Connah's Quay Low Carbon Power

Preliminary Environmental Information Report
Volume II, Chapter 8: Air Quality

Uniper

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The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017
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8. Air Quality

8.1 Introduction

Overview

8.1.1 This chapter of the Preliminary Environmental Information Report (PEIR) presents a preliminary assessment of the likely significant environmental effects of Connah's Quay Combined Cycle Gas Turbine (CCGT) with Carbon Capture Plant (CCP) (hereafter referred to as the Proposed Development) with respect to Air Quality during the construction, operation (including maintenance), and decommissioning phases of the Proposed Development.

8.1.2 This chapter is supported by the following figures in PEIR Volume III:

- **Figure 8-1: Construction Phase Assessment - Air Quality Study Area and Baseline Monitoring Locations**;
- **Figure 8-2: Operational Phase Assessment - Air Quality Study Area and Human Health Receptors**;
- **Figure 8-3: Operational Phase Assessment - Air Quality Study Area and Ecological Receptors**;
- **Figure 8-4: Air Quality Study Area Modelled Buildings**;
- **Figure 8-5: Annual Mean NO_2 process contribution (µg/m³) 2020 Meteorological Data**;
- **Figure 8-6: 1-hour Mean NO_2 process contribution (µg/m³), as a 99.8th Percentile of hourly averages, 2022 Meteorological Data**;
- **Figure 8-7: Maximum 8-hour Mean CO process contribution (µg/m³), as a 100.00th Percentile of hourly averages, 2022 Meteorological Data**;
- **Figure 8-8: Annual Mean NOx process contribution (µg/m³), 2020 Meteorological Data**;
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- **Figure 8-12: Maximum 1-hour Mean Amine Process Contribution (µg/m³), as a 100th Percentile of hourly averages, 2022 Meteorological Data**; and
- **Figure 8-13: Maximum 24-hour Mean Amine Process Contribution (µg/m³), as a 100th Percentile of hourly averages, 2021 Meteorological Data**.

8.1.3 This chapter is supported by the following appendices in PEIR Volume IV:

- **Appendix 1-B PEIR Volume IV: EIA Scoping Opinion**.
- **Appendix 7-A: Legislative, Policy and Guidance Framework for Technical Topics**;
- **Appendix 8-A: Baseline Air Quality Information**;
- **Appendix 8-B: Air Quality Construction Dust Risk Assessment**;
- **Appendix 8-C: Air Quality Traffic Emission Assessment**; and
- **Appendix 8-D: Air Quality Operational Assessment**;

Legislation, Policy and Guidance

8.1.4 Legislation, planning policy, and guidance relating to Air Quality and pertinent to the Proposed Development are listed in **Table 8-1**. Further detail regarding these can be found in **Appendix 7-A: Legislative, Policy and Guidance Framework for Technical Topics** (**PEIR Volume IV**).

Table 8-1: Legislation, Planning Policy, and Guidance relating to Air Quality

Type	Legislation, Policy and Guidance
Legislation	• Infrastructure Planning (Environmental Impact Assessment (EIA)) Regulations 2017 (Ref 8-1); • The European Union Ambient Air Quality Directive 2008 (Ref 8-2); • The Air Quality Standards (Wales) Regulations 2010 (Ref 8-4); • The Air Quality Standards (Amendment) Regulations 2016 (Ref 8-3); • The European Union (Withdrawal) Act 2018 (Ref 8-5); • Environment Act 1995 (Ref 8-6); • The Air Quality (Wales) Regulations 2000 (Ref 8-7); • The Air Quality (Wales) (Amendment) Regulations 2002 (Ref 8-8); • Environment Act 2021 (Part IV) (Ref 8-10); • The Environment (Wales) Act 2016 (Ref 8-11); • The Environment (Air Quality and Soundscapes) (Wales) Act 2024 (note: at the time of writing, the PM2.5 target has not been set) (Ref 8-12); • The National Emissions Ceilings Regulations 2018 (Ref 8-15); • Environmental Protection Act 1990 (Part III) (Ref 8-16); • Well-being of Future Generations (Wales) Act 2015 (Ref 8-17); • The Industrial Emissions Directive (IED) 2010 (Ref 8-18); • The Environmental Permitting (England and Wales) Regulations 2016 (the EPR) (Ref 8-20); • The Post-combustion Carbon Dioxide Capture: Best Available Techniques (Ref 8-21) ; • The European Birds Directive 2009 (Ref 8-23); • The Habitats Directive (Ref 8-24); • The Ramsar Convention (Ref 8-25); and

Type	Legislation, Policy and Guidance
	• The Conservation of Habitats and Species Regulations 2017 (as amended) (the Habitats Regulations) (Ref 8-26).
National Planning Policy	• The Overarching National Policy Statement (NPS) for Energy (EN-1) (Ref 8-27), • NPS for Natural Gas Electricity Generating Infrastructure (EN-2) (Ref 8-28), • NPS for Natural Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (Ref 8-29) • NPS for Electricity Networks Infrastructure (EN-5) (Ref 8-30); • The Air Quality Strategy 2007 (Ref 8-9); • Planning Policy Wales (PPW) (Ref 8-33); and • Future Wales: The National Plan 2040 (Ref 8-32).
Local Planning Policy	• Flintshire County Council (FCC) Local Development Plan (LDP) (2015-2030) (Ref 8-33).
National Guidance	• The Clean Air Strategy 2019 (Ref 8-13); • The Clean Air Plan for Wales (Ref 8-14); • BAT Reference Document (BRef) for Large Combustion Plants (LCP BAT Conclusions) (specifies the BAT-Associated Emission Levels (BAT-AELs)) (Ref 8-19); • Air Quality Modelling and Assessment Unit (AQMAU) recommendations for the regulation of impacts to air quality from amine-based post-combustion carbon capture plant. AQMAU-C2025-RP01 (Ref 8-34); • Toxicological advice on air pollutants Hazard Ranking of Substances for Development of EALs for Substance Emissions to Air from Carbon Capture Technologies (Ref 8-35); • Air Emissions Risk Assessment for your Environmental Permit Guidance ('EPR Risk Assessment Guidance') (Ref 8-22); • Environmental permitting: air dispersion modelling reports (Ref 8-36); • Post-combustion CO_2 capture: BAT (Ref 8-37); • BAT Review for New Build and Retrofit Post-Combustion Carbon Dioxide Capture Using Amine-Based Technologies for Power and CHP Plants Fuelled by Gas and Biomass as an Emerging Technology under the IED for the UK (Ref 8-38); • AQMAU Proposed assessment method to include amines and degradation products in nutrient nitrogen deposition estimations at ecological sites AQMAU-C2600-RP01 (draft) (Ref 8-39); • Land-Use Planning & Development Control: Planning for Air Quality ('IAQM/EPUK Guidance') (Ref 8-40); • IAQM: A guide to the assessment of air quality impacts on designated nature conservation sites ('IAQM Nature Site Guidance') (Ref 8-41); • Guidance on the assessment of dust from demolition and construction ('IAQM Construction Dust Guidance') (Ref 8-42); and

Type	Legislation, Policy and Guidance
	• Defra LAQM Technical Guidance (TG22) (Ref 8-43).

8.2 Consultation and Scope of Assessment

Consultation

8.2.1 A request for an EIA Scoping Opinion was sought from the Secretary of State (SoS) through the Planning Inspectorate (PINS) in February 2024 as part of the EIA Scoping Process. The EIA Scoping Opinion was adopted on 20 March 2024 (**Appendix 1-B: Scoping Opinion PEIR Volume IV**).

8.2.2 Key issues raised in the Scoping Opinion are summarised and responded to in **Appendix 2-B: Matters Raised in the Scoping Opinion** (**PEIR Volume IV**). All issues are being considered during the EIA process.

8.2.3 A Discretionary Planning Advice (DPA) Application has been prepared and submitted to Natural Resources Wales (NRW) regarding the assessment of impacts on ecological receptors. At the time of submission, no feedback regarding air quality has been received yet in relation to this DPA, but any future comments will be considered in the ES.

8.2.4 Flintshire County Council was contacted prior to the baseline air quality survey to inform them of planned locations. No comments were received back.

Scope of the Assessment

8.2.5 Following the scoping process that has been undertaken, the scope of the assessment considered in this chapter of the PEIR is as follows:

- baseline - determination of the existing and future conditions;
- construction phase and decommissioning phase – consideration of fugitive emissions of dust and particulate matter;
- construction phase, operational phase and decommissioning phase - road traffic emissions, including emissions from Non-Road Mobile Machinery (NRMM); and
- operational phase - prediction of the impacts and effects of emissions to air from the power plant on human health and ecological receptors.

8.2.6 The following aspects have not been considered within the scope of the assessment in this chapter of the PEIR:

- an assessment of potential odour effects on amenity is not included, as the Proposed Development does not introduce any significant sources of odour.

8.3 Assessment Methodology

8.3.1 The potential emissions to air from construction and operation of the Proposed Development have been determined or estimated, and key local receptors have been identified, together with the current local ambient air quality.

8.3.2 The potential pollutant concentrations resulting from the projected emissions arising from the construction and operational phases of the Proposed Development have been predicted using atmospheric dispersion modelling techniques where appropriate, which enabled the assessment of the impacts associated with the Proposed Development on the existing local ambient air quality and in particular on the identified sensitive receptors.

Impact Assessment

8.3.3 The approach to the assessment for air quality follows the general process outlined in **Chapter 2: Assessment Methodology and Consultation**. Potential impacts are assessed against the current and future baseline conditions as determined by available data and suitable modelling techniques, respectively.

8.3.4 The methodology for each assessment is outlined below. Unless otherwise stated, the general process for each assessment follows these steps:

- identify receptors within the appropriate study area for the Proposed Development;
- identify the magnitude of impact through consideration of the scale, duration and location of activities being carried out;
- for the dust risk assessment in particular, establish the sensitivity of the area through determination of the sensitivity of receptors and their distance from construction activities;
- identify development design and impact avoidance measures (for the dust risk assessment in particular, determine the appropriate level of control measures required based on the level of risk, to ensure there are no significant effects);

  determine the risk of significant effects on receptors occurring as a result of the magnitude of impact and the sensitivity of the area, assuming no additional mitigation (beyond what was determined in the previous step) is applied; and
- summarise the potential residual effects of the mitigated works.

8.3.5 Details of the assessment methodologies are provided within **Appendices 8-A to 8-D** (**PEIR Volume IV**).

8.3.6 Additional details of the methodology applicable to the assessment of effects arising from air quality impacts on ecosystems are provided in **Chapter 11: Terrestrial and Aquatic Ecology**, whilst the methodology applicable for the assessment of air quality impacts on human health are provided in **Chapter 21: Human Health**.

Construction Dust Risk Assessment Methodology

8.3.7 The movement and handling of soils and spoil during construction activities for the Proposed Development is anticipated to lead to the generation of some short-term airborne dust. The occurrence and significance of dust generated by earth moving operations is difficult to estimate and depends heavily upon

the meteorological and ground conditions at the actual time and location of the work, and the nature of the activity being carried out.

8.3.8 At present, there are no statutory UK or EU standards relating to the assessment or control of dust. The emphasis of the regulation and control of construction dust, therefore, is through the adoption of Best Practicable Means (BPM) when working on-site to mitigate any potential impacts. It is intended that significant adverse environmental effects are avoided at the design stage and through embedded mitigation where possible, including the use of good working practices to minimise dust formation.

8.3.9 The IAQM provides guidance for good practice and for qualitative assessment of risk of dust emissions from construction and demolition activities (Ref 8-42). The guidance considers the risk of dust emissions from unmitigated activities to cause human health impacts (associated with PM_{10}), dust soiling impacts and ecological impacts (such as physical smothering and chemical impacts, for example from the deposition of alkaline materials). The appraisal of risk is based on the scale and nature of activities and on the sensitivity of receptors, and the outcome of the appraisal is used to determine the level of good practice mitigation required for the adequate control of dust. Such measures can then be incorporated into the Framework Construction Environmental Management Plan (CEMP) that will accompany the DCO Application and thereafter controlled via requirement of the DCO which will require a Final CEMP, in accordance with measures set out in the Framework CEMP. Details on the methodology and the assessment are presented in **Appendix 8-B** (**PEIR Volume IV**).

Construction Site Plant Non-Road Mobile Machinery Assessment Methodology

8.3.10 There are likely to be emissions to air during construction activities arising from on-site construction plant or NRMM. The IAQM guidance (Ref 8-42) states:

"*Experience of assessing the exhaust emissions from on-site plant … and site traffic suggests that they are unlikely to make a significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed. For site plant and on-site traffic, consideration should be given to the number of plant/ vehicles and their operating hours and locations to assess whether a significant effect is likely to occur.*"

8.3.11 Emissions from NRMM associated with the Proposed Development will be temporary and localised and will be controlled via the application of appropriate emissions standards and through best-practice mitigation measures – refer to Section 8.5. For these reasons, effects associated with construction phase NRMM emissions are highly unlikely to be significant and, therefore, have not been modelled .

Road Traffic Assessment Methodology

8.3.12 During the construction, decommissioning and operational phases of the Proposed Development, there is the potential for changes in traffic flows on the surrounding road network due to additional vehicles accessing the Site to give rise to air quality effects at nearby sensitive receptors. The requirement

to undertake a detailed assessment of road traffic emissions is based on the criteria set out in the IAQM/EPUK Guidance (Ref 8-40). It states that, when outside of an Air Quality Management Area (AQMA) (see Existing Baseline in Section 8.4), a detailed assessment is required if there is a predicted change in the annual average daily traffic of either:

- 500 Light Duty Vehicles (LDV, all vehicles less than 3.5 tonnes gross weight); or
- 100 Heavy Duty Vehicles (HDV).

8.3.13 Where road traffic emissions cannot be screened out and further assessment is considered necessary, concentrations of pollutants at sensitive human health receptors due to changes in traffic flows on the surrounding road network have been predicted using the ADMS Roads software package.

8.3.14 The incomplete combustion of fuel in vehicle engines results in the presence of combustion products of CO, PM_{10}, and $PM_{2.5}$ in exhaust emissions as well as hydrocarbons (HC) such as benzene and 1,3-butadiene. Similarly, the small amount of sulphur in ultra-low sulphur fuel can be converted to SO_2 that is then released to the atmosphere. In addition, at the high temperatures and pressures found within vehicle engines, some of the nitrogen in the air and the fuel is oxidised to form NO_x, mainly in the form of nitric oxide (NO), which is then converted to NO_2 in the atmosphere. Better emission control technology and fuel specifications are expected to reduce emissions per vehicle across the UK vehicle fleet in the long term.

8.3.15 Although SO_2, CO, benzene, and 1,3-butadiene are present in motor vehicle exhaust emissions, detailed consideration of the associated impacts on local air quality management is not considered relevant in the context of the Proposed Development, as environmental concentrations are now so low that they are not priority pollutants for local air quality management. The risks to the attainment of the relevant air quality objectives in the vicinity of the Proposed Development are considered to be negligible, based on current emission rates for road vehicles. The emissions of SO_2, CO, benzene and 1,3-butadiene from road traffic are, therefore, not considered further within this assessment.

8.3.16 The exhaust emissions from road vehicles that have the potential to affect ambient concentrations of pollutants are NO_x, NO_2, PM_{10} and $PM_{2.5}$. Therefore, the assessment of the significance of road traffic air quality effects as associated with the Proposed Development only considers these pollutants.

8.3.17 Five scenarios have been considered, with the future year chosen as the anticipated peak in additional traffic for each phase:

- current baseline (2023), representing the last complete calendar year prior to the assessment;
- future year without the Proposed Development construction (2034), representing future baseline conditions during the construction phase;

- future year with the Proposed Development construction (2034), representing future construction peak of month 36, under a single phase approach;
- future year without the Proposed Development operation (2036), representing future baseline conditions in the first year of only operational (and maintenance) activities under all construction scenarios; and
- future year with the Proposed Development in operation (2036), representing future conditions in the first year of only operational (and maintenance) activities under all construction scenarios.

8.3.18 The current baseline has been used alongside a site-specific survey to verify the model against real life measurements.

8.3.19 Details on the methodology and the assessment are presented in **Appendix 8-C** (**PEIR Volume IV**).

8.3.20 At this stage, specific details about the Abnormal Indivisible Loads (AIL) delivery are not known. Potential routes are discussed in **Chapter 10: Transport and Traffic** (**PEIR Volume II**). If necessary, the ES will include an indication of the anticipated number of AIL movements during the construction period and assess the impact of those movements on the sensitive receptors.

8.3.21 The future decommissioning baseline scenario is not included, as it is considered that the effects would be comparable to or lower than construction effects, particularly given the expected improvements in vehicle fleet emissions over that time.

Process Emissions from the Operational Plant Methodology

8.3.22 Emissions from the Proposed Development have been assessed using the Risk Assessment methodology (Ref 8-22) adopted by NRW, in order to identify where proposed emissions are unlikely to cause significant effects, and do not require more detailed assessment (termed "screening out"). For the purposes of this assessment, the first year of operation (referred to as opening) of the Proposed Development is assumed to be 2030, which is the earliest date that the Proposed Development could realistically start to operate. Detailed dispersion modelling using the atmospheric dispersion model ADMS (currently ADMS 6.0.0.1), including the Amines Chemistry module, has been used to calculate the concentrations of pollutants at identified receptors. These concentrations have been compared with the defined Air Quality Assessment Level (AQAL) for each pollutant species, as summarised in **Table 8-2** to **Table 8-4**.

8.3.23 Dispersion modelling calculates the predicted concentrations arising from the emissions to atmosphere, based on Gaussian approximation techniques. The model employed has been developed for UK regulatory use. **Appendix 8-D: Air Quality Operational Phase (PEIR Volume IV)** details the model inputs for the assessment.

8.3.24 The assessment has considered the difference between the existing Connah's Quay Power Station and following future scenarios:

- Train 1 and 2 in unabated mode, i.e. emitting via Heat Recovery Steam Generator (HRSG) stack (abnormal temporary operating scenario e.g periods when the CO_2 transport and storage system is not available);
- Train 1 CCP stack and two of the existing CCGTs in operation, with single or twin absorber unit; and
- Train 1 and 2 CCP stacks with single or twin absorber unit.

8.3.25 Although this chapter is only presenting an assessment of the Train 1 and 2 single absorber solution, the other scenarios were also considered and a sensitivity test showing that the single absorber option is the reasonable worst case is included in **Appendix 8-D: Air Quality Operational Assessment (PEIR Volume IV)**.

8.3.26 It has been assumed that the Proposed Development operates continuously, as this is considered to represent the reasonable worst case scenario in terms of the annual average operational emissions, as detailed in **Appendix 8-D (PEIR Volume IV)**.

8.3.27 The conservative assessment of long-term (annual mean) and short-term (daily, 8-hourly, hourly and 30 minute mean) emissions resulting from the operation of the Proposed Development has been undertaken by comparing the maximum change in process contributions ('PC') that occurs at any identified human health receptor, with the long-term and short-term AQAL, taking into consideration the baseline air quality, in accordance with the Risk Assessment methodology (Ref 8-22) adopted by NRW.

8.3.28 An assessment of the impact of nutrient nitrogen and acid deposition has been undertaken by applying published deposition velocities to the predicted annual average NO_2, NH_3 and amines concentrations at the identified ecological sites, determined through dispersion modelling, to calculate deposition rates (expressed as kilograms per hectare per year, Kg/ha/yr and Keq/ha/yr). These deposition rates have then been compared to the Critical Loads for nitrogen and acidity published by UK APIS (Ref 8-46), taking into consideration the baseline air quality.

8.3.29 Non-statutory designated sites (i.e. Local Wildlife Sites (LWS), Ancient Woodlands) have also been considered for both nutrient nitrogen and acid deposition, due to the proximity of these sites to the Proposed Development. There are no LWS within the study area but there are Ancient Woodland sites. For these sites, there is little data available with regards to habitat types present and the relevant Critical Loads Classes to be applied, and therefore PC have been considered against an assumed appropriate Critical Load determined for the appropriate habitat type, as informed by **Chapter 11: Terrestrial and Aquatic Ecology**.

8.3.30 An assessment of impacts from NOx and NH_3 emissions on sensitive ecological sites was also carried out.

8.3.31 Modelling outputs used to assess ecological impacts are presented within this chapter, as well as in more details in appendices **8-C: Air Quality Traffic Assessment (PEIR Volume IV)** and **8-D: Air Quality Operational**

Assessment (PEIR Volume IV) but determination of the significance of effects are included in **Chapter 11: Terrestrial and Aquatic Ecology**.

8.3.32 An assessment of cumulative impacts with other committed developments that could interact with the operational impacts and effects of the Proposed Development has not yet been carried out and will be included in the ES (see also **Chapter 24: Cumulative and Combined Effects**).

8.3.33 A plume visibility assessment to determine how often the plume release from the stacks might be visible and how long the plume would be, will be provided within the ES.

8.3.34 Note that whilst there are well established Environmental Assessment Levels (EAL) for NO_2, CO and NH_3, the suite of EALs relating to amines and amine degradation products is much more limited. Currently the EPR Risk Assessment Guidance (Ref 8-20) only includes EALs for monoethanolamine (MEA) and N-nitrosodimethylamine (NDMA). The UK regulators currently have a contract in place to establish a more robust suite of EALs, which could become available during preparation of the ES and DCO Application. As they are not available at the time this assessment is written, and as the capture technology choice is not yet confirmed, the two existing EALs for amines and degradation products have been applied, accompanied by a series of reasonable worst case assumptions.

Table 8-2: National Air Quality Strategy Objectives – Protection of Human Health

Pollutant	Source	Concentration (µg/m³)	Measured As
Nitrogen Dioxide (NO_2)	EU Air Quality Limit Value	40	Annual mean
		200	1-hour mean, not to be exceeded more than 18 times a year
Particulate Matter (PM_{10})	EU Air Quality Limit Value	40	Annual mean
		50	24-hour mean, not to be exceeded more than 35 times a year
Particulate Matter ($PM_{2.5}$)	EU Air Quality Target Value	25	Annual mean
Carbon Monoxide (CO)	EU Air Quality Limit Value	10,000	Maximum daily running 8-hour mean

Table 8-3: Critical Levels (CL) - Protection of Vegetation and Ecosystems

Pollutant	Source	Concentration (µg/m³)	Measured As
Oxides of Nitrogen (NOx)	EU Air Quality Limit Value	30	Annual mean
	UK Target Value	75	Daily mean
Ammonia (NH_3)	UK target value for lichen and bryophytes	1	Annual mean

Pollutant	Source	Concentration (µg/m³)	Measured As
	UK Target Value	3	Annual Mean

Table 8-4: Environmental assessment Levels (EALs) – Human Health

Pollutant	Source	Concentration (µg/m³)	Measured As
CO	Risk Assessment methodology (Ref 8-22) adopted by NRW	30,000	Hourly mean
NH_3	Risk Assessment methodology (Ref 8-22) adopted by NRW	180	Annual Mean
		2,500	Hourly mean
Amines (as MEA)	Environment Agency's Proposed EAL	400	Hourly mean
		100	24-hour mean
Nitrosamines	Environment Agency's Proposed EAL	0.2 (ng/m³)	Annual Mean
Formaldehyde	Risk Assessment methodology (Ref 8-22) adopted by NRW	100	30 Minute Mean
		5	Annual Mean

Evaluation of Significance – Construction Phase Dust Risk Assessment

8.3.35 For potential amenity effects, such as those related to dust deposition, the aim is to bring forward a scheme, to include mitigation measures as necessary that minimise the potential for amenity, human health, and ecological impacts as a result of the Proposed Development construction works.

8.3.36 The IAQM guidance (Ref 8-40) does not provide a method for the evaluation of impacts on receptors from construction dust, rather a means to determine the level of mitigation required to avoid significant impacts on receptors. The IAQM guidance indicates that application of appropriate mitigation should ensure that residual effects will normally be 'not significant'. Such control measures are proposed to be included in the Final CEMP.

Evaluation of Significance – Traffic and Operational Emissions Assessment

8.3.37 The evaluation of the significance of air quality effects from the traffic and operational point sources has been based on the approach referenced in IAQM/ EPUK guidance (Ref 8-40), and the criteria in the Risk Assessment methodology (Ref 8-22) adopted by NRW ('NRW guidance' thereafter). The predicted changes in pollutant concentrations are compared to AQAL to determine the magnitude of change.

8.3.38 For a change of a given magnitude, the IAQM publication 'Land-Use Planning & Development Control: Planning for Air Quality Ref 8-40) has published recommendations for describing the magnitude of long-term impacts at

individual receptors and describing the significance (**Table 8-5**) of such impacts. This terminology has been changed where appropriate in order to maintain consistency with the rest of this PEIR – where the IAQM uses 'substantial' this has been changed to 'major', and 'slight' has been changed to 'minor'.

Table 8-5: Air Quality Impact Descriptors for Long Term Changes in Ambient Pollutant Concentrations

Long term averaging concentration at receptor	Percentage Change in Annual Mean Concentrations				
	Up to 0.5% Imperceptible	0.5 – 1% Very Low	2-5% Low	6-10% Medium	>10% High
75% or less of AQAL	Negligible	Negligible	Negligible	Minor	Moderate
76-94% of AQAL	Negligible	Negligible	Minor	Moderate	Moderate
95-102% of AQAL	Negligible	Minor	Moderate	Moderate	Major
103-109% of AQAL	Negligible	Moderate	Moderate	Major	Major
110% or more of AQAL	Negligible	Moderate	Major	Major	Major

AQAL = Air Quality Assessment Level (National Air Quality Standard objectives or Environmental Assessment Level (EAL))

8.3.39 The IAQM guidance (Ref 8-40) is not explicit in the identification of whether any of the above impact descriptors should be considered 'significant' or 'not significant' effects, rather it indicates that the descriptors should be applied to individual receptors and a 'moderate' adverse impact at one receptor may not mean that the overall impact has a significant effect; other factors need to be considered. However, it indicates further that 'negligible' impacts are likely to lead to effects that are 'not significant' and 'major' impacts describe the potential for 'significant' effects. The judgment of significance of effects adopted within this assessment is discussed below.

8.3.40 Guidance from the Environmental Permitting Regime uses a risk-based approach to identify when additional assessment is required to understand whether or not significant effects are likely to occur. The Risk Assessment methodology (Ref 8-22) adopted by NRW, includes risk assessment screening criteria to be used for comparison of PC with AQAL. An emission would not require further consideration where:

- short term PC <=10% of the AQAL; and
- long term PC <=1% of the AQAL.

8.3.41 Where an emission cannot be screened out from requiring more detailed consideration, the second stage of screening considers the PC in the context of the existing background pollutant concentrations; the predicted environmental concentration (PEC) is unlikely to cause a significant effect where:

- short term PC <20% of the short-term AQAL minus twice the long-term background concentration; and
- long term PEC (PC + background concentration) <70% of the AQAL.

8.3.42 For local nature sites, such as LWS, the Risk Assessment methodology (Ref 8-22) adopted by NRW guidance (Ref 8-22) identifies that where the short or long-term PC is less than 100% of the respective standard, then it can be concluded that there are unlikely to be significant effects due to changes in air quality without needing to assess the PEC.

8.3.43 The IAQM Nature Site Guidance (Ref 8-41) recommends the same assessment criteria as the NRW guidance (Ref 8-22) in relation to impacts on SACs, SPAs and SSSIs. In relation to LWSs and ancient woodland, the IAQM Nature Site Guidance recommends that such sites are screened using the same criteria as SACs, SPAs and SSSIs (i.e. 1% for long-term impacts and 10% for short-term impacts) but notes that the determination of significance of any effect may differ for local wildlife sites. The IAQM Nature Site Guidance has been used for initial screening of all sites. Where local wildlife sites do not screen out, the EPR Risk Assessment Guidance (Ref 8-20) criteria have been considered, as long-established quantitative determinants of significance, together with advice provided by the project ecologists, to reach a conclusion on significance.

8.3.44 Where the PEC does not exceed the AQAL and the proposed emissions comply with the BAT-AEL (or equivalent requirements) the emissions are typically considered acceptable by NRW.

8.3.45 The IAQM guidance (Ref 8-40) indicates that the Risk Assessment methodology (Ref 8-22) adopted by NRW threshold criterion of 10% of the short term AQAL is sufficiently small in magnitude to be regarded as likely to have an 'insignificant' effect without the need for further assessment. The IAQM guidance deviates from the NRW guidance (Ref 8-22) (discussed below) with respect to the background contribution; the IAQM guidance indicates that severity of peak short-term concentrations can be described without the need to reference background concentrations as the PC is used to measure impact, not the overall concentration at a receptor. The peak short-term PC from an elevated source is described as follows:

- PC <=10% of the AQAL represents an 'insignificant' (negligible) impact;
- PC 11-20% of the AQAL is low in magnitude representing a minor impact;
- PC 21-50% of the AQAL is medium in magnitude representing a moderate impact; and
- PC >51% of the AQAL is large in magnitude representing a 'substantial' (major) impact.

8.3.46 For impacts on human health from emissions of NOx and particulates, the IAQM criteria displayed in **Table 8-5** have been used to assess long term impacts on individual sensitive receptors.

8.3.47 Short-term impacts on individual sensitive receptors from emissions of NOx, CO, PM_{10} and amines have been assessed using the criteria described in paragraph 8.3.45.

8.3.48 As amine degradation products (assessed against the NDMA AQAL) have a negligible background concentration and are emitted at an order of magnitude 1000 times smaller than other pollutants, the IAQM criteria set out above are

not deemed appropriate. As paragraph 6.27 if the IAQM guidance (Ref 8-40) notes that, the assessment may use its own set of criteria to define magnitude, but the important matter to be concluded is the likely significant effects of the impacts on air quality. It also references the number of significant figures to which concentrations should be reported and how it should "*reflect the accuracy associated with predicted changes*". The evidence supporting the setting of the EAL for NDMA identifies that there are knowledge gaps and uncertainties in the current state of knowledge. This is reflected in the use of one significant figure for the reported EAL value. Results should only be presented with one significant figure, however in order to assist decision making a second significant figure has been included, with values rounded to the nearest 0.05 ng/m^3. The criteria used in this assessment for amine degradation products are as shown in **Table 8-6**.

Table 8-6: N-Amine Impact Descriptors

	Change in Annual Mean Concentrations (ng/m^3)				
	Up To 0.05 Imperceptible	>0.05 to 0.1 Very Low	>0.1 to 0.15 Low	>0.15 to 0.2 Medium	>0.2 High
Effect descriptor at an individual receptor	Negligible	Negligible	Minor	Moderate	Major

8.3.49 For impacts on ecological sites from emissions of NOx, NH_3, amines and their associated deposition, the IAQM criteria set out in paragraph 8.3.43 have been used to assess long term impacts on individual sensitive receptors.

Evaluation of Significance – Proposed Development as a Whole

8.3.50 Following the assessment of each individual air quality effect (construction and decommissioning dust, construction and decommissioning traffic and operations), the significance of all of the reported effects is then considered for the Proposed Development in overall terms, recognising that construction dust and traffic will occur in the same time period, but that operational effects would occur at a later date. The potential for the Proposed Development to contribute to, or interfere with, the successful implementation of policies and strategies for the management of local air quality is considered if relevant, but the principal focus is any change to the likelihood of future achievement of the NAQS (which also relate to compliance with local authority goals for Local Air Quality Management (LAQM) and objectives set for the protection of human health).

8.3.51 In terms of the significance of the effects (consequences) of any adverse impacts, an effect is reported as being either 'not significant' or as being 'significant'. If the overall effect of the development on local air quality or on amenity is found to be 'moderate' or 'major' this is deemed to be 'significant' for EIA purposes. Effects found to be 'minor' or 'negligible' are considered to be 'not significant'.

Rochdale Envelope

8.3.52 The setting of design parameters using the 'Rochdale Envelope' approach is described in **Chapter 2: Assessment Methodology and Consultation**. Table 4-1 of **Chapter 4: The Proposed Development** sets out the maximum

parameters currently envisaged for the principal components of the Proposed Development. These parameters, together with assumptions regarding the future plans for the existing Connah's Quay Power Station set out in **Chapter 2: Assessment Methodology and Consultation** have been used to inform the reasonable worst case scenario that has been assessed in this chapter, in order to provide a robust assessment of the impacts and likely significance of environmental effects of the Proposed Development at its current stage of design.

8.3.53 In particular, focused use of the Rochdale Envelope has been adopted for the following aspects:

- building dimensions and positioning included within the assessment are based on available information within the concept design for the Proposed Development. Although there are limited layout options due to site constraints, exact building dimensions are not yet known. A conservative approach has been used by modelling maximum realistic dimensions, as larger buildings close to the stacks lead to more building downwash;
- different options for the construction and operational scenarios have been considered, as detailed in Table 2.1 in **Chapter 2: Assessment Methodology and Consultation**; and
- the Proposed Development has been assumed to be running 24 hours a day for 8,760 hours per year as a reasonable worst case scenario (actual operation is expected to be dispatchable, in response to demand). Assuming continuous operation throughout the year is considered to lead to reasonable worst case annual average air quality impacts.

Assessment Assumptions and Limitations

8.3.54 For the purposes of the assessment, the construction phase includes enabling and demolition works required to facilitate the Proposed Development. To complete a conservative assessment of potential effects, assumptions used include: monthly peak flows assumed for a full calendar year, for both construction and operational scenarios.

8.3.55 Until the preferred technology provider is selected, there will be some degree of uncertainty in the operational emissions used in the assessment. In order to minimise the potential for under-estimating the predicted impacts for the operational emissions, a number of conservative assumptions have been made for assessment purposes that differ from what is likely to occur. The basis for the assessment is as follows:

- continuous operation (i.e. for 8,760 hours per year) of the CCGTs and CCP for the Proposed Development when both Train 1 and Train 2 (or combined single phase) are developed (i.e. the Proposed Development is fully built out) will represent the reasonable worst-case. In practice, the plant will operate in a dispatchable manner, with a load factor significantly lower and would require routine maintenance periods;
- emissions to air at the maximum allowable limits from the BAT-AELs defined in the LCP Bref at all times, when in reality emissions should, on average, be below the limits;

- assessment of air quality impacts based on the point of maximum impact across the modelled grid in addition to impacts at identified receptors; and
- the impact at each receptor has been reported based on the highest impact magnitude in any individual year for the meteorological conditions experienced in the last five years.

8.3.56 Any bypass stacks associated with Proposed Development's CCGT units would only be operational when the Proposed Development is operating in an unabated mode (i.e. combustion emissions only, with no carbon capture taking place); hence, bypass stack emissions would not be representative of the typical operating scenario. Whilst the bypass stacks would be considerably shorter (circa 85 m) than the CCP absorber stack(s) the higher emission temperatures are expected to result in lower air quality impacts relative to emissions from the CCP absorber stack(s). The PEIR, therefore, reports air quality impacts arising from emissions from the CCP (the Proposed Development operating in abated mode) using Rochdale Envelope principles.

8.3.57 Similarly, if the option to only build one train (Train 1 CCP stack and two of the existing CCGTs in operation) is chosen, emissions from the Proposed Development will be halved, as will (roughly) the impacts at receptors, especially for pollutants emitted by the Proposed Development but not the existing Connah's Quay Power Station (i.e. NH_3, amines and byproducts). Therefore the PEIR reports air quality impacts arising from emissions from both trains, using Rochdale Envelope principles.

8.3.58 The actual impacts in the future will be determined by the meteorological conditions and the activities undertaken at that time. This uncertainty is addressed through the use of conservative assumptions, for the inputs to the assessment, so that the air quality assessment represents a reasonable worst case assessment process. The use of dispersion modelling is a widely applied and accepted approach for the prediction of impacts from industrial sources.

8.4 Baseline Conditions and Study Area

Study Area

8.4.1 The study area was defined to include air quality features likely to be at risk from possible direct and indirect impacts that might arise from the Proposed Development, termed the Zone of Influence (ZOI). The potential ZOI is considered to be 15 km from the Main Site, as per the NRW guidance (Ref 8-22).

8.4.2 To identify the relevant baseline for future operational assessment, a study area of 15 km from the Main Site (where operational emissions will arise) has been identified for statutory designated ecological sites i.e. SPAs, SACs, Ramsar sites (protected wetlands)) and SSSIs and of 2 km for non-statutory designated nature conservation sites (ancient woodlands, LWS and national and local nature reserves).

8.4.3 Regarding impacts on human health, as maximum impacts from the operational Proposed Development are within 2 km of the stack(s), sensitive receptors for the human health impacts are concentrated within a 2 km study

area. The air quality in relation to human health encompass a range of residential and educations receptors, as well as places of worship.

8.4.4 For the construction / decommissioning dust risk assessments, the study area is set as 250 m from the Site Boundary and 50 m from access roads up to 250 m from the Site entrance for potential impacts to human health and amenity; and 50 m from the Indicative Site Boundary and 50 m from access roads up to 250 m from the Site entrance for potential impacts on relevant ecological sites. The study area criteria are in line with the current IAQM guidance (Ref 8-42) which replaced the original 2014 document.

8.4.5 For potential impacts due to changes in pollutant concentrations associated with changes in road traffic flows, the study area for potential impacts on sensitive receptors is 200 m from the road centreline of all road links in the affected road network. At this time, roads links affected by traffic movements for the AILs have not been included and will be identified using the same criteria at the ES stage.

8.4.6 Meteorological data to support air quality modelling have been sourced from the Met Office site at Hawarden Airport, located approximately 7 km south-east of the Main Site.

8.4.7 The selected sensitive receptors used in the air quality assessment for both human health and ecological receptors within the study area are presented in **Table 8-7** to **Table 8-10**) and on **Figure 8-2: Operational Phase Assessment - Air Quality Study Area and Human Health Receptors** and **Figure 8-3: Operational Phase Assessment - Air Quality Study Area and Ecological Receptors**.

Table 8-7: Sensitive Operational Human Receptors

Receptor ID	OS Grid Coordinates		Type	Description
	X	Y		
OH1	327173	371240	Residential	Kelsterton Road, Rockcliffe, Flint, Connah's Quay, CH6 5SJ
OH2	327155	371208	Residential	Chester Road, Oakenholt, Flint, Connah's Quay, CH6 5SJ
OH3	326749	371070	Residential	Chester Road, Oakenholt, Flint, Connah's Quay, CH6 5SF
OH4	326371	371298	Residential	Papermill Lane, Oakenholt, Flint, CH6 5TD
OH5	325968	371822	Residential	Chester Road, Oakenholt, Flint, CH6 5WF
OH6	325967	371792	Residential	Leaderbrook Drive, Oakenholt, Flint, CH6 5ST
OH7	325911	371581	Residential	Leaderbrook Drive, Oakenholt, Flint, CH6 5ST
OH8	325929	371332	Residential	Leaderbrook Drive, Oakenholt, Flint, CH6 5ST
OH9	326047	371069	Residential	Leaderbrook Drive, Oakenholt, Flint, CH6 5ST

Receptor ID	OS Grid Coordinates		Type	Description
	X	Y		
OH10	326452	370953	Residential	Oakenholt Lane, Oakenholt, Flint, CH6 5SX
OH11	327557	370826	Residential	Kelsterton Road, Rockcliffe, Connah's Quay, CH6 5TH
OH12	327835	370774	Residential	Kelsterton Road, Rockcliffe, Connah's Quay, CH5 4BJ
OH13	327972	370700	Residential	Connah's Quay, CH5 4BL
OH14	328826	370120	Residential	Church Street, Golftyn, Connah's Quay, CH5 4AQ
OH15	328609	369883	School	Golftyn C.P. School, York Road, Golftyn, Connah's Quay, CH5 4XA
OH16	324919	372090	Place of worship	St Richard Gwyn Roman Catholic High School, Albert Avenue, Flint, CH6 5JZ
OH17	324186	370140	Place of worship	St Thomas's Church, St Thomas's Court, Flint, Flint Mountain, CH6 5SL
OH18	329955	369652	Sports pitch	Dock Road, Connah's Quay, CH5 4EF
OH19	328165	368716	Residential	Mold Road, Connah's Quay, CH5 4QN
OH20	326575	369683	Residential	Oakenholt Lane, Rockcliffe, Connah's Quay, Northop Hall, CH6 5SU
OH21	329070	369899	Place of worship	St Mark's Parish Church, Church Hill, Golftyn, Connah's Quay, CH5 4AD
OH22	328022	370548	School	Deeside College, York Road, Golftyn, Connah's Quay, CH5 4YE
OH23	328031	370164	School	Connah's Quay High School, Golftyn Lane, Connah's Quay, CH5 4BH
OH24	328940	369540	School	Bryn Deva C.P. School, Linden Avenue, Golftyn, Connah's Quay, CH5 4SN
OH25	329549	369647	Residential	High Street, Golftyn, Connah's Quay, CH5 4DJ
OH26	329953	369351	Residential	High Street, Connah's Quay, Shotton, CH5 4DA
OH27	329782	369120	Place of worship	Saint Davids Mission Church, Dee Road, Connah's Quay, CH5 4PA
OH28	329722	369093	School	Brookfield Primary School, Red Hall Avenue, Connah's Quay, CH5 4RB
OH29	330375	368913	Place of worship	Christ Church Deeside, Victoria Road, Shotton, CH5 1ES
OH30	324385	371941	School	Ysgol Maes Hyfryd, Maes Hyfryd, Flint, CH6 5LN
OH31	324516	372532	School	Gwynedd County Primary School, Ysgol Pen Coch, Maes-y-Dre Avenue, Flint, CH6 5JT

Receptor ID	OS Grid Coordinates		Type	Description
	X	Y		
OH32	324990	372645	School	Ysgol Gymraeg Croes Atti, Chester Road, Flint, CH6 5DU
OH33	325516	372175	Place of worship	St David's, Croes Attilla, Flint, CH6 5SP

Table 8-8: Sensitive Operational Ecological Receptors

Receptor ID	Ecological Site	Designation	OS Grid Coordinate*	
			X	Y
OE01	Heswall Dales	Site of Special Scientific Interest (SSSI)	326127	381815
OE02	Dee Estuary	Ramsar, Special Area of Conservation (SAC), Special Protection Area (SPA) and SSSI	330798	372117
OE03	The Dungeon	SSSI	325074	383034
OE04	Thurston Common	SSSI	324893	384379
OE05	Dibbinsdale	SSSI	332304	380953
OE06	Mersey Estuary	Ramsar, SPA, SSSI	337932	379707
OE07	New Ferry	SSSI	335477	384176
OE08	Hallwood Farm Marl Pit	SSSI	334355	375893
OE09	Inner Marsh Farm	SSSI	330718	372980
OE10	River Dee and Bala Lake	SAC, SSSI	328755	371000
OE11	Connah's Quay Ponds and Woodland	SSSI	328955	368680
OE12	Maes y Grug	SSSI	326031	366762
OE13	Deeside and Buckley Newt sites	SAC, SSSI	329081	365705
OE14	Coed Talon Marsh	SSSI	327012	358683
OE15	Bryn Alyn	SSSI	320410	359418
OE16	Cambrian Quarry	SSSI	321432	362367
OE17	Alyn Valley Woods and Alyn Gorge Caves	SAC, SSSI	319797	366391
OE18	Halkyn Mountain	SAC, SSSI	318259	376351

Receptor ID	Ecological Site	Designation	OS Grid Coordinate*	
			X	Y
OE19	Pen-y-Cefn Pasture	SSSI	318909	366514
OE20	Cefn Meadow	SSSI	318929	366042
OE21	Coed Trefraith	SSSI	313639	372797
OE22	Ddol Uchaf	SSSI	314317	371354
OE23	Caerwys Tufa	SSSI	313035	371844
OE24	Tyddyn-y-barcut	SSSI	319073	367525
OE25	Parc Bodlondeb and Gwenallt-parc	SSSI	317876	370857
OE26	Parc Linden, Lixwm	SSSI	318383	371925
OE27	Flint Mountain	SSSI	324875	371560
OE28	Herward Smithy	SSSI	319855	373980
OE29	Shotton Lagoons and Reedbeds	SSSI	329515	371040
OE30	Local Ancient Woodlands	Ancient Woodlands	329795	368480

*Point of maximum long-term impact within each site

Table 8-9: Sensitive Traffic Human Receptors

Receptor ID	OS Grid Coordinate		Type	Description
	X	Y		
TH1	329755	369491	Residential	High Street, Golftyn, Connah's Quay, CH5 4DJ
TH2	328830	370114	Residential and place of worship	Church Street, Golftyn, Connah's Quay, CH5 4AQ
TH3	328833	370098	Residential	Church Street, Golftyn, Connah's Quay, CH5 4AQ
TH4	329307	369781	Residential	High Street, Golftyn, Connah's Quay, CH5 4DJ
TH5	328452	370345	Residential	Church Street, Golftyn, Connah's Quay, CH5 4AS
TH6	325968	371822	Residential	Chester Road, Oakenholt, Flint, CH6 5WF
TH7	327155	371208	Residential	Chester Road, Oakenholt, Flint, Connah's Quay, CH6 5SJ

Receptor ID	OS Grid Coordinate		Type	Description
	X	Y		
TH8	327173	371240	Residential	Kelsterton Road, Rockcliffe, Flint, Connah's Quay, CH6 5SJ
TH9	327557	370826	Residential	Kelsterton Road, Rockcliffe, Connah's Quay, CH6 5TH
TH10	327889	370735	Residential	Kelsterton Road, Rockcliffe, Connah's Quay, CH5 4BJ
TH11	329596	369083	Residential	Mold Road, Connah's Quay, CH5 4QN
TH12	328213	370061	Residential	Golftyn Lane, Connah's Quay, CH5 4DT
TH13	327315	369849	Residential	Top-y-fron Hall, Kelsterton Lane, Connah's Quay, Northop Hall, CH6 5TF
TH14	328187	370153	Residential	Golftyn Lane, Connah's Quay, Flintshire, Wales, CH5 4BH

Table 8-10: Sensitive Traffic Ecological Receptors

Receptor ID	Closest Coordinate to the Road		Site
	X	Y	
TE1	326253	371464	Ancient Woodland
TE2	325214	370709	Ancient Woodland
TE3	327514	369145	Ancient Woodland
TE4	327121	369346	Ancient Woodland
TE5	327330	370021	Ancient Woodland
TE6	327335	370021	Ancient Woodland
TE7_a	328086	368701	Connah's Quay Ponds and Woodland
TE7_b	328423	368613	Connah's Quay Ponds and Woodland
TE7_c	328894	368709	Connah's Quay Ponds and Woodland
TE8_a	326300	371751	Dee Estuary
TE8_b	328631	370781	Dee Estuary
TE8_c	329123	370046	Dee Estuary

Existing Baseline

8.4.8 Existing air quality conditions in the vicinity of the Proposed Development have has been evaluated through modelling of existing traffic and stack emissions as well as a review of Local Authority air quality management reports, Defra

published data, a site-specific survey and other sources. The key pollutants of concern resulting from construction and operation of the Proposed Development and that have potentially elevated background concentrations from other sources are NOx, NO_2, CO, NH_3, PM_{10} and $PM_{2.5}$, therefore the assessment of baseline conditions within this chapter considers these pollutants only.

8.4.9 Baseline concentrations of the other pollutants such as amines, nitrosamines and nitramines are assumed to be negligible as there are no sources of these pollutants within the study area. There are also no UK background data available from published sources for these pollutants.

8.4.10 As stated in the North Wales Authorities Collaborative Project 2022 Air Quality Progress Report (Ref 8-44), there are no Air Quality Management Areas (AQMAs) designated within the administrative boundary of FCC or the adjoining Welsh local authority areas of Denbighshire and Wrexham, as well as in the Wirral. The nearest AQMAs are located within Cheshire West and Chester Council, one in Chester approximately 12 km east from the Main Site and two in Ellesmere Port, approximately 13 km and 15 km north-east from the Main Site. The biggest of the three, Thornton le Moors in Ellesmere Port (EP), is designated in relation to the 15-minute sulphur dioxide air quality standard and is not considered relevant to the assessment of impacts from the Proposed Development as emissions of SO_2 have been screened out. Whitby Rd/Station Rd AQMA is located approximately 350 m south-west of EP (Manchester Ship Canal) and Chester City Centre AQMA covers the entire area within the inner ring road and the adjoining sections of Liverpool Road, Parkgate Road, Hoole Way, Boughton gyratory and Watergate Street. They are both designated for nitrogen dioxide, with the main source cited as road traffic in both cases.

8.4.11 FCC conducts local air quality measurements for nitrogen dioxide (NO_2) at 59 sites (in 2021), according to the local air quality progress report (Ref 8-44). At all locations where air quality measurement is conducted, all concentrations are well below the relevant objectives. Annual mean NO_2 concentrations at the closest urban background diffusion tube to the Main Site vary between 12.6 µg/m^3 and 10.1 µg/m^3 in the past five years (excluding 2020, as monitoring during that year was affected by the Covid-19 pandemic). Measurement concentrations at sites within the study area are presented in **Appendix 8-A (PEIR Volume IV)**.

8.4.12 DEFRA's background maps (Ref 8-45) predict annual mean concentrations of 6.8 µg/m^3 for NO_2, 9.4 µg/m^3 for PM_{10} and 6.2 µg/m^3 for $PM_{2.5}$ in 2023 at the Main Site. APIS's background maps (Ref 8-46) predict concentrations of pollutant relevant to ecological sites. Relevant background predictions for all receptors are included in **Appendix 8-A (PEIR Volume IV)**.

8.4.13 Results from the Project Specific Survey of nitrogen dioxide are presented in the next section.

8.4.14 Although information on NO_2 background concentrations is available from different sources (Defra Background Maps, Project Specific Survey and Local Authority Monitoring), the data from the Project Specific Survey has been used for the sensitive human health receptors as there is good agreement with the

Defra Background Map, and it is actual measurements as opposed to modelled data. The highest measurement out of the background sites has been used at all receptors as a conservative assumption. The Local Authority Data helps to provide an understanding of local concentrations over the past few years but is not available for 2023 yet so has not been used further.

8.4.15 In relation to ecosystems, for oxides of nitrogen (NOx) and NH_3 background concentrations for designated sites has been sourced from the UK Air Pollution Information System (APIS) website (Ref 8-46).Note that the existing Connah's Quay Power Station is already operational and therefore is included in the background concentrations used for the assessment. However, in the first stage of the assessment, the existing Connah's Quay Power Station's contributions have not been deducted from the background contribution. There will be some degree of double counting of these emissions in the future scenario impacts but the over-estimate is unlikely to materially change the conclusion of the assessment.

Surveys

8.4.16 In addition to carrying out a desk-based study of baseline air quality, a three-month project-specific diffusion tube measurement survey has been carried out for baseline NO_2 to establish existing concentrations within the study area including adjacent to the road network surrounding the Main Site. Indicative locations are presented in **Figure 8-1 (PEIR Volume III)**.

8.4.17 The annualised results, to correct for seasonal variation and to make data representative of the whole year, are detailed in **Appendix 8-A: Air Quality Baseline Information (PEIR Volume IV)**, and summarised below in **Table 8-11.**

Table 8-11: Bias Adjusted and Annualised NO_2 Diffusion Tube Survey Monitoring Results

ID	Period 1 Raw Concentration (µg/m^3)	Period 2 Raw Concentration (µg/m^3)	Period 3 Raw Concentration (µg/m^3)	Raw Period Mean Concentration (µg/m^3)	Annualised Mean Concentration (µg/m^3)	Annualised and Bias Adjusted Concentration (µg/m^3)
DT1	31.83	33.89	28.69	31.5	32.9	26.6
DT2	26.66	22.31	19.05	22.7	23.7	19.2
DT3	19.42	12.97	13.03	15.1	15.8	12.8
DT4	17.09	13.58	9.29	13.3	13.9	11.3
DT5	18.01	11.55	7.94	12.5	13.1	10.6
DT6	22.97	17.82	14.22	18.3	19.2	15.5
DT7	9.47	6.10	5.08	6.9	7.2	5.8
DT8	9.75	6.47	6.70	7.6	8.0	6.5
DT9	10.53	6.41	4.97	7.3	7.6	6.2
DT10	21.51	14.57	16.61	17.6	18.3	14.9

Future Baseline

8.4.18 The future baseline scenarios are set out in **Chapter 2: Assessment Methodology and Consultation**.

8.4.19 In order to represent a conservative approach, it has been assumed that baseline concentrations, particularly of NO_2 and NOx, would not decrease in future years. Therefore, the current baseline concentrations have been assumed to apply to the future baseline scenarios.

8.4.20 A staged approach has been used to assess the impacts from the Proposed Development. At first, impacts from the Proposed Development alone, alongside the current background contribution to total concentrations have been considered. If the impacts cannot be screened out as insignificant (based on being more than 1% and 10% of the AQAL for the relevant pollutant for annual and short-term impacts respectively), a second stage assesses the impact of the change between the operation of the Proposed Development and the end of operations of the existing Connah's Quay Power Station (i.e. contributions from the Proposed Development minus contributions from the existing Connah's Quay Power Station).

8.5 Development Design and Embedded Mitigation

8.5.1 The Proposed Development has been designed, as far as possible, to avoid or minimise impacts and effects on Air Quality through the process of design development, and by embedding measures into the design of the Proposed Development.

8.5.2 The following embedded mitigation measures have been incorporated into the Proposed Development design, with detailed proposals and locations to be submitted with the Development Consent Order (DCO) Application:

- IED/ BAT-AEL Emission Limit Value (ELV) compliance: the Proposed Development will be designed such that process emissions to air comply with the ELV requirements specified in the IED and where additional, or tighter, the relevant BRefs. This will be regulated by NRW through the Environmental Permit required for the operation of the Proposed Development. The Environmental Permit may also include additional ELV for species not covered under the IED or LCP BRef;
- Stack Height(s): the proposed heights of the CCPs' absorber stacks and HRSGs for the Proposed Development have been assessed as a robust case with consideration given to minimisation of ground-level air quality impacts and the visual impacts of taller stacks, based on the largest building massing for the primary structures of the Proposed Development. At the detailed design stage, should the final building dimensions be reduced from those assessed in this ES, it may be possible to use lower stack heights to reduce visual impacts without increasing the air quality impacts as presented in this chapter; and
- Emissions Control: the impact assessment is based on emissions performance from the CCPs that project engineers have confirmed is achievable through the use of appropriate process control techniques. Emissions of amines will be controlled in accordance with regulatory

guidance on minimising the environmental impacts of post-combustion carbon dioxide capture (Ref 8-21). This is anticipated to include the use of water wash stages and demisters prior to the flue gas exiting the CCPs' absorber stacks enabling the solvent that is carried over in the flue gas to be captured and returned to the process for re-use. Emissions of NOx from the HRSG are expected to be controlled through the use of Selective Catalytic Reduction (SCR) so as to minimise NOx carry over into the CCP.

8.5.3 The standard construction practices listed below are some of the relevant ones to this assessment, with the full list included in **Appendix 8-A (PEIR Volume IV)**, and will be included in the Framework CEMP and Decommissioning Environmental Management Plan.

- avoid mechanical roughening or grinding of concrete surfaces, where appropriate;
- store sand and aggregates in bunded areas and store cement powder and fine materials in silos, where appropriate;
- use water suppression and regular cleaning to minimise mud on roads, and control dust during earth moving activities;
- cover vehicles leaving the construction site that are carrying waste materials or spoil;
- employ wheel wash systems at site exits;
- restrict, where practicable, the use of unmade road accesses;
- minimise duration of storage of topsoil or spoil during pipeline construction;
- prohibit open fires on site;
- Good practice will also be employed for the siting and operation of NRMM to control associated emissions, including:
- minimise vehicle and plant idling;
- where reasonably practicable, locating static plant away from sensitive boundaries or receptors; and
- minimise operating time outside of core working hours/ daylight hours.

8.6 Preliminary Assessment of Likely Impacts and Effects

8.6.1 Taking into account the embedded mitigation measures as detailed in Section 8.5 above, the potential impacts and effects of the Proposed Development have been assessed using the methodology as detailed in Section 8.3 of this chapter and **Chapter 2: Assessment Methodology and Consultation**.

Construction Phase

8.6.2 Impacts on Air Quality features during construction of the Proposed Development are likely to include:

- impacts on amenity, human health and ecological receptors from fugitive emissions of dust and particulate matter during the construction phase, are described **in Appendix 8-B: Air Quality – Construction Dust Risk Assessment (PEIR Volume IV**); and
- impacts on human health and ecological receptors from traffic emissions during the construction phase are described in **Appendix 8-C: Air Quality Traffic Assessment (PEIR Volume IV**).

Construction Dust

8.6.3 The assessment demonstrates that with good practice dust control measures embedded through the Framework CEMP, the generation of fugitive dust emissions from potentially dust generating activities (demolition, earthworks, trackout and construction) would be sufficiently controlled through decision making that minimises the potential for emissions to occur near to sensitive receptors, by:

- minimising the magnitude and frequency of emissions at source;
- providing clear responsibilities to proactively consider the performance of routine control measures; and
- responding promptly when additional short term measures are also required.

8.6.4 This leads to the overall conclusion that the frequency and duration of dust impacts would give rise to a negligible effect on health or amenity.

8.6.5 The same control measures would also result in negligible effects at any sensitive features within designated ecological sites.

8.6.6 Overall, the likely effect of dust impacts from the construction phase is considered to be **not significant**.

Construction Traffic

8.6.7 The impact of the construction traffic emissions of NOx and particulate matter on properties facing onto the Kelsterton Road (representative receptor TH8), has been assessed as having a magnitude of low adverse which would result in a negligible effect. All other human health receptors would experience impacts that are imperceptible in magnitude, resulting in a negligible effect overall, which is considered to be **not significant**.

8.6.8 The impact of the construction traffic emissions on atmospheric levels of NOx and associated deposition rates of nitrogen, at the ancient woodland ecological receptors (represented by receptors TE4, TE5 and TE6), has been assessed as having a very low magnitude adverse impact that would have a negligible effect. All other representative ecological receptors would experience impacts that are very low or imperceptible in magnitude, resulting in a negligible effect overall, which is considered to be **not significant**.

Operation Phase

8.6.9 Impacts on Air Quality features during operation of the Proposed Development are likely to include:

- impacts on human health and ecological receptors from operations of the CCP and associated emissions, are described in **Appendix 8-D: Air Quality Operational Assessment (PEIR Volume IV**); and
- impacts on human health and ecological receptors from traffic emissions during the operational phase, are described in **Appendix 8-C: Air Quality Traffic Assessment (PEIR Volume IV**).

8.6.10 The earliest year of operation for the Proposed Development is anticipated to be 2030, under a phased construction approach beginning in 2026 for a period of five years. If construction was to be undertaken in a single phased approach, the earliest year of operation is anticipated to be 2035. If a single phased construction approach was undertaken at the latest possible time, five years after DCO Consent, operation would be anticipated to occur in late 2036.

8.6.11 As detailed design is progressed, the choice of solvent for the carbon capture will become more certain and the assessment will be updated for the Environmental Statement to reflect the updated understanding of the solvent composition.

Operation Emissions

8.6.12 The impact of point source emissions from the Proposed Development at human health receptors has been determined from model outputs at discrete receptor locations, as well as at the maximum anywhere in the Study Area. Concentration isopleths are presented in:

- **Figure 8-5: Annual Mean NO_2 process contribution (µg/m³) 2020 Meteorological Data;**
- **Figure 8-6: 1-hour Mean NO_2 process contribution (µg/m³), as a 99.8th Percentile of hourly averages, 2022 Meteorological Data;**
- **Figure 8-7: Maximum 8-hour Mean CO process contribution (µg/m³), as a 100.00th Percentile of hourly averages, 2022 Meteorological Data;**
- **Figure 8-11: Annual Mean N-amines Process Contribution (ng/m³), 2019 Meteorological Data;**
- **Figure 8-12: Maximum 1-hour Mean Amine Process Contribution (µg/m³), as a 100th Percentile of hourly averages, 2022 Meteorological Data; and**
- **Figure 8-13: Maximum 24-hour Mean Amine Process Contribution (µg/m³), as a 100th Percentile of hourly averages, 2021 Meteorological Data**.

8.6.13 The maximum hourly, daily and annual mean predicted concentrations at human health receptors have been compared with the relevant AQALs, as summarised in **Table 8-12**. Any inconsistencies between the PEC (i.e. change in the Process Contribution (PC) and existing background concentration) and the predicted changes combined with the background concentrations are due to rounding only.

8.6.14 The predicted concentrations at all selected receptors within the study area have been reported in **Appendix 8-D: Air Quality – Operational Phase** (**PEIR Volume IV**).

8.6.15 The impact of operational emissions to air on human health, at sensitive receptors, has been assessed as having a magnitude of imperceptible to low adverse for all but annual mean N-amines concentrations, which results in an overall negligible or minor effect, which is considered to be **not significant**.

8.6.16 At the most affected receptors, only the N-amines annual mean is predicted to have medium magnitude impacts, leading to moderate effects at those receptors.

8.6.17 The assessment for N-MEA should be regarded as extremely conservative as it incorporates a number of worst-case assumptions, namely:

- the Proposed Development is assumed to run two trains at full load during every hour of the year, whereas in practice the load factor is likely to be substantially lower due the plant providing dispatchable power when required;
- the assessment is based on the highest annual impact at each receptor out of the five years modelled;
- the assessment assumes no depletion of plume concentrations due to wet or dry deposition;
- the assessment assumes that all nitramines and nitrosamines emitted from the stack or formed in the atmosphere have the same toxicity as NDMA, known to be one of the most toxic nitrosamine species. In particular current studies suggest that nitramines are substantially less toxic than their corresponding nitrosamines;
- emissions of amines have been modelled at the higher end of the range of emission concentrations understood to be available from capture technology providers; and
- all buildings have been modelled at their maximum anticipated dimensions ensuring the potential for impacting on plume dispersion is captured in the dispersion model.

8.6.18 Based on the above, N-MEA impacts are expected to be substantially lower than those presented in practice.

8.6.19 Given the conservative assessment approach and that the the PEC is predicted to be below the AQAL at all receptors, the overall effect is deemed to be minor, which is considered to be **not significant**.

8.6.20 At the point of maximum impact, only the N-MEA annual mean is predicted to be higher than the AQAL value, within a limited area located north-west of the Main Site, within the Dee Estuary, where no human receptors would be regularly present.

8.6.21 Overall, the effect from the Proposed Development on human health is considered to be **not significant.**

Table 8-12: Results of Operational Impact Assessment for Human Health Impacts

Species	Location	AQAL (µg/m³)	Proposed Development PC (µg/m³ or mg/m³ for CO and ng/m³ for N-amines)	PC/AQAL (%)	Magnitude of Impact	Background (µg/m³ or mg/m³ for CO and ng/m³ for N-amines)	Future Year with Proposed Development (PEC) (µg/m³ or mg/m³ for CO and ng/m³ for N-amines)	PEC/AQAL (%)
Maximum NO_2 hourly mean (as the 99.79th percentile)	Most affected sensitive receptor (OH4)	200	38.1	19.1%	Low	13.0	51.1	25.6%
	Maximum anywhere outside site boundary		74.1	37.0%	Medium	13.0	87.1	43.5%
Maximum NO_2 annual mean	Most affected sensitive receptor (OH22)	40	0.6	1.6%	Very Low	6.5	7.1	17.9%
	Maximum anywhere outside site boundary		1.3	3.3%	Low	6.5	7.8	19.6%
Maximum CO 8-hour rolling average	Most affected sensitive receptor (OH11)	10,000	<0.1	0.4%	Imperceptible	0.5	0.5	5.4%
	Maximum anywhere		0.1	0.6%	Low	0.6	0.6	6.5%

Species	Location	AQAL (µg/m³)	Proposed Development PC (µg/m³ or mg/m³ for CO and ng/m³ for N-amines)	PC/AQAL (%)	Magnitude of Impact	Background (µg/m³ or mg/m³ for CO and ng/m³ for N-amines)	Future Year with Proposed Development (PEC) (µg/m³ or mg/m³ for CO and ng/m³ for N-amines)	PEC/AQAL (%)
	outside site boundary							
Maximum CO 1-hour	Most affected sensitive receptor (OH3)	30,000	0.1	0.2%	Imperceptible	0.5	0.6	1.9%
	Maximum anywhere outside site boundary		0.1	0.2%	Imperceptible	0.6	0.7	2.2%
Maximum MEA 24-hour	Most affected sensitive receptor (OH23)	100	3.0	3.0%	Imperceptible	No Data Available	3.0	3.0%
	Maximum anywhere outside site boundary		4.7	4.7%	Imperceptible	No Data Available	4.7	4.7%
Maximum MEA hourly mean	Most affected sensitive receptor (OH3)	400	7.8	2.0%	Imperceptible	No Data Available	7.8	2.0%
	Maximum anywhere		10.9	2.7%	Imperceptible	No Data Available	10.9	2.7%

Species	Location	AQAL (µg/m³)	Proposed Development PC (µg/m³ or mg/m³ for CO and ng/m³ for N-amines)	PC/AQAL (%)	Magnitude of Impact	Background (µg/m³ or mg/m³ for CO and ng/m³ for N-amines)	Future Year with Proposed Development (PEC) (µg/m³ or mg/m³ for CO and ng/m³ for N-amines)	PEC/AQAL (%)
	outside site boundary							
Maximum N-MEA annual mean	Most affected sensitive receptor (OH22)	0.2 (ng/m³)	0.20	92.0%	Medium	No Data Available	0.20	92.0%
	Maximum anywhere outside site boundary		0.21	104.3%	High	No Data Available	0.21	104.3%
Maximum Formaldehyde 30-min mean	Most affected sensitive receptor (OH3)	100	1.0	1.0%	Low	<0.1	1.0	1.0%
	Maximum anywhere outside site boundary		1.4	1.4%	Low	<0.1	1.4	1.4%
Maximum Formaldehyde Annual mean	Most affected sensitive receptor (OH15 and OH22)	5	<0.1	0.4%	Imperceptible	<0.1	<0.1	0.4%

Species	Location	AQAL (µg/m³)	Proposed Development PC (µg/m³ or mg/m³ for CO and ng/m³ for N-amines)	PC/AQAL (%)	Magnitude of Impact	Background (µg/m³ or mg/m³ for CO and ng/m³ for N-amines)	Future Year with Proposed Development (PEC) (µg/m³ or mg/m³ for CO and ng/m³ for N-amines)	PEC/AQAL (%)
	Maximum anywhere outside site boundary		<0.1	0.8%	Very Low	<0.1	<0.1	0.8%
Maximum Ammonia Annual Mean	Most affected sensitive receptor (OH22)	180	<0.1	<0.1%	Imperceptible	2.0	2.0	1.1%
	Maximum anywhere outside site boundary		0.1	<0.1%	Imperceptible	2.0	2.1	1.2%

8.6.22 Operational air quality results for the worst affected ecological receptor are presented in **Table 8-13** for impacts from the Proposed Development alone. Concentration and deposition isopleths are presented in **Figure 8-8: Annual Mean NOx process contribution (µg/m³), 2020 Meteorological Data, Figure 8-9: Annual Mean Ammonia process contribution (µg/m³), 2020 Meteorological Data** and **Figure 8-10: Nitrogen Deposition process contribution (Grassland) (kgN/ha/yr), 2020 Meteorological Data.** Operational air quality results for the worst affected ecological receptor are presented in Table 8-14 for impacts from the change in contributions, i.e. the Proposed Development concentration minus the existing Connah's Quay Power Station. These results are only presented if effects from the Proposed Development alone cannot be screened out as not significant without the need for further assessment by an ecologist.

8.6.23 Any inconsistencies between the PEC (i.e. change in the Process Contribution (PC) and existing background concentration) and the predicted changes combined with the background concentrations are due to rounding only. Results at all other ecological receptors are presented in **Appendix 8-D: Air Quality Operational Assessment** (**PEIR Volume IV).**

8.6.24 For all receptors, the predicted annual average NO_X concentration PC is less than 1% of the AQAL or the PEC is less than 70% of the AQAL and therefore are considered **not significant** without the need for further assessment by an ecologist. It is important to note that the background concentrations are likely to already include to some degree the contribution from the existing Connah's Quay Power Station, and therefore it is considered that the actual PECs will be below these values.

8.6.25 The daily mean NO_X concentrations show a PC for all receptors, except for OE10, OE29 and OE30, that is less than 10% of the AQAL or less than 20% of the AQAL minus the background concentration. The predicted impacts are small enough that effects will be **not significant** without undertaking a more detailed assessment.

8.6.26 OE30 is not a statutory site and concentrations there are less than 100% of the AQAL and effects can also be screened out as insignificant without the need for further assessment. However, if the removal of the existing Connah's Quay Power Station is taken into account, the change in concentration at all receptors (including OE10 and OE29) is less than 10% of the AQAL and effects can be screened out as **not significant** without undertaking a more detailed assessment.

8.6.27 For all receptors, except OE02, OE10, OE11, OE29 and OE30, the predicted annual average ammonia concentrations are below 1% of the EAL and therefore are considered **not significant**. The background values at all receptors are higher than the EAL, therefore the PEC's at OE02, OE11, OE29 and OE30 are greater than the EAL and cannot be screened out from needing more detailed assessment. The significance of this change is discussed in **Chapter 11: Terrestrial and Aquatic Ecology (PEIR Volume II**).

8.6.28 The nitrogen deposition results show that the predicted impacts from the Proposed Development are less than the 1% threshold to demonstrate more

detailed assessment is not required for all ecological receptors except OE1, OE2, OE4, OE9, OE10, OE11, OE13, OE29 and OE30.

8.6.29 OE30 is not a statutory site and nitrogen deposition there is less than 100% of the AQAL and effects can also be screened out as **not significant** without the need for further assessment. At receptors OE1, OE2, OE4, OE9, OE10, OE11, OE13, OE29, the background values are higher than the critical loads and the PEC's are greater than 70%, therefore these can't be screened out from needing more detailed assessment. The significance of the change at these 8 receptors is discussed in **Chapter 11: Terrestrial and Aquatic Ecology (PEIR Volume II**).

8.6.30 For acid deposition, results show that the predicted impacts from the Proposed Development are less than the 1% threshold to demonstrate insignificance without the need for further assessment for all ecological receptors except OE1, OE2, OE11, OE29 and OE30.

8.6.31 Taking into account the removal of the existing Connah's Quay Power Station, only OE1, OE29, OE30 are above the 1% threshold to demonstrate more detailed assessment of acid deposition effects is not required. OE30 is not a statutory site and acid deposition there is less than 100% of the AQAL and effects can also be screened out as **not significant** without the need for further assessment. The significance of this change for the remaining sites (OE1, OE29) is discussed in **Chapter 11: Terrestrial and Aquatic Ecology (PEIR Volume II**).

Table 8-13: Results of Operational Impact Assessment for Designated Habitats – Proposed Development only

Species	AQAL (µg/m³)	Units	Proposed development PC	PC/AQAL (%)	Background (µg/m³)	Future Year with Proposed Development (PEC)	PEC/AQAL (%)
Most impacted location at any receptor for NOx daily mean (as the 100th percentile) (OE10)	75	µg/m³	23.9	31.8%	13.3	37.1	49.5%
Most impacted location at any receptor for NOx annual mean (OE10)	30	µg/m³	0.7	2.3%	8.8	9.5	31.8%
Most impacted location at any receptor for NH_3 annual mean (OE10)	1 or 3	µg/m³	0.02	2.4%	1.7	1.8	176.4%
Most impacted location at any receptor for Nitrogen Deposition (OE30)	5, 6 or 10	Kg/ha/yr	0.36	6.0%	31.1	31.46	524.3%
Most impacted location at any receptor for Acid Deposition (OE30)	Min CL Min N 0.499 Min CL Max N 1.72 Min CL Max S 1.448	Keq/ha/yr	0.025	1.8%	Not Available for locally designated sites	Not Applicable	Not Applicable

Table 8-14: Results of Operational Impact Assessment for Designated Habitats – Change from existing

Species	AQAL (µg/m³)	Units	Change	Change/AQAL (%)	Background (µg/m³)	Future Year with Proposed Development (PEC)	PEC/AQAL (%)
Most impacted location at any receptor for NOx daily mean (as the 100th percentile) (OE10)	75	µg/m³	-8.3	-11.1%	13.3	4.9	6.6%
Most impacted location at any receptor for Nitrogen Deposition (OE30)	5, 6 or 10	Kg/ha/yr	0.36	6.0%	31.1	31.46	524.3%
Most impacted location at any receptor for Acid Deposition (OE30)	Min CL Min N 0.499 Min CL Max N 1.72 Min CL Max S 1.448	Keq/ha/yr	0.025	1.8%	Not Available for locally designated sites	Not Applicable	Not Applicable

Operation Traffic

8.6.32 The impact of the operational traffic emissions of NOx and particulate matter on human health receptors has been assessed, receptors would experience impacts that are imperceptible in magnitude (i.e. the maximum predicted change in annual mean concentrations at the selected sensitive receptors is <0.1 µg/m^3), resulting in a negligible effect overall, which is considered to be **not significant.**

8.6.33 The impact of the operational traffic emissions on atmospheric levels of NOx and associated deposition rates of nitrogen has been assessed, receptors would experience impacts that are very low or imperceptible in magnitude (i.e. the maximum predicted change in annual mean concentrations at the selected sensitive receptors is <0.1 µg/m^3 or <0.1 kgN/ha/yr), resulting in a negligible effect overall, which is considered to be **not significant**.

8.6.34 Detailed results are presented in **Appendix 8-C: Air Quality Traffic Assessment** (**PEIR Volume IV**).

Decommissioning Phase

8.6.35 The predicted air quality impacts of decommissioning of the Proposed Development are considered to be comparable to, or less than, those assessed associated with construction activities. As such, air quality effects at sensitive receptors are anticipated to be **not significant**.

8.7 Additional Mitigation and Enhancement Measures

Construction Phase

8.7.1 No specific additional mitigation has been identified as necessary to control the risk of impacts from fugitive dust emissions from the Proposed Development 8.5.

8.7.2 The impacts from traffic associated with the construction phase have been shown to be very low, resulting in negligible effects and are **not significant** in **Appendix 8-C: Air Quality Traffic Assessment (PEIR Volume IV)** and this chapter. Additional mitigation measures are therefore unlikely to have any additional benefit.

Operation Phase

8.7.3 The air quality assessment of operational impacts has assumed that the ELVs will be met for the operational Proposed Development as required under the IED and in accordance with use of BAT under the EnvironmentalPermitting Regime. The environmental effects from operation of the Proposed Development have been identified as being **not significant** at all human health receptors for the operation of the Proposed Development.

8.7.4 Detailed modelling of predicted impacts at ecological receptors indicates that potential effects at ecological receptors as a result of the operation of the Proposed Development are largely considered to be **not significant**. Where

this is not the case, further interpretation of the predicted effects at ecological receptors and the determination of the significance of these effects has therefore been assessed further in **Chapter 11: Terrestrial and Aquatic Ecology** (**PEIR Volume II**).

8.7.5 No specific additional mitigation has been identified as necessary for the Proposed Development 8.5.

Decommissioning Phase

8.7.6 No specific additional mitigation has been identified as necessary to control the risk of impacts from fugitive dust emissions from the Proposed Development 8.5.

8.8 Summary of Likely Significant Residual Effects

8.8.1 There are no likely residual significant effects of the Proposed Development on local Air Quality following implementation of mitigation.

8.8.2 An assessment of cumulative effects with other proposed developments that could interact with the effects of this Proposed Development will be carried out in the final ES, when the short-list of other developments has been finalised, as detailed in **Chapter 24: Cumulative and Combined Effects. Chapter 24: Cumulative and Combined Effects** of the ES will also assess the in-combination effects of multiple aspects on one receptor.

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