012) |
| **Cumulative Effects Assessment** | Assessment of impacts as a result of the incremental changes caused by other past, present and reasonably foreseeable human activities and natural processes together with the Proposed Development. |
| **DCO** | Development Consent Order. |
| **DCO Application** | An application for consent to undertake a Nationally Significant Infrastructure Project made to the Planning Inspectorate who will consider the application and make a recommendation to the Secretary of State, who will decide on whether development consent should be granted for the Proposed Development. |
| **Decommissioning** | The period during which a development and its associated processes are removed from active operation. |
| **Defra** | Department for Environment, Food and Rural Affairs. |
| **Demolition** | An activity involved with the removal of an existing structure or structures. |

| Term (acronym) | Definition |
|---|---|
| **Development Consent Order** | This is the means of obtaining permission for developments categorised as Nationally Significant Infrastructure Projects, under the Planning Act 2008. |
| **Diffusion tubes** | Passive diffusion tube samplers collect nitrogen dioxide and other pollutants by molecular diffusion along an inert tube to an efficient chemical absorbent. After exposure for a known time, the absorbent material is chemically analysed and the concentration calculated. |
| **Dispersion modelling** | Dispersion modelling is a means of calculating air pollution concentrations using information about the pollutant emissions and the nature of the atmosphere. |
| **DMP** | Dust Management Plan. |
| **EA** | Environment Agency. |
| **Earthworks** | The processes of soil-stripping, ground-levelling, excavation and landscaping. |
| **EEA** | European Economic Area. |
| **Embedded environmental measures** | Equate to 'primary environmental measures' as defined by Institute of Environmental Management and Assessment (2016). They are measures to avoid or reduce environmental effects that are directly incorporated into the preferred masterplan for the Proposed Development. |
| **Environmental Impact Assessment (EIA)** | The process of evaluating the likely significant environmental effects of a proposed project or development over and above the existing circumstances (or 'baseline'). |
| **Environmental Measures** | Measures which are proposed to prevent, reduce and where possible offset any significant adverse effects (or to avoid, reduce and if possible, remedy identified effects. (GLVIA3, 2013 Para 3.37). |
| **Environmental Statement** | The written output presenting the full findings of the Environmental Impact Assessment. |
| **EPUK** | Environmental Protection UK. |
| **ES** | Environmental Statement. |
| **EU** | European Union. |
| **EU Directives** | The European Union has been legislating to control emissions of air pollutants and to establish air quality objectives since the early |

| Term (acronym) | Definition |
|---|---|
| | 1970s. European Directives on ambient air quality require the UK to undertake air quality assessment, and to report the findings to the European Commission on an annual basis. At the time of the UK's departure from the EU, these continue to provide much of the legislative base. |
| **Exceedance** | An exceedance defines a period of time during which the concentration of a pollutant is greater than, or equal to, the appropriate air quality criterion. For AQOs, an exceedance is a concentration greater than the AQO value. |
| **Formal consultation** | Formal consultation refers to statutory consultation that is required under Section 42 and Section 47 of the Planning Act 2008 with the relevant consultation bodies and the public on the preliminary environmental information. |
| **Future Baseline** | Refers to the situation in future years without the Proposed Development. |
| **HDC** | Horsham District Council. |
| **HDV** | Heavy Duty Vehicle. Goods vehicles and buses greater than 3.5 t gross vehicle weight. |
| **HGV** | Heavy Goods Vehicle. Goods vehicles greater than 3.5 t gross vehicle weight. |
| **Horizontal Directional Drilling (HDD)** | An engineering technique avoiding open trenches. |
| **IAQM** | Institute of Air Quality Management. |
| **Impact** | The changes resulting from an action. |
| **Impact pathway** | A change descriptively assessed by one aspect, used by another aspect to inform a related assessment. |
| **Indirect effects** | Effects that result indirectly from the Proposed Development as a consequence of the direct effects, often occurring away from the site, or as a result of a sequence of interrelationships or a complex pathway. They may be separated by distance or in time from the source of the effects.<br><br>Often used to describe effects on landscape character that are not directly impacted by the Proposed Development such as effects on perceptual characteristics and qualities of the landscape. |

| Term (acronym) | Definition |
|---|---|
| **Informal consultation** | Informal consultation refers to the voluntary consultation that RED undertake in addition to the formal consultation requirements. |
| **LAQM** | Local Air Quality Management. The LAQM process requires Local Authorities to periodically review and assess the current and future quality of air in their areas. |
| **LDV** | Light Duty Vehicle. Cars and vans up to 3.5 t gross vehicle weight. |
| **Likely Significant Effects** | It is a requirement of Environmental Impact Assessment Regulations to determine the likely significant effects of the Proposed Development on the environment which should relate to the level of an effect and the type of effect. |
| **LNR** | Local Nature Reserve. |
| **Magnitude (of change)** | A term that combines judgements about the size and scale of the effect, the extent of the area over which it occurs, whether it is reversible or irreversible and whether it is short term or long term in duration'. Also known as the 'degree' or 'nature' of change. |
| **Micrograms per cubic metre (µg $m^{-3}$)** | A measure of concentration in terms of mass per unit volume. A concentration of 1 µg $m^{-3}$ means that one cubic metre of air contains one microgram ($10^{-6}$ grams) of pollutant. |
| **MSDC** | Mid Sussex District Council. |
| **Nationally Significant Infrastructure Project** | Nationally Significant Infrastructure Projects are major infrastructure developments in England and Wales which are consented by DCO. These include proposals for renewable energy projects with an installed capacity greater than 100MW. |
| **NE** | Natural England. |
| **$NO_2$** | Nitrogen dioxide. |
| **$NO_x$** | Oxides of nitrogen. The sum of $NO_2$ and nitric oxide (NO). |
| **NRMM** | Non-road mobile machinery. |
| **Onshore part of the PEIR Assessment Boundary** | An area that encompasses all planned onshore infrastructure. |
| **Pb** | Lead. |
| **PC** | Process contribution. |

| Term (acronym) | Definition |
|---|---|
| **PEC** | Predicted environmental contribution. |
| **PEIR Assessment Boundary** | The PEIR Assessment Boundary combines the search areas for the offshore and onshore infrastructure associated with the Proposed Development. It is defined as the area within which the Proposed Development and associated infrastructure will be located, including the temporary and permanent construction and operational work areas. |
| **PINS** | Planning Inspectorate. |
| **PM** | Particulate matter. Microscopic portions of solid matter suspended in air. This includes a wide range of particle sizes and different chemical constituents. It consists of both primary components, which are emitted directly into the atmosphere, and secondary components, which are formed within the atmosphere as a result of chemical reactions. Commonly used to refer to both $PM_{10}$ and $PM_{2.5}$. |
| **$PM_{10}$** | Particulate matter smaller than 10 µm in diameter. |
| **$PM_{2.5}$** | Particulate matter smaller than 2.5 µm in diameter. |
| **PPE** | Personal Protective Equipment. |
| **Preliminary Environmental Information Report (PEIR)** | The written output of the Environmental Impact Assessment undertaken to date for the Proposed Development. It is developed to support formal consultation and presents the preliminary findings of the assessment to allow an informed view to be developed of the Proposed Development, the assessment approach that has been undertaken, and the preliminary conclusions on the likely significant effects of the Proposed Development and environmental measures proposed. |
| **Proposed Development** | The development that is subject to the application for development consent, as described in **Chapter 4 The Proposed Development**. |
| **Receptor** | These are as defined in Regulation 5(2) of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 and include population and human health, biodiversity, land, soil, water, air, climate, material assets, cultural heritage and landscape that may be at risk from exposure to pollutants which could potentially arise as a result of the Proposed Development. |
| **SAC** | Special Area of Conservation. |
| **Scoping Opinion** | A Scoping Opinion is adopted by the Secretary of State for a Proposed Development. |

| Term (acronym) | Definition |
|---|---|
| **Scoping Report** | A report that presents the findings of an initial stage in the Environmental Impact Assessment process. |
| **Secretary of State** | The body who makes the decision to grant development consent. |
| **Sensitivity** | A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or development proposed and the value associated to that receptor. |
| **Significance** | A measure of the importance of the environmental effect, defined by criteria specific to the environmental aspect. |
| **Significant effects** | It is a requirement of the EIA Regulations to determine the likely significant effects of the development on the environment which should relate to the level of an effect and the type of effect. Where possible significant effects should be mitigated.<br><br>The significance of an effect gives an indication as to the degree of importance (based on the magnitude of the effect and the sensitivity of the receptor) that should be attached to the impact described.<br><br>Whether or not an effect should be considered significant is not absolute and requires the application of professional judgement. Significant – 'noteworthy, of considerable amount or effect or importance, not insignificant or negligible'. The Concise Oxford Dictionary.<br><br>Those levels and types of landscape and visual effect likely to have a major or important / noteworthy or special effect of which a decision maker should take particular note. |
| **$SO_2$** | Sulphur dioxide. |
| **SPA** | Special Protection Area. |
| **SSSI** | Sites of Special Scientific Interest. |
| **TA** | Transport Assessment. |
| **Temporal Scope** | The temporal scope covers the time period over which changes to the environment and the resultant effects are predicted to occur and are typically defined as either being temporary or permanent. |
| **The Applicant** | Rampion Extension Development Limited (RED) |
| **The Proposed Development / Rampion 2** | The onshore and offshore infrastructure associated with the offshore wind farm comprising of installed capacity of up to 1200 |

| Term (acronym) | Definition |
|---|---|
| | MW, located in the English Channel in off the south coast of England. |
| **Trackout** | The transport of dust and dirt from the site onto the public road network. This arises when vehicles leave site with dusty materials or transfer dust and dirt onto the road having travelled over muddy ground on-site. |
| **WBC** | Worthing Borough Council. |
| **WHO** | World Health Organization. |
| Workfront | The location of the active works along the onshore cable corridor, that moves along the corridor as work progresses. |
| **ZOI** | Zone of Influence. |
| **Zone of Influence** | The area surrounding the Proposed Development which could result in likely significant effects. |

## 20.18 References

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