Connah's Quay Low Carbon Power

Environmental Statement Volume IV Appendix 8-D: Air Quality Operational Assessment Tracked

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1.1 Introduction

1.1.1 Emissions associated with the operation of the Connah's Quay Combined Cycle Gas Turbine (CCGT) fitted with Carbon Capture Plant (CCP) (hereafter referred to as the Proposed Development) have the potential to affect human health and sensitive ecosystems, if not appropriately managed. This technical appendix supports **Chapter 8: Air Quality** (**EN010166/APP/6.2.8**) and describes the additional details for the dispersion modelling of operational point source emissions from the Proposed Development. This assessment considers the potential for likely significant effects on air quality as a result of the Proposed Development to replacing the existing Connah's Quay Power Station. For more details about the Proposed Development, refer to **Chapter 4: Proposed Development** (**EN010166/APP/6.2.4**).

1.1.2 The magnitude of air quality impacts at sensitive human and ecological receptors has been quantified through detailed dispersion modelling of the pollutants emitted from the stacks associated with the Proposed Development and the existing Connah's Quay Power Station. The impact of emissions on human health receptors has been considered in the context of the relevant Air Quality Standards and Environmental Assessment Levels, as described in **Chapter 8: Air Quality** (**EN010166/APP/6.2.8**). The magnitude of air quality impacts at sensitive ecological receptors has been considered in the context of relevant critical levels and critical loads for designated and non-designated ecological sites.

1.1.3 The assessment has considered emissions from the Proposed Development during normal operational conditions only. Non routine emissions, such as those which may occur during the commissioning process or other abnormal short-term events would typically only occur on an infrequent basis, would be detected by the process control systems and be rectified within a short time period. The plant operation would be regulated by Natural Resources Wales (NRW) through an Environmental Permit required for the operation of the Proposed Development including notification requirements for any malfunction, breakdown or failure of equipment or techniques which may cause significant pollution. For plant start-up and shut-down periods, although there may be slight increases in some pollutant concentrations, the overall mass release of pollutant present in the release would not increase over those assessed, as stack airflows would be lower during such times. **Chapter 22: Major Accidents and Disasters** (**EN010166/APP/6.2.22**) includes an assessment of the reasonably foreseeable worst-case environmental consequences potentially arising as a result of the Proposed Development.

1.1.4 The operation of the existing Connah's Quay Power Station is currently regulated by NRW through an Environmental Permit. The existing Connah's Quay Power Station would not operate at its full installed capacity concurrently with the Proposed Development. See details in **Chapter 4: The Proposed Development** (**EN010166/APP/6.2.4**).

1.1.5 **Annex A** of this Appendix provides details on assessment of amine degradation products.

1.1.6 **Annex B** of this Appendix provides a sensitivity analysis of the model input parameters.

1.1.7 **Annex C** of this Appendix provides an assessment of visible plumes from the Proposed Development's stacks.

1.1.8 **Annex D** of this Appendix provides model inputs for the cumulative sources.

1.2 Scope

Operational Traffic Emissions

1.2.1 A quantitative assessment of operational traffic emissions associated with the Proposed Development has been made, as even if the numbers of additional vehicles associated with the operational phase are below the Institute for Air Quality Management (IAQM) (Ref 1) screening criteria for requiring such assessment, there is a risk of cumulative impacts from other development in the study area. Details relating to the operational traffic modelling are presented in **Appendix 8-C: Air Quality Traffic Assessment**, although the combined impacts with the plant operations are considered in this appendix (Section 1.5).

Operational Process Emissions

1.2.2 The study area for the operational Proposed Development's point source emissions extends up to 15 km from the Main Development Area, in order to assess the potential impacts on ecological receptors, in line with the Risk Assessment methodology (Ref 2) adopted by NRW. This includes:

- Special Protection Areas (SPA), Special Areas of Conservation (SAC), Ramsar sites and Sites of Special Scientific Interest (SSSI) within 15 km of the Main Development Area; and
- Local Nature Sites (including ancient woodlands, Local Wildlife Sites (LWS) and National and Local Nature Reserves (NNR and LNR) within 2 km of the Main Development Area.

1.2.3 The details of the assessment of ecological impacts are presented in Section 1.5 of this appendix.

1.2.4 In terms of human health receptors, maximum impacts from the operation of the Proposed Development are within 2 km from the emissions sources and therefore sensitive receptors for the human health impacts are concentrated within a 2 km study area.

1.2.5 As detailed in **Chapter 4: The Proposed Development** (**EN010166/APP/6.2.4**) Section 4.4, a number of different scenarios have been considered in this assessment, namely:

- Train 1 and Train 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), referred to as the "Unabated scenario";

- operation of two CCGT Trains with Single Absorbers for Carbon Capture with the FEED 1 Design, referred to as the "FEED 1 scenario"; and
- operation of two CCGT Trains with Single Absorbers for Carbon Capture with the FEED 2 Design, referred to as the "FEED 2 scenario".

1.2.6 Full results for each scenario leading to the highest impacts are presented in Section 1.5 of this appendix.

Existing Emissions

1.2.7 To assess the change in pollutant concentrations in the Study Area in more detail, a baseline scenario considering emissions from the existing Connah's Quay Power Station CCGTs under normal operating conditions, with all sources assumed to be operating for 21% of the year[1], has been included in this assessment. As this does not represent a worst-case scenario but a more realistic one, it has only been considered where emissions from the Proposed Development alone are above the relevant screening criteria (which is based on a percentage of the Air Quality Assessment Levels (AQALs), as they are defined in **Chapter 8: Air Quality** (**EN010166/APP/6.2.8**)).

1.2.8 Combustion emissions from the existing Combined Cycle Gas Turbines (CCGT) occur from the Gas Turbines (GT) 1 to 4. At present, the emissions from these sources are released to air via four stacks, which are 85 m above ground level.

1.2.9 In order to determine the impacts associated with the existing emissions these sources have been modelled at the existing emission parameters and emission limit values, as detailed in the Environmental Permit for the Site (Ref 3). Both annual average and hourly average emission limits are provided in the Environmental Permit and, therefore, the appropriate limit values have been used for the corresponding averaging times within the dispersion modelling assessment.

Operational Proposed Development's Emissions (Future Assessment)

1.2.10 As with the Baseline Assessment, the Future Assessment has considered the impact of the future operational processes for the Proposed Development to determine the change to local air quality, as a result of the CCGTs being operational and the flue gas being abated by the Carbon Capture Plants (CCP).

1.2.11 The Future Assessment assumes normal operating conditions, with the CCP operating for 8,760 hours per year. The assessment considers impacts, from all listed scenarios, in the earliest year in which the Proposed Developments are due to commence operation, 2036.

1.2.12 The predicted model output concentrations (Process Contributions (or PCs)) of the Baseline Assessment have been compared to the PCs from the Future Assessment, as detailed in **Chapter 8: Air Quality** (**EN010166/APP/6.2.8**) in order to determine the change between the predicted impacts of the Baseline Assessment and Future Assessment.

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[1] The assumption of a 21% operational scenario is based on Uniper's data on the recent historic use of the existing power plant and is considered to be robust for use in the assessment

1.2.13 The emissions from the Existing Connah's Quay Power Station's GTs are currently at the Best Available Technique-Associated Emission Levels (BAT-AEL) for the relevant technology type, as detailed in the Large Combustion Plant (LCP) Best Available Technique (BAT) Reference document (LCP BRef) Ref 4), except where specific emission rates data are available.

1.2.14 Emission rates of amines have been based on information provided by the FEED contractors for both the FEED 1 and FEED 2 scenarios.

Cumulative impacts

1.2.15 The contribution to pollutant concentrations from existing sources of pollution in the area are accounted for in the adoption of site-specific background pollutant concentrations from archive sources and air quality monitoring in close proximity to the Main Development Area.

1.2.16 It is recognised, however, that there is a potential impact on local air quality from emission sources which have either received or may receive, planning permission or other consent, but have yet to come into operation.

1.2.17 The full list of short-listed cumulative schemes considered for the Proposed Developments are detailed within **Chapter 24: Cumulative and Combined Effects** (**EN010166/APP/6.2.24**). Detailed assessment of cumulative impacts on air quality has been considered within this assessment. The detailed model inputs are presented in **Annex D**.

1.2.18 The results presented within this assessment are inherently cumulative, as the air quality modelling for the operational phase includes all relevant committed developments on top of the existing background, both with and without the Proposed Development.

Sources of Information

1.2.19 The information that has been used within this assessment includes:

- **Chapter 3: Location of the Proposed Development** (**EN010166/APP/6.2.3**);
- **Chapter 4: The Proposed Development** (**EN010166/APP/6.2.4**);
- data on existing emissions to atmosphere taken from the existing Environmental Permits and from emissions monitoring data collated by the site;
- data on future emissions to atmosphere provided by the project engineers;
- **Figure 3-3: Areas Described in the ES** (**EN010166/APP/6.3**);
- Ordnance Survey mapping;
- baseline air quality data from published sources and Local Authorities, as detailed in **Appendix 8-A: Baseline Air Quality Information** (**EN010166/APP/6.4**);
- meteorological data supplied by ADM Limited; and
- data on committed developments presented in **Chapter 24: Cumulative and Combined Effects** (**EN010166/APP/6.2.24**).

1.3 Methodology

Introduction

1.3.1 The dispersion of emissions from both existing and future emission sources has been predicted using the latest version of the atmospheric dispersion model ADMS (currently version 6.0.2). The results are presented in both tabular format within this appendix and as contour plots of predicted ground level change overlaid on mapping of the surrounding area (**Figures 8-5 to 8-28** (**EN010166/APP/6.3**)).

1.3.2 The modelled scenarios are detailed in Section 1.2.5 of this appendix.

Baseline Assessment

1.3.3 The Baseline Assessment has considered the effects from emissions of oxides of nitrogen (NOx), carbon monoxide (CO) and sulphur dioxide (SO_2) associated with the operation of the existing Connah's Quay Power Station's GTs only.

Future Assessment

1.3.4 For the future assessments, the same pollutants assessed for the Baseline Assessments have been modelled again from the proposed CCP emission sources, except that there would be emissions of ammonia (NH_3) but not SO_2. The release parameters for the new CCP, such as stack height, air flow, efflux velocity, release temperature and pollutant concentration all affect the dispersion of these emissions.

1.3.5 Emissions of amines and their breakdown products have also been modelled due to their potential to be present in the emissions from the CCP Absorber stacks. Breakdown products include NH_3 and formaldehyde (as a pollutant representative of breakdown products).

1.3.6 It is also known that amines can degrade into nitrosamines and nitramines (collectively referred to as N-amines) both within the carbon capture process itself and also in the environment following release.

1.3.7 The direct release of amines and any other degradation products generated in the process have been considered in the future assessment (as formaldehyde) and the results are presented in this appendix.

1.3.8 Complex atmospheric processes that occur following the release of both amines and directly releases N-amines as discussed in **Annex A**.

Dispersion Model Selection

1.3.9 As stated previously, the assessment of emissions from the Proposed Development has been undertaken using the advanced dispersion model ADMS (version 6.0.2), supplied by Cambridge Environmental Research Consultants Limited (CERC) (Ref 5). ADMS is a modern dispersion model that has an extensive published validation history for use in the UK. This model has been extensively used throughout the UK to demonstrate regulatory compliance.

1.3.10 CERC has developed an amine chemistry module for use with the ADMS dispersion model, for the assessment of emissions of amines and their atmospheric degradation products. The model calculates the rate of amine degradation, taking into account the reaction of amines with other species present in the exhaust gas (i.e. NO and NO_2) and with OH radicals in the atmosphere.

1.3.11 The ADMS Amines chemistry module is currently the only commercially available modelling software for evaluating the potential impacts of amines and amine degradation products.

1.3.12 The Air Quality Modelling & Assessment Unit (AQMAU) have reviewed the amines module (Ref 7), stating that '*The amines chemistry module is based on established science considering published research on mechanisms of formation of toxic compounds. Although the validation of the module is not possible at the moment, the ADMS air dispersion modelling algorithms are continually validated against real world situations, field campaigns and wind tunnel experiments'.*

1.3.13 AQMAU recognise in their report (Ref 7) that '*There are various aspects of the current version of the module that suggest the estimation of toxic products might be conservative, however, the level of uncertainties in other input parameters can counteract this.*' Note that an updated version of the amine chemistry module came out in 2023 with the new version of ADMS.

1.3.14 Within the ADMS amines chemistry module, it is necessary to specify the amine, nitrosamine, nitramines and radical species that are being modelled (although the latter is now only necessary if an output of the radical is required). With the new module, emissions of a solvent with multiple amine components can be modelled in the same run, although reactions between the amine components themselves are not accounted for.

1.3.15 The module requires the amine-specific branching ratio and the kinetic constants, k values (specific to each subsequent reaction rate). The rates of reaction may be derived through scientific research through experimental observation, for the more stable intermediate reaction species, or through theoretical computational calculations such as Transition State Theory.

Model Inputs

1.3.16 The general model conditions applicable to all the model scenarios assessed are summarised in **Table 1**. Specialised model treatment inputs within the ADMS amines model are specified in **Annex A**.

Table 1: General ADMS 6 Model Inputs

Variable	Model Input
Surface roughness at source	0.4
Surface roughness at meteorological site	0.3
Receptors	Selected discrete receptors (as detailed in **Table 4**)

Variable	Model Input
Receptor locations	X, Y co-ordinates determined by GIS
	z (ground level) = 1.5 m for human receptors
	z = 0 m for ecological receptors
Source locations	X, Y co-ordinates determined by GIS
Meteorological data	5 years of meteorological data, Hawarden Meteorological Station (2019 - 2023)
Terrain data	Not required

1.3.17 The assessment has assumed that all sources operate at continuous design load (8,760 hours per year) as a conservative approach. No time-based variation in emissions has therefore been accounted for within the model.

Emissions Inventory

1.3.18 The stack emission parameters for all the modelled sources are shown in **Table 2**. The stack flow (actual) parameters take account of the CO_2 removal from the gas stream.

Table 2: Stack Emission Parameters for all Modelled Sources

Emission Source	Location (x, y)	Stack Height (m)	Stack Diameter (m)	Release Temp (°C)	Stack Airflow (actual) Am^3/s	Stack H_2O Content (%)	Flue O_2 content (dry) (%)	Reference O_2 (%)	Stack flow at reference conditions (STP, dry, Ref O_2)	Stack gas exit velocity (m/s)
HRSG (per stack)	327454, 371411 327409, 371346	150	8.0	89	1,127.0	9.6	12.2	15	1,130.6	22.4
Single Absorber (per stack) – Feed 1	327355, 371479 327310, 371413	150	7.0	60	744.2.0	7.7	13.5	15	700.0	19.3
Single Absorber (per stack) – Feed 2	327355, 371479 327310 371413	150	7.0	58	989.6	9.3	12.9	15	1003.1	25.7
Existing CCGT (per stack)	327949, 371137 327932, 371112 327914, 371087 327897, 371063	85	7.4	105.0	676.0	NA	NA	15	547.0	15.8

1.3.19 During normal operation, the CCP absorber stack(s) would be the primary source of emissions from both the combustion and carbon capture processes associated with the Proposed Development.

1.3.20 In addition, there would be bypass stacks (HRSG stack(s)) associated with Proposed Development's CCGT units (one per train), which 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) as described in **Chapter 4: The Proposed Development** (**EN010166/APP/6.2.4**).

1.3.21 When the plant is operating with carbon capture, there are additional emissions of amines and potentially their degradation compounds (nitrosamines and nitramines, collectively referred to as N-amines).

1.3.22 The main reported emissions for the Proposed Development have therefore been modelled based on a single CCP absorber stack per train as outlined in **Chapter 4: The Proposed Development** (**EN010166/APP/6.2.4**). These stacks have been evaluated for a range of stack heights but the results presented are based on the predicted results, a stack height of 150 m AGL with an internal stack diameter of 7 m. It is considered that 150 m AGL is the appropriate stack height that would result in not significant impacts at human health receptors and would minimise effects reported at ecological receptors, with the current conservative model input parameters, a stack height of 150 m AGL has therefore been used in the assessment. The physical properties of the assessed emission sources are shown in **Table 2** and are illustrated in **Figure 8-4** (**EN010166/APP/6.3**).

1.3.23 The modelled pollutant emission rates (in grams per second (g/s)) have been calculated by multiplying the emission concentration by the volumetric flow rate at normalised reference conditions. The emission limits that apply to the existing emission sources and those assumed for the Proposed Development are shown in **Table 3**.

1.3.24 The Environmental Permit issued by NRW would require emission concentrations of NO_X to be no higher than the BAT-AEL range provided in the Large Combustion Plant BRef for new CCGT plant (10 - 30 mg/Nm^3 as a yearly average and 15 - 40 mg/Nm^3 as a daily average). The Proposed Development's emissions would also need to comply with the Industrial Emissions Directive (IED)'s hourly maximum Emission Limit Value (ELV) of 100 mg/Nm^3. NO_X has been modelled at the upper end of the daily BAT-AEL range for daily average impacts and at the upper end of the hourly IED ELV range for hourly average impacts but at a yearly emission level lower than the upper end of the BAT-AEL range for annual average impacts, as provided by the FEED contractors. It is considered that this represents the worst-case NO_X emissions; in practice the emission is likely to be lower than these concentrations, as it is desirable to reduce the NO_X emissions entering the inlet of the CCP.

1.3.25 A NOx abatement system such as Selective Catalytic Reduction (SCR) may be required to achieve the required NOx emission on inlet to the CCP. SCR reduces NO_X concentrations by spraying ammonia into the flue gas and therefore has the potential to result in 'ammonia slip' with a resulting emission of NH_3. Emissions of NH_3 have therefore also been included in the assessment.

1.3.26 In addition, depending on the amine solution used, ammonia can result as a degradation product during the carbon capture process itself. As there is uncertainty in the level of potential ammonia emission, the design for the CCP may include provision for an acid wash to remove ammonia from the absorber stack gas, if required. Emissions of NH_3 have therefore been assessed at a concentration considered to be achievable through the use of acid wash abatement (0.75 - 1 mg/Nm^3).

1.3.27 Depending on the final CCGT design and solvent selection, acid wash may not be required to control ammonia emissions from the CCP. Alternatively, other design parameters may be applied so that the impacts associated with any ammonia emission are acceptable at ecological receptors (such as additional reheat).

1.3.28 The carbon capture process would utilise a proprietary amine solvent to remove the carbon dioxide from the combustion emission. Emissions of 'amine slip' can therefore also result.

1.3.29 Each licensor's proprietary amine solution (i.e. FEED 1 and FEED 2) contains a different mix of amines. The results below are based on data provided by the FEED contractor for each solution.

1.3.30 It is also known that amines degrade into nitrosamines and nitramines (collectively referred to as N-amines) both within the carbon capture process itself and also in the environment following release, and therefore this has also been considered in the assessment. Depending on the amine solvent, other degradation products, such as acetaldehyde, formaldehyde and ketones may be formed. Formaldehyde has been included as a representative degradation product.

1.3.31 Due to the complexity of the N-amines atmospheric degradation processes that occur following release, the assessment of N-amines is described in **Annex A**.

Table 3: Pollutant Emission Limits

Emission Source	Pollutant	Annual Average Emissions		Short Term Emissions (where applicable)	
		Emission Concentration (mg/Nm^3)	Release Rate (g/s)	Emission Concentration (mg/Nm^3)	Release Rate (g/s)
HRSG (per stack)	NOx	30	33.9	40 (daily) 100 (hourly)	45.2 113.1
	CO	-	-	200 (hourly)	226.2
	NH_3	1	1.13	-	-
Single Absorber (per stack) – Feed 1	NOx	11.3	7.9	45.2 (daily) 113.0 (hourly)	31.6 79.1
	CO	-	-	226 (hourly)	158.2
	NH_3	1	0.7	-	-
	Amine 1	0.99	0.693	-	-
	Amine 2	0.01	0.007	-	-
	Nitrosamine 2	0.00495	0.0035	-	-
	Nitramine 1	0.0000495	0.000035	-	-
	Nitramine 2	0.0000005	0.00000035	-	-
	Formaldehyde	2.0	1.40	-	-
Single Absorber (per stack) – Feed 2	NOx	11.3	11.3	45.2 (daily) 113.0 (hourly)	45.3 113.4
	CO	-	-	226 (hourly)	226.7
	NH_3	0.75	0.75	-	-

Emission Source	Pollutant	Annual Average Emissions		Short Term Emissions (where applicable)	
		Emission Concentration (mg/Nm^3)	Release Rate (g/s)	Emission Concentration (mg/Nm^3)	Release Rate (g/s)
	Amine 1	0.2030	0.204	-	-
	Amine 2	0.0576	0.058	-	-
	Nitrosamine 1	0.0028	0.00285	-	-
	Nitrosamine 2	0.0005	0.00051	-	-
	Formaldehyde	0.13	0.13	-	-
Existing GT (per stack)	NOx	40	21.9	100	54.7
	CO	-	-	60	32.8
	SO_2	3.9	2.1	-	-

Modelled Domain and Discrete Receptors

Human Health Receptors

1.3.32 The modelling has predicted concentrations of the pollutants relevant to human health at the maximum location anywhere within the modelled area and at discrete air quality sensitive receptors, as listed in **Table 4.** The significance of impacts is discussed further in **Chapter 8: Air Quality** (**EN010166/APP/6.2.8**). The locations of these receptors are also shown in **Figure 8-2: Operational Phase Assessment – Air Quality Study Area and Human Health Receptors** (**EN010166/APP/6.3**). The receptors are selected to be representative of residential dwellings and schools in the area around the Proposed Developments.

1.3.33 **Table 4** shows the minimum distance of each receptor to the Proposed Development's stacks.

Table 4: Human Health Receptor Locations

Receptor ID	Grid Reference X	Grid Reference Y	Receptor Description	Minimum Distance from the Proposed Developments' Stacks (m)
R1	327170	371241	Kelsterton Road, Rockcliffe, Flint, Connah's Quay, Flintshire, Wales, CH6 5SJ	220
R2	327152	371210	Chester Road, Oakenholt, Flint, Connah's Quay, Flintshire, Wales, CH6 5SJ	260
R3	326749	371070	Chester Road, Oakenholt, Flint, Connah's Quay, CH6 5SF	660
R4	327557	370826	Kelsterton Road, Rockcliffe, Connah's Quay, Flintshire, Wales, CH6 5TH	490
R5	327880	370743	Kelsterton Road, Rockcliffe, Connah's Quay, Flintshire, Wales, CH5 4BJ	700
R6	327972	370700	Connah's Quay, CH5 4BL	790
R7	328024	370545	Deeside College, York Road, Golftyn, Connah's Quay, CH5 4YE	950

Receptor ID	Grid Reference X	Grid Reference Y	Receptor Description	Minimum Distance from the Proposed Developments' Stacks (m)
R8	326371	371298	Papermill Lane, Oakenholt, Flint, CH6 5TD	950
R9	326452	370953	Oakenholt Lane, Oakenholt, Flint, CH6 5SX	970
R10	326048	371070	Leaderbrook Drive, Oakenholt, Flint, CH6 5ST	1,310
R11	325943	371334	Leaderbrook Drive, Oakenholt, Flint, CH6 5ST	1,370
R12	325928	371585	Leaderbrook Drive, Oakenholt, Flint, CH6 5ST	1,390
R13	325967	371792	Leaderbrook Drive, Oakenholt, Flint, CH6 5ST,	1,390
R14	325966	371823	Chester Road, Oakenholt, Flint, Flintshire, Wales, CH6 5WF	1,400
R15	328454	370344	Church Street, Golftyn, Connah's Quay,	1,380

Receptor ID	Grid Reference X	Grid Reference Y	Receptor Description	Minimum Distance from the Proposed Developments' Stacks (m)
			Flintshire, Wales, CH5 4AS	
R16	328381	370167	College View, Connah's Quay, CH5 4BY	1,460
R17	328213	370061	Golftyn Lane, Connah's Quay, Flintshire, Wales, CH5 4DT,	1,450
R18	328026	370163	Connah's Quay High School, Golftyn Lane, Connah's Quay, CH5 4BH	1,270
R19	327314	369848	Top-y-fron Hall, Kelsterton Lane, Connah's Quay, Northop Hall, Flintshire, Wales, CH6 5TF	1,460
R20	326567	369690	Oakenholt Lane, Rockcliffe, Connah's Quay, Northop Hall, CH6 5SU	1,840
R21	328609	369883	Golftyn Primary School, York Rd, Connah's Quay, Deeside CH5 4XA	1,830
R22	328824	370107	Church Street, Golftyn, Connah's Quay, Flintshire, Wales, CH5 4AQ	1,820

Receptor ID	Grid Reference X	Grid Reference Y	Receptor Description	Minimum Distance from the Proposed Developments' Stacks (m)
R23	328830	370114	Church Street, Golftyn, Connah's Quay, Flintshire, Wales, CH5 4AQ	1,820
R24	329067	369895	St Mark's Parish Church, Church Hill, Golftyn, Connah's Quay, CH5 4AD	2,140
R25	328941	369539	Bryn Deva C.P. School, Linden Avenue, Golftyn, Connah's Quay, CH5 4SN	2,300
R26	328634	369331	Lon Dderwen, Connah's Quay, Deeside CH5 4WG	2,300
R27	325516	372175	St David's, Croes Attilla, Flint, CH6 5SP	1,950
R28	324919	372091	St Richard Gwyn Roman Catholic High School, Albert Avenue, Flint, CH6 5JZ	2,480
R29	324990	372645	Ysgol Gymraeg Croes Atti, Chester Road, Flint, CH6 5DU	2,620
R30	324385	371941	Ysgol Maes Hyfryd, Maes Hyfryd, Flint, CH6 5LN	2,970

Receptor ID	Grid Reference X	Grid Reference Y	Receptor Description	Minimum Distance from the Proposed Developments' Stacks (m)
R31	324516	372532	Gwynedd County Primary School, Ysgol Pen Coch, Maes-y-Dre Avenue, Flint, CH6 5JT	3,010
R32	324546	373323	Lloyd Street, Flint, CH6 5PD	3,350
R33	324186	370145	St Thomas's Church, St Thomas's Court, Flint, Flint Mountain, CH6 5SL	3,370
R34	329678	369534	High Street, Golftyn, Connah's Quay, Flintshire, Wales, CH5 4DJ	2,840
R35	329955	369652	Dock Road, Connah's Quay, CH5 4EF	2,990
R36	329953	369351	High Street, Golftyn, Connah's Quay, Flintshire, Wales, CH5 4DJ	3,170
R37	329600	369081	Mold Road, Connah's Quay, Flintshire, Wales, CH5 4QN	3,090
R38	329128	368936	Cranbrook Close, Connah's Quay, CH5 4JY	2,900

Receptor ID	Grid Reference X	Grid Reference Y	Receptor Description	Minimum Distance from the Proposed Developments' Stacks (m)
R39	328165	368716	Mold Road, Connah's Quay, CH5 4QN	2,680
R40	330375	368913	Christ Church Deeside, Victoria Road, Shotton, CH5 1ES	3,770
R41	330528	367801	Deeside Community Hospital, Plough Lane, Aston, Deeside CH5 1XS	4,660
R42	332295	369161	Farm Road, Garden City, CH5 2HJ	5,270
R43	331087	366723	Overlea Drive, Deeside CH5 3HS	5,840
R44	331149	373884	Greenwood Farm, Unnamed Road, Neston CH64 5SH	4,410

Ecological Receptors

1.3.34 In accordance with the Risk Assessment methodology (Ref 2) adopted by NRW, the impacts associated with emissions from the Proposed Development on statutory sensitive ecological sites have been quantified. The assessment considers European designated sites (SACs, SPAs and Ramsar sites) and SSSIs within 15km of the operational Proposed Development, as recommended by the NRW risk assessment guidance for "large emitters".

1.3.35 In additional, Local Wildlife Sites (LWS) within 2 km of Main Development Area have also been included in the assessment.

1.3.36 Ground-level concentrations of the modelled pollutants relevant to sensitive ecological receptors have been predicted at locations listed in **Table 5**. The locations of these receptors are also shown in **Figure 8-3: Operational Phase Assessment – Air Quality Study Area and Ecological Receptors** (**EN010166/APP/6.3**). The distance reported for each ecology site is to either of the Proposed Development stack(s), whichever is the closest, is taken to be representative of the worst-case location. (OE labels are applied to Operational Phase – Ecological Receptors).

Table 5: Ecological Receptor Locations

Receptor ID	Ecological Site	Designation	OS Grid Coordinate*		Distance from the Proposed Developments' Stacks (m)
			X	Y	
OE01	Heswall Dales	Site of Special Scientific Interest (SSSI)	326127	381815	10,400
OE02	Dee Estuary	Ramsar, Special Area of Conservation (SAC), Special Protection Area (SPA) and SSSI	Varied	Varied	Varied
OE03	The Dungeon	SSSI	325074	383034	11,770
OE04	Thurstaston Common	SSSI	324893	384379	13,130
OE05	Dibbinsdale	SSSI	332304	380953	10,690
OE06	Mersey Estuary	Ramsar, SPA, SSSI	337932	379707	13,340
OE07	New Ferry	SSSI	335477	384176	15,070
OE08	Hallwood Farm Marl Pit	SSSI	334355	375893	8,190
OE09	Inner Marsh Farm	SSSI	330718	372980	3,580
OE10	River Dee and Bala Lake	SAC, SSSI	328755	371000	1,300
OE11	Connah's Quay Ponds and Woodland	SSSI	328955	368680	3,020
OE12	Maes y Grug	SSSI	326031	366762	4,760

Receptor ID	Ecological Site	Designation	OS Grid Coordinate*		Distance from the Proposed Developments' Stacks (m)
			X	Y	
OE13	Deeside and Buckley Newt sites	SAC, SSSI	329081	365705	5,830
OE14	Coed Talon Marsh	SSSI	327012	358683	12,630
OE15	Bryn Alyn	SSSI	320410	359418	13,820
OE16	Cambrian Quarry	SSSI	321432	362367	10,780
OE17	Alyn Valley Woods and Alyn Gorge Caves	SAC, SSSI	319797	366391	9,040
OE18	Halkyn Mountain	SAC. SSSI	318259	376351	10,310
OE19	Pen-y-Cefn Pasture	SSSI	318909	366514	9,730
OE20	Cefn Meadow	SSSI	318929	366042	9,950
OE21	Coed Trefraith	SSSI	313639	372797	13,740
OE22	Ddol Uchaf	SSSI	314317	371354	12,990
OE23	Caerwys Tufa	SSSI	313035	371844	14,280
OE24	Tyddyn-y-barcut	SSSI	319073	367525	9,110
OE25	Parc Bodlondeb and Gwenallt-parc	SSSI	317876	370857	9,450
OE26	Parc Linden, Lixwm	SSSI	318383	371925	8,940
OE27	Flint Mountain	SSSI	324875	371560	2,440
OE28	Herward Smithy	SSSI	319855	373980	7,880
OE29	Shotton Lagoons and Reedbeds	SSSI	329515	371040	2,030

Receptor ID	Ecological Site	Designation	OS Grid Coordinate*		Distance from the Proposed Developments' Stacks (m)
			X	Y	
OE30	Local Ancient Woodlands	Ancient Woodland (LWS)	329795	368480	3,670

*Point of maximum long-term impact within each site

Model Domain – Receptor Grid

1.3.37 Emissions from the Proposed Development' stacks have been modelled on a nested receptor grid that is 20 km by 20 km centered on the Proposed Development's absorber stacks. The nested grid spacing is 40 m for the first 3 km square, 100 m up to 4 km and 500 m up to 20 km, which is considered appropriate for the height of the stacks included in the assessment.

1.3.38 In addition, the receptors detailed in **Table 4** have been included as specified points within the model and therefore the predicted PCs at these locations are unaffected by grid spacing.

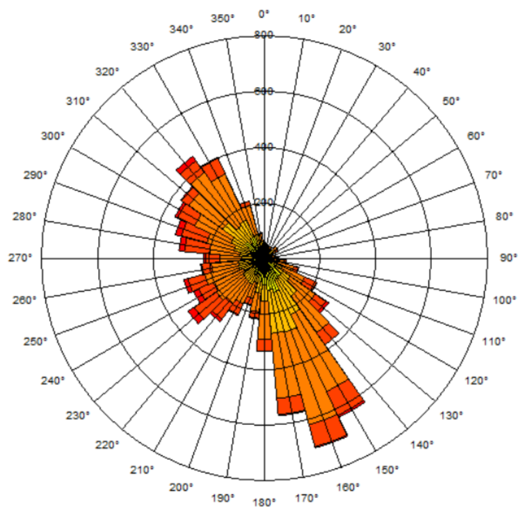
Meteorological Data

1.3.39 Actual measured hourly-sequential meteorological data is available for input into dispersion models, and it is important to select data as representative as possible for the site that will be modelled. This is usually achieved by selecting a meteorological station as close to the site as possible, although other stations may be used if the local terrain and conditions vary considerably, or if the station does not provide sufficient data.

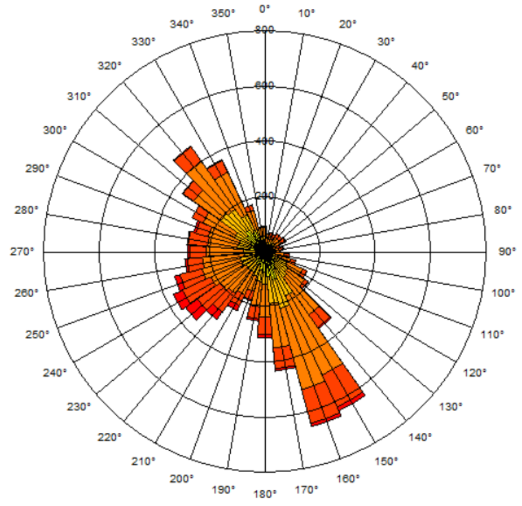
1.3.40 The meteorological site selected for the assessment is Hawarden Airport, located approximately 9 km south-east of the centre of the Main Development Area, at a flat airfield in a principally agricultural area. A surface roughness of 0.3 m (representative of an agricultural area) has been selected for the meteorological site within the model.

1.3.41 The modelling for this assessment has utilised 5 years of meteorological data for the period 2019 – 2023. Wind roses for each of the years within this period are shown in **Plate 1**.

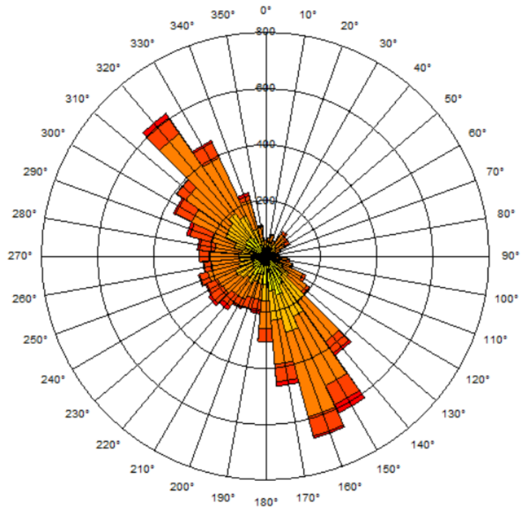
2019



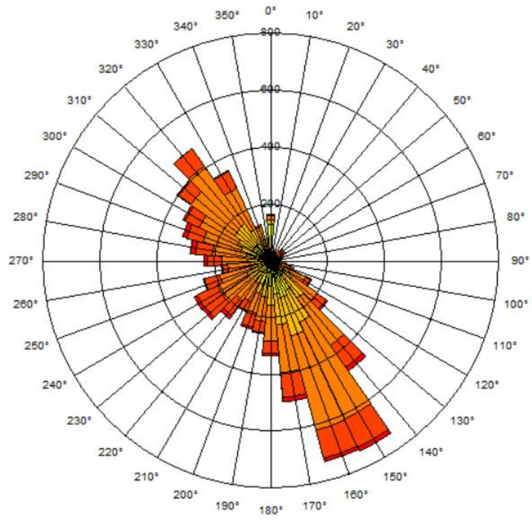
2020



2021



2022



2023

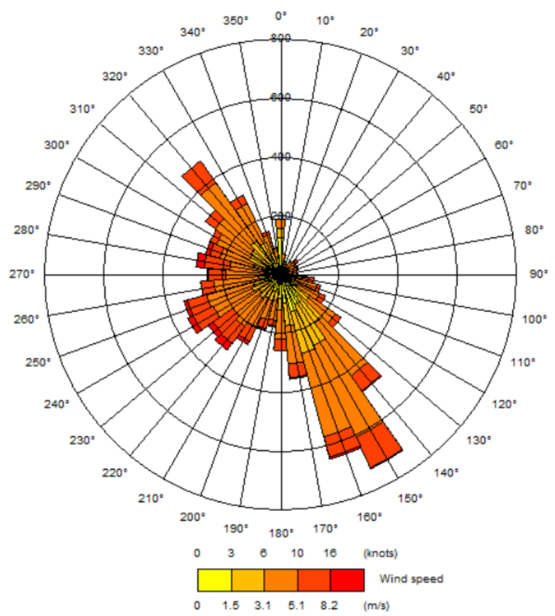


Plate 1: Hawarden 2019-2023 Wind Rose

Building Downwash Effects

1.3.42 The existing Connah's Quay Power Station buildings, and those that make up the Proposed Development, have the potential to affect the dispersion of emissions from the stacks assessed. The ADMS buildings effect module has therefore been used to incorporate building downwash effects as part of the model set up. Buildings greater than one-third of the height of the stack height modelled have been included within the modelling assessment.

1.3.43 Buildings associated with the Proposed Development that have been considered to be of sufficient height and volume to potentially impact on the dispersion of emission stacks are shown in **Table 6**. Plans showing the building layout used in the ADMS simulations are illustrated **in Figure 8-4: Air Quality Study Area Modelled Buildings** (**EN010166/APP/6.3**).

Table 6: Modelled Building Parameters

Building	Building Centre (X)	Building Centre (Y)	Height (m)	Length (m)	Width (m)	Angle (°)
1F Absorber Stack	327310	371413	92	24	56	34
1E CO_2 Stripper	327288	371527	60	15	15	NA
1C Admin Building	327594	371208	16	106	24	34
1B HRSG	327475	371341	60	193	175	34
1A	327506	371320	50	193	250	34
1Fa	327207	371558	25	134	513	34
1Fb	327205	371447	25	51	391	34
1F Absorber Stack 2	327355	371479	92	24	56	34
Boiler House	327923	371100	37	128	34	215
1E CO_2 Stripper 2	327253	371477	60	15	15	NA

Terrain

1.3.44 The local area immediate to the Main Development Area is predominantly a mix of rural and residential, with the residential area of Connah's Quay to the south-east and Flint to the north-west. Due to the mixed surroundings, a surface roughness of 0.4 m, also used for previous air quality modelling related to the existing Connah's Quay Power Station's permit, has been selected to represent the local terrain.

1.3.45 Site-specific terrain data has not been used in the model, as there are no potentially significant changes in gradient within the study area.

NO_X to NO_2 Conversion

1.3.46 Emissions of NO_X from industrial point sources are typically dominated by nitric oxide (NO), with emissions from combustion sources typically in the ratio of NO to NO_2 of 9:1. However, it is NO_2 that has specified environmental standards due to its potential impact on human health. In ambient air, NO is oxidised to NO_2 by the ozone present, and the rate of oxidation is dependent on the relative concentrations of NO and ozone in the ambient air.

1.3.47 For the purposes of detailed modelling, and in accordance with the Risk Assessment methodology (Ref 2) adopted by NRW, it is assumed that 70% of NO emitted from the stack is oxidised to NO_2 in the long term and 35% of the emitted NO is oxidised to NO_2 in the local vicinity of the Proposed Development's stacks in the short-term.

Calculation of Deposition at Sensitive Ecological Receptors

1.3.48 The deposition of nutrient nitrogen and acid at sensitive ecological receptors has been calculated using the modelled PCs predicted at the relevant receptor points. The deposition rates are determined using conversion rates and factors contained within published guidance (Ref 22), which takes into account variations in the deposition mechanisms for different types of habitat.

1.3.49 The conversion rates and factors used in the assessment are shown in **Table 7**.

Table 7: Deposition Conversion Rates for Ecological Receptors

Pollutant	Deposition Velocity Grasslands (m/s)	Deposition Velocity Woodlands (m/s)	Deposition Conversion Factors	
			Nutrient Nitrogen (µg/m^2/s to kgN/ha/yr)	Acid (µg/m^2/s to keq/ha/yr)
NOx as NO_2	0.0015	0.003	95.9	6.84
NH_3	0.02	0.03	259.7	18.5
SO_2	0.012	0.024	-	9.84
Amine 1 – FEED 1	0.02	0.03	49.6	3.5
Amine 2 – FEED 1	0.02	0.03	102.7	7.3
Amine 1 – FEED 2	0.02	0.03	67.9	4.8
Amine 2 – FEED 2	0.02	0.03	102.7	7.3
Nitrosamine 1 – FEED1	0.02	0.03	74.8	5.35
Nitrosamine 2 – FEED 1	0.02	0.03	115.2	8.23
Nitrosamine 1 – FEED 2	0.02	0.03	83.3	5.9
Nitrosamine 2 – FEED 2	0.02	0.03	115.2	8.2
Nitramine 1 – FEED 1	0.02	0.03	65.9	4.7
Nitramine 2 – FEED 1	0.02	0.03	101.1	7.2
Nitramine 1 – FEED 2	0.02	0.03	75.7	5.4
Nitramine 2 – FEED 2	0.02	0.03	101.1	7.2
Amine 3*	0.02	0.03	72.3	5.2
Amine 4*	0.02	0.03	97.9	7.0

Pollutant	Deposition Velocity Grasslands (m/s)	Deposition Velocity Woodlands (m/s)	Deposition Conversion Factors	
			Nutrient Nitrogen (µg/m^2/s to kgN/ha/yr)	Acid (µg/m^2/s to keq/ha/yr)
Amine 5*	0.02	0.03	97.9	7.0

*These amines are associated with emissions from Padeswood Cement, one of the developments considered in the cumulative assessment, as described in **Annex D**.

1.3.50 For the purpose of assessment, the deposition velocity of amine species has been assumed to be equivalent to that of NH_3, as recommended in the AQMAU guidance (Ref 8).

1.3.51 For amine species, the factors to convert dry deposition flux (µg/m^2/s) to nutrient nitrogen deposition (kgN/ha/yr) have been estimated using the nitrogen (N) available for deposition within the pollutant molecule (i.e., nitrogen atomic weight, 14, multiplied by the number of nitrogen atoms in the molecular formula, divided by the species molecular weight). The factors to convert dry deposition flux (µg/m^2/s) from to acid deposition (keq/ha/yr) has been estimated by dividing the nutrient nitrogen deposition by the nitrogen atomic weight.

Specialised Model Treatments

1.3.52 Specialised Model Treatments have been used to assess amine and amine degradation products impacts. This includes the amine chemistry module and the dry deposition option in ADMS, as detailed in **Annex A**.

Environmental Assessment Levels (EALs)

1.3.53 Whilst there are well established Environmental Assessment Levels (EALs) for NO_2, CO and NH_3, the suite of EALs relating to amines and amine degradation products (nitrosamines and nitramines, collectively N-Amines and formaldehyde) is much more limited. Previsouly the Risk Assessment Guidance (Ref 2) only included EALs for mono-ethanolamine (MEA) and N-nitrosodimethylamine (NDMA). The UK regulators have recently consulted on EALs for a wider range of amines and one additional nitrosamine. Following this consultation, EALs have been published in the risk assessment guidance for an additional five amine species and one additional nitrosamine species on 21 July 2025.

1.3.54 The FEED contractors have assisted in identifying appropriate EALs by providing information on the direct amine species which would be emitted from the process via the absorber stacks or formed in the atmosphere following emissions. The EALs applied have been derived from experimental data relating to the potential health impacts of the species emitted and/or read across from such data relating to species with published EALs which would be expected to have similar impacts based on structural or other similarity.

1.3.55 For nitrosamines and nitramines impacts have been assessed against the EAL for NDMA for all species. Based on the existing literature, NDMA is known to be one of the most toxic nitrosamine species and studies suggest that nitramines are substantially less toxic than their corresponding nitrosamines (Ref 25). As such, the use of the NDMA EAL is considered to represent a highly conservative assumption for the nitrosamine and nitramine species anticipated to be emitted or formed in the atmosphere from the FEED contractors' technologies.

1.3.56 The impacts of the individual amine species have been assessed against their respective EALs. For cumulative impacts, all direct amines emissions from the Proposed Development and other cumulative sources have been added together and assessed against the MEA EAL. This represents a conservative assumption as it is not established that the impacts of different amines would be cumulative. Similarly the cumulative impacts of N-amine species have also been assessed against the EAL for NDMA.

Table 8: Adopted Air Quality Assessment Level– Protection of Human Health

Pollutant	Source	Concentration ($\mu g/m^3$)	Measured As
Nitrogen Dioxide (NO_2)	National Air Quality Strategy Objectives	40	Annual mean
		200	1-hour mean, not to be exceeded more than 18 times a year
Particulate Matter (PM_{10})	National Air Quality Strategy Objectives	40	Annual mean
		50	24-hour mean, not to be exceeded more than 35 times a year
Particulate Matter ($PM_{2.5}$)	National Air Quality Strategy Objectives	20	Annual mean
Carbon Monoxide (CO)	National Air Quality Strategy Objectives	10,000	Maximum daily running 8-hour mean
CO	Risk Assessment Guidance (Ref 2) adopted by NRW	30,000	Hourly mean
NH_3	Risk Assessment Guidance (Ref 2) adopted by NRW	180	Annual Mean
		2,500	Hourly mean
Amines (as MEA)	Risk Assessment Guidance (Ref 2) adopted by NRW	400	Hourly mean
		100	24-hour mean
FEED 1 - Amine 1	Risk Assessment Guidance (Ref 2) adopted by NRW	400	Hourly Mean
		100	24-hour mean
FEED 1 - Amine 2	Risk Assessment Guidance (Ref	15	24-hour mean

Pollutant	Source	Concentration (µg/m³)	Measured As
	2) adopted by NRW		
FEED 2 – Amine 1	Risk Assessment Guidance (Ref 2) adopted by NRW	400	Hourly Mean
		100	24-hour mean
FEED 2 – Amine 2	Risk Assessment Guidance (Ref 2) adopted by NRW	15	24-hour mean
N-amines (as NDMA) Applied to: FEED1 - Nitrosamine 1 FEED1 - Nitrosamine 2 FEED1 - Nitramine 1 FEED1 - Nitramine 2 FEED2 - Nitrosamine 1 FEED2 - Nitrosamine 2 FEED 2 - Nitramine 1 FEED 2 - Nitramine 2	Risk Assessment Guidance (Ref 2) adopted by NRW	0.2 (ng/m^3)	Annual Mean
Formaldehyde	Risk Assessment Guidance (Ref 2) adopted by NRW	100	30 Minute Mean
		5	Annual Mean

Table 9: Adopted Air Quality Assessment Level - 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
	UK Target Value	3	Annual Mean

Assessment Limitations and Assumptions

1.3.57 The greatest uncertainty associated with any dispersion modelling assessment arises through the inherent uncertainty of the dispersion modelling process itself. As discussed below, the impact of this uncertainty can be mitigated by establishing a series of worst-case assumptions and the use of dispersion modelling is a widely applied and accepted approach for the prediction of impacts from industrial sources.

1.3.58 In order to minimise the likelihood of under-estimating the PC to ground level concentrations from the Proposed Development's stacks, the following conservative assumptions have been made within the assessment:

- the operational Proposed Development has been assumed to operate on a continuous basis i.e. for 8,760 hour per year, although in practice there would be periods when the plant is not generating as it would operate in a dispatchable manner, with a load factor significantly lower and the plant would require routine maintenance periods;
- the modelling predictions are based on the use of five full years of meteorological data from Hawarden Airport meteorological station for the years 2019 to 2023 inclusive, with the highest result being reported for all years assessed; and,
- emission concentrations for the process are calculated based on the use of BAT-AEL concentrations, Environmental Permit Emission Limit Values or licensor maximum envisaged emission concentrations; in practice annual average rates would be below these values to enable continued compliance with Environmental Permit requirements (Ref 4).

1.4 Baseline Air Quality

1.4.1 This section presents the information used to evaluate the background and baseline ambient air quality in the area surrounding the Proposed Development. The following steps have been taken in the determination of background values:

- identification of Air Quality Management Areas (AQMA);
- review of Flintshire County Council (FCC) and project specific ambient monitoring data;
- review of data from Defra's background mapping database; and
- review of ecological receptor background data and site relevant critical loads from the Air Pollution Information System (APIS) website (Ref 24).

1.4.2 Full details on the baseline air quality are provided in **Chapter 8: Air Quality** (**EN010166/APP/6.2.8**) and **Appendix 8-A: Air Quality Baseline Information,** however a summary of the specific background (ambient) data that has been used for the operational assessment is provided in **Table 10**.

Table 10: Background Concentrations

Pollutant	Background Concentration Used at all Receptor Locations ($\mu g/m^3$)	Source of Data
NO_2	6.5	Highest value from background sites measured during the site specific survey
CO	0.249 - 0.301	Defra background mapping from 2001.
NH_3	1.~~6 – ~~2~~.7~~ - 2.0	APIS website 2020 – 2022.
NO_X	4.5 – 11.5	APIS website 2020 – 2022.
N-Deposition (kg N/Ha/Yr)	16.2 - 31.1	APIS website 2020 – 2022.
Acid Deposition (K Neq/Ha/Yr)	0.15 - 0.28	APIS website 2020 – 2022.
Acid Deposition (K Seq/Ha/Yr)	0.69 - 2.13	APIS website 2020 – 2022.
Amines and byproducts	No background data available	

1.4.3 Short-term (hourly) background concentrations have been calculated by multiplying the selected annual mean background concentration by a factor of two, in accordance with the Risk Assessment methodology (Ref 2) adopted by NRW. For daily NO_X impacts, the annual mean has been multiplied by a factor of 2, as advised by NRW during consultation for this the Environmental Statement. This is a conservative assumption.

1.4.4 Data on APIS is only pertinent to statutory ecological sites, however advice from the project ecologists has provided the lowest appropriate critical load for the non-statutory sites included in the assessment.

1.4.5 In order to represent a conservative approach, it has been assumed that background concentrations, particularly of NO_2 and NO_X, would not decrease in future years. Therefore, the current background concentrations have been assumed to apply to the projected opening year of 2036.

1.5 Assessment Results

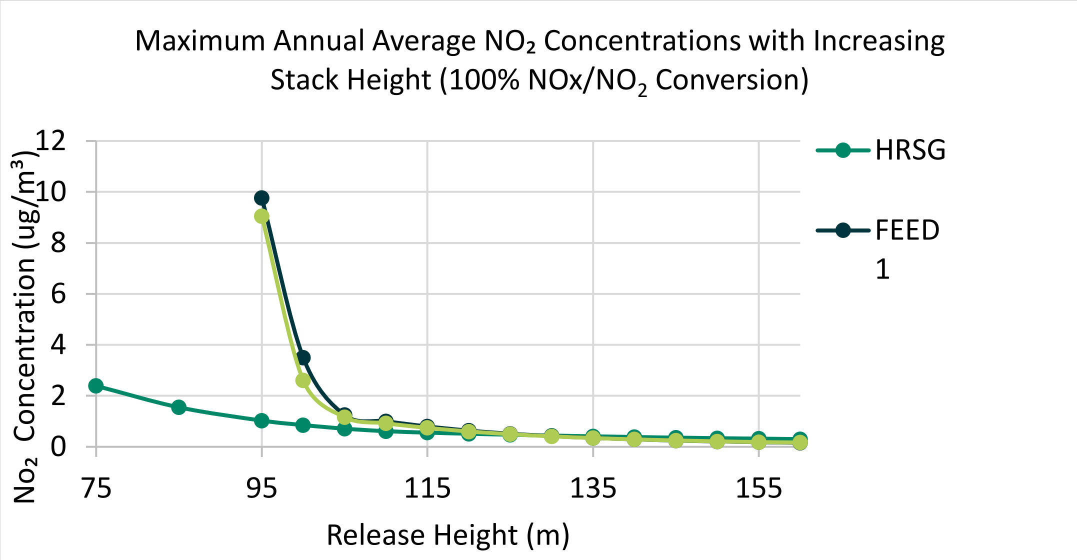
Evaluation of Stack Height

1.5.1 The selection of an appropriate stack release height requires a number of factors to be taken into account, the most important of which is the need to balance a release height sufficient to achieve adequate dispersion of pollutants against other constraints such as the visual impact of tall stacks.

1.5.2 Emissions from each Unabated stack have been modelled at heights between 75 m and 160 m, at 5 m increments, and between 95 m and 160 m for the FEED 1 and FEED 2 stacks. Graphs for the results, showing the predicted ground level concentrations for the annual mean and maximum one hour NO_2 concentrations are presented in **Plate 2**. The purpose of the graphs is to evaluate the optimum release height in terms of the dispersion of pollutants which would occur, against the visual constraints of further increases in release height, with the 'elbow' of the resulting curve showing where the reductions in ground level concentrations become disproportionate to the increasing height.

1.5.3 Analysis of the curves shows that the benefit of incremental increases in release heights of the absorber stacks (as used in the FEED 1 and FEED 2 scenario) after 110 m become less pronounced, but concentrations are still decreasing slowly. Because of the proximity of sensitive ecological habitats, that decrease in concentration is useful to limit impacts on ecosystems, even if the curve flattens. Benefits on air quality from increasing release height further is reduced, with this levelling out after 150 m. A release height of 150 m for the absorber stacks is predicted to provide a sufficient degree of dispersion such that ground level PCs are below the Environment Agency's 1% and 10% screening criteria for long term and short-term impacts respectively.

1.5.4 Analysis of the curves shows that the benefit of incremental increases in release heights of the HRSG stacks in unabated mode after 115 m become less pronounced, but concentrations are still decreasing slowly. Because of the proximity of sensitive ecological habitats, that decrease in concentration is useful to limit impacts on ecosystems, even if the curve flattens. Benefits on air quality from increasing release height further is reduced, with this levelling out after 150 m. A release height of 150 m for the HRSG is predicted to provide a sufficient degree of dispersion such that ground level PCs are below the Environment Agency's 1% and 10% screening criteria for long term and short-term impacts respectively.



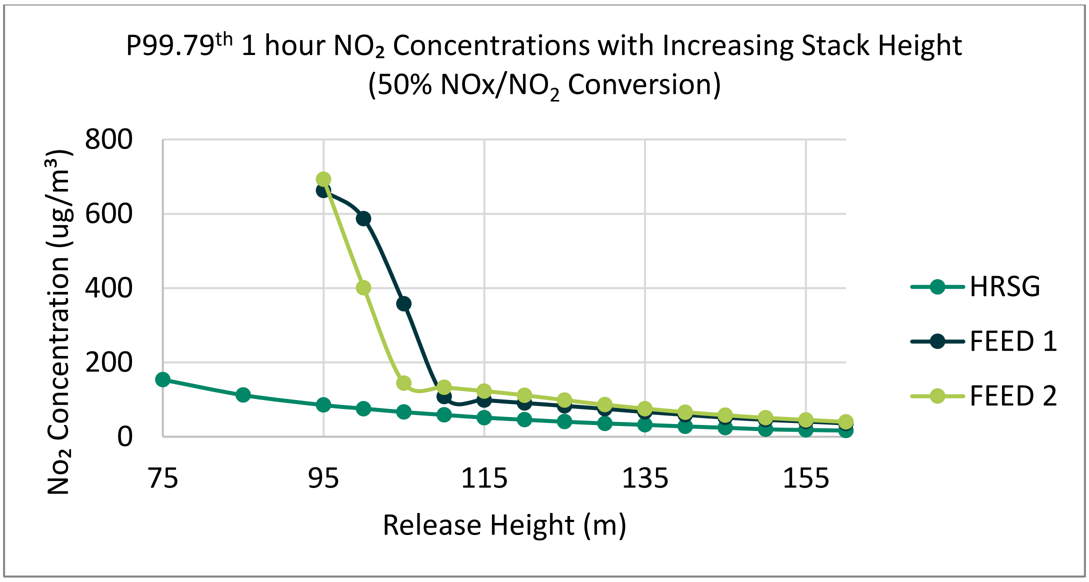


Plate 2: Predicted Maximum Process Contribution to Ground Level NO_2 Concentrations at Stack Release Heights of 75 m to 160 m

Human Health Receptor Results

1.5.5 The impacts of the Proposed Development have been modelled at the emission parameters detailed in **Table 2** and **Table 3**.

1.5.6 Where the concentrations from the Proposed Development PC exceed 1% of the AQALs, results from the change in concentration between the Proposed Development and the existing Connah's Quay Power Station are also presented, if the pollutant of concern was already emitted by the existing Connah's Quay Power Station.

1.5.7 The modelled concentrations have been compared to the AQALs for each pollutant released. Predicted concentrations from road traffic emissions in the operational scenario are presented with the PC contributions. The background concentrations have then been added to the modelled concentrations to determine the Future Year with Proposed Development concentrations, referred to as predicted environmental concentrations (PEC), which are again then compared to the AQAL.

1.5.8 The "Proposed development PC" column shows the concentrations due to contributions from the various proposed stacks (emission points differ between scenarios). The "Road Traffic Emissions PC" column shows the concentrations due to contributions from additional traffic present on local roads because of the operation of the Proposed Development (not relevant for all pollutants). The "PC/AQAL (%)" column shows the total PC (the addition of the previous two columns) divided by the relevant AQAL. The "Background Concentration" column shows the existing background. The "PC from Cumulative Sources" column shows concentrations due to contributions from the cumulative sources as presented in Annex D (not relevant for all pollutants). The "PEC" column shows total concentrations, i.e. total PC, plus background, plus cumulative sources. "PEC/AQAL (%)" column shows the PEC divided by the relevant AQAL.

FEED 1 Scenario

1.5.9 The results at the identified human health receptors for the FEED 1 scenario are shown in **Table 11** to **Table 19**.

Table 11: Predicted Process Contribution Annual Mean NO_2 Concentrations – FEED 1 Scenario

Receptor	Proposed development PC (µg/m³)	Road Traffic Emissions PC (µg/m³)	PC/AQAL (%)	Background Concentration* (µg/m³)	PC from Cumulative Sources (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
R1	<0.1	<0.1	0.1%	7.5	0.1	7.6	18.9%
R2	<0.1	<0.1	0.0%	8.0	0.1	8.1	20.3%
R3	<0.1	<0.1	0.0%	6.5	0.1	6.6	16.4%
R4	<0.1	<0.1	0.0%	7.4	0.1	7.5	18.7%
R5	<0.1	<0.1	0.1%	8.3	0.1	8.4	21.1%
R6	0.1	<0.1	0.2%	8.3	0.1	8.4	21.0%
R7	0.1	<0.1	0.2%	7.1	0.1	7.3	18.1%
R8	<0.1	<0.1	0.1%	6.5	0.1	6.6	16.4%
R9	<0.1	<0.1	0.1%	6.5	0.1	6.6	16.4%
R10	<0.1	<0.1	0.1%	6.5	<0.1	6.6	16.4%
R11	<0.1	<0.1	0.1%	6.5	0.1	6.6	16.4%
R12	<0.1	<0.1	0.1%	6.5	0.1	6.6	16.5%
R13	<0.1	<0.1	0.1%	7.5	0.1	7.6	19.0%
R14	<0.1	<0.1	0.1%	8.9	0.1	9.0	22.5%
R15	0.1	<0.1	0.2%	9.7	0.1	9.9	24.8%
R16	0.1	<0.1	0.3%	7.0	0.1	7.2	17.9%
R17	0.1	<0.1	0.3%	8.5	0.1	8.7	21.8%

Receptor	Proposed development PC (µg/m^3)	Road Traffic Emissions PC (µg/m^3)	PC/AQAL (%)	Background Concentration* (µg/m^3)	PC from Cumulative Sources (µg/m^3)	PEC (µg/m^3)	PEC/AQAL (%)
R18	0.1	<0.1	0.2%	6.5	0.1	6.7	16.7%
R19	<0.1	<0.1	0.0%	7.0	0.1	7.1	17.6%
R20	<0.1	<0.1	0.0%	6.5	<0.1	6.6	16.4%
R21	0.1	<0.1	0.3%	6.5	0.1	6.7	16.8%
R22	0.1	<0.1	0.2%	9.1	0.1	9.3	23.3%
R23	0.1	<0.1	0.2%	9.7	0.1	9.9	24.8%
R24	0.1	<0.1	0.2%	7.3	0.1	7.5	18.7%
R25	0.1	<0.1	0.3%	6.5	0.1	6.7	16.7%
R26	0.1	<0.1	0.3%	6.5	0.1	6.7	16.7%
R27	<0.1	<0.1	0.1%	6.5	0.1	6.6	16.5%
R28	<0.1	<0.1	0.1%	6.5	<0.1	6.6	16.4%
R29	<0.1	<0.1	0.1%	6.5	0.1	6.6	16.5%
R30	<0.1	<0.1	0.1%	6.5	<0.1	6.6	16.4%
R31	<0.1	<0.1	0.1%	6.5	<0.1	6.6	16.4%
R32	<0.1	<0.1	0.1%	6.5	0.1	6.6	16.5%
R33	<0.1	<0.1	0.0%	6.5	<0.1	6.5	16.4%
R34	0.1	<0.1	0.2%	8.7	0.1	8.9	22.2%
R35	0.1	<0.1	0.1%	6.8	0.1	6.9	17.3%

Receptor	Proposed development PC (µg/m³)	Road Traffic Emissions PC (µg/m³)	PC/AQAL (%)	Background Concentration* (µg/m³)	PC from Cumulative Sources (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
R36	0.1	<0.1	0.2%	9.6	0.1	9.8	24.4%
R37	0.1	<0.1	0.2%	8.5	0.1	8.6	21.6%
R38	0.1	<0.1	0.3%	7.5	0.1	7.7	19.2%
R39	<0.1	<0.1	0.1%	7.8	0.1	7.9	19.7%
R40	0.1	<0.1	0.2%	6.6	0.1	6.8	17.0%
R41	0.1	<0.1	0.2%	6.5	0.1	6.7	16.7%
R42	<0.1	<0.1	0.1%	6.5	1.2	7.8	19.5%
R43	0.1	<0.1	0.2%	6.5	0.1	6.6	16.6%
R44	0.1	<0.1	0.1%	6.5	0.3	6.8	17.1%
R3_Cement	<0.1	<0.1	0.0%	6.5	<0.1	6.5	16.4%
R6_Cement	<0.1	<0.1	0.0%	6.5	<0.1	6.5	16.4%
1_ICT	<0.1	<0.1	0.1%	6.5	0.7	7.2	18.0%
9_ICT	<0.1	<0.1	0.1%	6.5	1.8	8.4	20.9%
Maximum	0.1	<0.1	0.4%	6.5	0.1	6.7	16.8%

AQAL 40 µg/m³

*For receptors sensitive to emissions from the Proposed Development and road traffic, background concentrations include the predicted road traffic emissions from the do-minimum scenario.

Table 12: Predicted Process Contribution 1-hour Mean 99.79th Percentile NO_2 Concentrations – FEED 1 Scenario

Receptor	Proposed development PC (µg/m^3)	Road Traffic Emissions PC (µg/m^3)	PC/AQAL (%)	Background Concentration (µg/m^3) *	PC from Cumulative Sources (µg/m^3)	PEC (µg/m^3)	PEC/AQAL (%)
R1	0.1	0.1	0.1%	15.0	1.6	16.7	8.4%
R2	0.2	<0.1	0.1%	16.1	1.5	17.8	8.9%
R3	3.9	<0.1	1.9%	13.0	0.6	17.5	8.8%
R4	5.1	<0.1	2.6%	14.8	<0.1	20.0	10.0%
R5	10.6	<0.1	5.3%	16.7	<0.1	27.4	13.7%
R6	11.6	<0.1	5.8%	16.6	<0.1	28.2	14.1%
R7	14.3	<0.1	7.2%	14.2	<0.1	28.5	14.3%
R8	15.2	<0.1	7.6%	13.0	0.5	28.7	14.4%
R9	13.5	<0.1	6.8%	13.0	0.3	26.8	13.4%
R10	17.6	<0.1	8.8%	13.0	0.2	30.7	15.4%
R11	18.0	<0.1	9.0%	13.0	0.4	31.5	15.7%
R12	19.1	<0.1	9.6%	13.0	0.5	32.7	16.3%
R13	15.1	<0.1	7.6%	15.0	0.5	30.7	15.3%
R14	14.6	<0.1	7.3%	18.0	0.6	33.2	16.6%
R15	13.9	<0.1	6.9%	19.6	<0.1	33.5	16.8%
R16	15.3	<0.1	7.6%	13.9	<0.1	29.2	14.6%
R17	16.1	<0.1	8.1%	17.1	<0.1	33.3	16.6%

Receptor	Proposed development PC (µg/m³)	Road Traffic Emissions PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³) *	PC from Cumulative Sources (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
R18	17.3	<0.1	8.6%	13.0	<0.1	30.3	15.1%
R19	9.9	<0.1	4.9%	13.9	<0.1	23.8	11.9%
R20	11.2	<0.1	5.6%	13.0	<0.1	24.2	12.1%
R21	14.0	<0.1	7.0%	13.0	<0.1	27.0	13.5%
R22	12.9	<0.1	6.5%	18.4	<0.1	31.3	15.7%
R23	12.8	<0.1	6.4%	19.6	<0.1	32.5	16.2%
R24	11.9	<0.1	5.9%	14.6	<0.1	26.5	13.2%
R25	12.2	<0.1	6.1%	13.0	<0.1	25.2	12.6%
R26	12.1	<0.1	6.0%	13.0	<0.1	25.1	12.5%
R27	12.6	<0.1	6.3%	13.0	0.2	25.8	12.9%
R28	11.5	<0.1	5.8%	13.0	0.4	25.0	12.5%
R29	10.8	<0.1	5.4%	13.0	0.5	24.3	12.1%
R30	10.1	<0.1	5.1%	13.0	0.5	23.6	11.8%
R31	9.7	<0.1	4.8%	13.0	0.3	23.0	11.5%
R32	9.7	<0.1	4.8%	13.0	0.3	23.0	11.5%
R33	8.5	<0.1	4.3%	13.0	0.3	21.9	10.9%
R34	9.9	<0.1	5.0%	17.5	<0.1	27.5	13.7%
R35	9.3	<0.1	4.6%	13.5	<0.1	22.8	11.4%

Receptor	Proposed development PC (µg/m³)	Road Traffic Emissions PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³) *	PC from Cumulative Sources (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
R36	9.2	<0.1	4.6%	19.3	<0.1	28.6	14.3%
R37	10.0	<0.1	5.0%	17.0	<0.1	27.0	13.5%
R38	10.7	<0.1	5.3%	15.0	<0.1	25.7	12.8%
R39	10.8	<0.1	5.4%	15.6	<0.1	26.3	13.2%
R40	8.4	<0.1	4.2%	13.2	<0.1	21.7	10.8%
R41	10.7	<0.1	5.3%	13.0	<0.1	23.7	11.9%
R42	8.6	<0.1	4.3%	13.0	1.4	23.0	11.5%
R43	10.3	<0.1	5.2%	13.0	0.1	23.4	11.7%
R44	7.7	<0.1	3.8%	13.0	<0.1	20.7	10.3%
R3_Cement	6.6	<0.1	3.3%	13.0	0.1	19.6	9.8%
R6_Cement	6.7	<0.1	3.4%	13.0	0.1	19.8	9.9%
1_ICT	8.6	<0.1	4.3%	13.0	0.1	21.7	10.9%
9_ICT	8.0	<0.1	4.0%	13.0	7.6	28.6	14.3%
Max	31.9	<0.1	15.9%	13.0	<0.1	44.9	22.4%

AQAL 200 µg/m³

*For receptors sensitive to emissions from the Proposed Development and road traffic, background concentrations include the predicted road traffic emissions from the do-minimum scenario.

Table 13: Predicted Process Contribution 8-hour Rolling Maximum CO Concentrations – FEED 1 Scenario

Receptor	Proposed development PC (mg/m^3)	PC/AQAL (%)	Background Concentration (mg/m^3)	PEC (mg/m^3)	PEC/AQAL (%)
R1	<0.1	<0.1%	0.6	0.6	6.0%
R2	<0.1	<0.1%	0.6	0.6	6.0%
R3	<0.1	0.5%	0.5	0.6	5.5%
R4	0.1	0.6%	0.5	0.6	5.7%
R5	0.1	0.7%	0.5	0.6	5.8%
R6	0.1	0.7%	0.5	0.6	5.7%
R7	0.1	0.8%	0.5	0.6	5.8%
R8	0.1	0.7%	0.5	0.6	5.7%
R9	0.1	0.9%	0.5	0.6	6.0%
R10	0.1	0.8%	0.5	0.6	6.0%
R11	0.1	0.6%	0.5	0.6	5.8%
R12	0.1	0.8%	0.5	0.6	5.9%
R13	0.1	0.7%	0.5	0.6	5.9%
R14	0.1	0.7%	0.5	0.6	6.0%
R15	0.1	0.7%	0.5	0.6	5.9%
R16	0.1	0.8%	0.5	0.6	6.1%
R17	0.1	0.8%	0.5	0.6	5.8%
R18	0.1	1.0%	0.5	0.6	6.0%

Receptor	Proposed development PC (mg/m³)	PC/AQAL (%)	Background Concentration (mg/m³)	PEC (mg/m³)	PEC/AQAL (%)
R19	<0.1	0.3%	0.6	0.6	5.9%
R20	0.1	0.7%	0.6	0.6	6.2%
R21	0.1	0.7%	0.5	0.6	5.7%
R22	0.1	0.6%	0.6	0.6	6.1%
R23	0.1	0.6%	0.5	0.6	5.8%
R24	0.1	0.6%	0.5	0.6	5.8%
R25	0.1	0.6%	0.5	0.6	5.9%
R26	0.1	0.6%	0.6	0.6	6.2%
R27	0.1	0.6%	0.6	0.6	6.1%
R28	0.1	0.6%	0.6	0.6	6.1%
R29	0.1	0.6%	0.6	0.6	6.5%
R30	<0.1	0.4%	0.5	0.5	5.4%
R31	<0.1	0.4%	0.5	0.5	5.4%
R32	<0.1	0.4%	0.5	0.5	5.4%
R33	<0.1	0.3%	0.5	0.5	5.3%
R34	<0.1	0.4%	0.5	0.6	5.7%
R35	<0.1	0.4%	0.5	0.6	5.7%
R36	<0.1	0.4%	0.5	0.6	5.5%

Receptor	Proposed development PC (mg/m^3)	PC/AQAL (%)	Background Concentration (mg/m^3)	PEC (mg/m^3)	PEC/AQAL (%)
R37	<0.1	0.4%	0.5	0.6	5.6%
R38	<0.1	0.5%	0.5	0.6	5.8%
R39	<0.1	0.4%	0.6	0.6	6.2%
R40	<0.1	0.3%	0.6	0.6	6.3%
R41	<0.1	0.3%	0.6	0.6	6.2%
R42	<0.1	0.3%	0.5	0.5	5.3%
R43	<0.1	0.3%	0.6	0.6	6.3%
R44	<0.1	0.4%	0.5	0.6	5.8%
R3_Cement	<0.1	0.3%	0.5	0.5	5.5%
R6_Cement	<0.1	0.2%	0.5	0.5	5.4%
1_ICT	<0.1	0.3%	0.6	0.6	6.3%
9_ICT	<0.1	0.3%	0.6	0.6	6.3%
Max	0.2	1.6%	0.6	0.8	7.7%

AQAL 10 mg/m^3

Table 14: Predicted Process Contribution 24-hour Maximum Total Amines Concentrations (assessed against MEA AQAL) - FEED 1 Scenario

Receptor	Proposed development PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	PC from Cumulative Sources (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
R1	<0.1	<0.1%	No Data Available	<0.1	<0.1	<0.1%
R2	<0.1	<0.1%		<0.1	<0.1	<0.1%
R3	0.1	0.1%		<0.1	0.1	0.1%
R4	0.1	0.1%		<0.1	0.1	0.1%
R5	0.2	0.2%		<0.1	0.2	0.2%
R6	0.2	0.2%		<0.1	0.2	0.2%
R7	0.2	0.2%		<0.1	0.2	0.2%
R8	0.1	0.1%		<0.1	0.1	0.1%
R9	0.2	0.2%		<0.1	0.2	0.2%
R10	0.2	0.2%		<0.1	0.2	0.2%
R11	0.1	0.1%		<0.1	0.1	0.1%
R12	0.2	0.2%		<0.1	0.2	0.2%
R13	0.2	0.2%		<0.1	0.2	0.2%
R14	0.1	0.1%		<0.1	0.1	0.1%
R15	0.2	0.2%		<0.1	0.2	0.2%
R16	0.2	0.2%		<0.1	0.2	0.2%
R17	0.2	0.2%		<0.1	0.2	0.2%

Receptor	Proposed development PC (µg/m^3)	PC/AQAL (%)	Background Concentration (µg/m^3)	PC from Cumulative Sources (µg/m^3)	PEC (µg/m^3)	PEC/AQAL (%)
R18	0.3	0.3%		<0.1	0.3	0.3%
R19	0.1	0.1%		<0.1	0.1	0.1%
R20	0.1	0.1%		<0.1	0.1	0.1%
R21	0.2	0.2%		<0.1	0.2	0.2%
R22	0.1	0.1%		<0.1	0.1	0.1%
R23	0.1	0.1%		<0.1	0.1	0.1%
R24	0.1	0.1%		<0.1	0.1	0.1%
R25	0.1	0.1%		<0.1	0.1	0.1%
R26	0.1	0.1%		<0.1	0.1	0.1%
R27	0.1	0.1%		<0.1	0.1	0.1%
R28	0.1	0.1%		<0.1	0.1	0.1%
R29	0.1	0.1%		<0.1	0.1	0.1%
R30	0.1	0.1%		<0.1	0.1	0.1%
R31	0.1	0.1%		<0.1	0.1	0.1%
R32	0.1	0.1%		<0.1	0.1	0.1%
R33	0.1	0.1%		<0.1	0.1	0.1%
R34	0.1	0.1%		<0.1	0.1	0.1%
R35	0.1	0.1%		<0.1	0.1	0.1%

Receptor	Proposed development PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	PC from Cumulative Sources (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
R36	0.1	0.1%		<0.1	0.1	0.1%
R37	0.1	0.1%		<0.1	0.1	0.1%
R38	0.1	0.1%		<0.1	0.1	0.1%
R39	0.1	0.1%		<0.1	0.1	0.1%
R40	0.1	0.1%		<0.1	0.1	0.1%
R41	0.1	0.1%		<0.1	0.1	0.1%
R42	0.1	0.1%		<0.1	0.1	0.1%
R43	0.1	0.1%		<0.1	0.1	0.1%
R44	0.1	0.1%		<0.1	0.1	0.1%
R3_Cement	<0.1	<0.1%		<0.1	0.0	0.0%
R6_Cement	0.1	0.1%		<0.1	0.1	0.1%
1_ICT	0.1	0.1%		<0.1	0.1	0.1%
9_ICT	0.1	0.1%		<0.1	0.1	0.1%
Maximum	0.4	0.4%		0.6	1.0	1.0%

AQAL 100 µg/m³

Table 15: Predicted Process Contribution 1-hour Maximum Total Amines Concentrations (assessed against MEA AQAL) - FEED 1 Scenario

Receptor	Proposed development PC (μg/m³)	PC/AQAL (%)	Background Concentration (μg/m³)	PC from Cumulative Sources (μg/m³)	PEC (μg/m³)	PEC/AQAL (%)
R1	0.1	<0.1%	No Data Available	<0.1	0.1	<0.1%
R2	0.1	<0.1%		<0.1	0.1	<0.1%
R3	0.4	0.1%		<0.1	0.4	0.1%
R4	0.5	0.1%		<0.1	0.5	0.1%
R5	0.5	0.1%		<0.1	0.5	0.1%
R6	0.4	0.1%		<0.1	0.4	0.1%
R7	0.5	0.1%		<0.1	0.5	0.1%
R8	0.6	0.2%		<0.1	0.6	0.2%
R9	0.6	0.2%		<0.1	0.6	0.2%
R10	0.5	0.1%		<0.1	0.5	0.1%
R11	0.6	0.1%		<0.1	0.6	0.1%
R12	0.6	0.2%		<0.1	0.6	0.2%
R13	0.5	0.1%		<0.1	0.5	0.1%
R14	0.5	0.1%		<0.1	0.5	0.1%
R15	0.4	0.1%		<0.1	0.4	0.1%
R16	0.4	0.1%		<0.1	0.4	0.1%
R17	0.5	0.1%		<0.1	0.5	0.1%

Receptor	Proposed development PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	PC from Cumulative Sources (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
R18	0.6	0.1%		<0.1	0.6	0.1%
R19	0.6	0.1%		<0.1	0.6	0.1%
R20	0.6	0.1%		<0.1	0.6	0.1%
R21	0.5	0.1%		<0.1	0.5	0.1%
R22	0.5	0.1%		<0.1	0.5	0.1%
R23	0.5	0.1%		<0.1	0.5	0.1%
R24	0.5	0.1%		<0.1	0.5	0.1%
R25	0.5	0.1%		<0.1	0.5	0.1%
R26	0.4	0.1%		<0.1	0.4	0.1%
R27	0.5	0.1%		<0.1	0.5	0.1%
R28	0.4	0.1%		<0.1	0.4	0.1%
R29	0.6	0.1%		<0.1	0.6	0.1%
R30	0.4	0.1%		<0.1	0.4	0.1%
R31	0.5	0.1%		<0.1	0.5	0.1%
R32	0.5	0.1%		<0.1	0.5	0.1%
R33	0.4	0.1%		<0.1	0.4	0.1%
R34	0.4	0.1%		<0.1	0.4	0.1%
R35	0.5	0.1%		<0.1	0.5	0.1%

Receptor	Proposed development PC (µg/m^3)	PC/AQAL (%)	Background Concentration (µg/m^3)	PC from Cumulative Sources (µg/m^3)	PEC (µg/m^3)	PEC/AQAL (%)
R36	0.4	0.1%		<0.1	0.4	0.1%
R37	0.4	0.1%		<0.1	0.4	0.1%
R38	0.5	0.1%		<0.1	0.5	0.1%
R39	0.5	0.1%		<0.1	0.5	0.1%
R40	0.4	0.1%		<0.1	0.4	0.1%
R41	0.5	0.1%		<0.1	0.5	0.1%
R42	0.4	0.1%		<0.1	0.4	0.1%
R43	0.4	0.1%		<0.1	0.4	0.1%
R44	0.5	0.1%		<0.1	0.5	0.1%
R3_Cement	0.3	0.1%		<0.1	0.3	0.1%
R6_Cement	0.3	0.1%		<0.1	0.3	0.1%
1_ICT	0.4	0.1%		<0.1	0.4	0.1%
9_ICT	0.4	0.1%		<0.1	0.4	0.1%
Maximum	1.0	0.2%		<0.1	1.0	0.2%

AQAL 400 µg/m^3

Table 16: Predicted Process Contribution 24-hour Maximum Amine 2 Concentrations (assessed against derived Amine 2 AQAL) - FEED 1 Scenario

Receptor	Proposed development PC (µg/m^3)	PC/AQAL (%)	Background Concentration (µg/m^3)	PEC (µg/m^3)	PEC/AQAL (%)
R1	<0.01	<0.1%	No Data Available	<0.01	<0.1%
R2	<0.01	<0.1%		<0.01	<0.1%
R3	<0.01	<0.1%		<0.01	<0.1%
R4	<0.01	<0.1%		<0.01	<0.1%
R5	<0.01	<0.1%		<0.01	<0.1%
R6	<0.01	<0.1%		<0.01	<0.1%
R7	<0.01	<0.1%		<0.01	<0.1%
R8	<0.01	<0.1%		<0.01	<0.1%
R9	<0.01	<0.1%		<0.01	<0.1%
R10	<0.01	<0.1%		<0.01	<0.1%
R11	<0.01	<0.1%		<0.01	<0.1%
R12	<0.01	<0.1%		<0.01	<0.1%
R13	<0.01	<0.1%		<0.01	<0.1%
R14	<0.01	<0.1%		<0.01	<0.1%
R15	<0.01	<0.1%		<0.01	<0.1%
R16	<0.01	<0.1%		<0.01	<0.1%

Receptor	Proposed development PC (µg/m^3)	PC/AQAL (%)	Background Concentration (µg/m^3)	PEC (µg/m^3)	PEC/AQAL (%)
R17	<0.01	<0.1%		<0.01	<0.1%
R18	<0.01	<0.1%		<0.01	<0.1%
R19	<0.01	<0.1%		<0.01	<0.1%
R20	<0.01	<0.1%		<0.01	<0.1%
R21	<0.01	<0.1%		<0.01	<0.1%
R22	<0.01	<0.1%		<0.01	<0.1%
R23	<0.01	<0.1%		<0.01	<0.1%
R24	<0.01	<0.1%		<0.01	<0.1%
R25	<0.01	<0.1%		<0.01	<0.1%
R26	<0.01	<0.1%		<0.01	<0.1%
R27	<0.01	<0.1%		<0.01	<0.1%
R28	<0.01	<0.1%		<0.01	<0.1%
R29	<0.01	<0.1%		<0.01	<0.1%
R30	<0.01	<0.1%		<0.01	<0.1%
R31	<0.01	<0.1%		<0.01	<0.1%
R32	<0.01	<0.1%		<0.01	<0.1%
R33	<0.01	<0.1%		<0.01	<0.1%
R34	<0.01	<0.1%		<0.01	<0.1%

Receptor	Proposed development PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
R35	<0.01	<0.1%		<0.01	<0.1%
R36	<0.01	<0.1%		<0.01	<0.1%
R37	<0.01	<0.1%		<0.01	<0.1%
R38	<0.01	<0.1%		<0.01	<0.1%
R39	<0.01	<0.1%		<0.01	<0.1%
R40	<0.01	<0.1%		<0.01	<0.1%
R41	<0.01	<0.1%		<0.01	<0.1%
R42	<0.01	<0.1%		<0.01	<0.1%
R43	<0.01	<0.1%		<0.01	<0.1%
R44	<0.01	<0.1%		<0.01	<0.1%
R3_Cement	<0.01	<0.1%		<0.01	<0.1%
R6_Cement	<0.01	<0.1%		<0.01	<0.1%
1_ICT	<0.01	<0.1%		<0.01	<0.1%
9_ICT	<0.01	<0.1%		<0.01	<0.1%
Maximum	<0.01	<0.1%		<0.01	<0.1%

AQAL 15 µg/m³

Table 17: Predicted Process Contribution Annual Mean Total N-Amines Concentrations (against NDMA AQAL) - FEED 1 Scenario

Receptor	Proposed development PC (ng/m³)	PC/AQAL (%)	Background Concentration (ng/m³)	PC from Cumulative Sources (ng/m³)	PEC (ng/m³)	PEC/AQAL (%)
R1	<0.01	0.1%	No Data Available – Assumed to be zero.	0.01	0.01	3.5%
R2	<0.01	0.1%		0.01	0.01	3.6%
R3	<0.01	2.4%		0.01	0.01	6.1%
R4	0.01	3.7%		0.01	0.01	6.5%
R5	0.04	17.8%		0.01	0.04	20.5%
R6	0.05	22.6%		0.01	0.05	25.2%
R7	0.07	32.8%		0.01	0.07	35.4%
R8	0.02	8.7%		0.01	0.02	12.0%
R9	0.02	8.1%		0.01	0.02	12.2%
R10	0.02	11.3%		0.01	0.03	15.6%
R11	0.03	12.7%		0.01	0.03	16.4%
R12	0.03	14.5%		0.01	0.04	18.1%
R13	0.03	14.9%		0.01	0.04	18.8%
R14	0.03	15.1%		0.01	0.04	19.0%
R15	0.08	42.0%		<0.01	0.09	44.4%
R16	0.10	50.4%		<0.01	0.11	52.8%
R17	0.10	47.7%		0.01	0.10	50.3%
R18	0.08	38.6%		0.01	0.08	41.4%

Receptor	Proposed development PC (ng/m^3)	PC/AQAL (%)	Background Concentration (ng/m^3)	PC from Cumulative Sources (ng/m^3)	PEC (ng/m^3)	PEC/AQAL (%)
R19	0.02	7.7%		0.01	0.02	11.2%
R20	0.02	9.3%		0.01	0.03	14.2%
R21	0.11	54.1%		<0.01	0.11	56.5%
R22	0.08	42.2%		<0.01	0.09	44.4%
R23	0.08	41.7%		<0.01	0.09	43.9%
R24	0.09	42.7%		<0.01	0.09	44.8%
R25	0.11	54.0%		<0.01	0.11	56.2%
R26	0.10	48.9%		0.01	0.10	51.5%
R27	0.04	17.9%		0.01	0.04	21.9%
R28	0.03	17.4%		0.01	0.04	21.6%
R29	0.04	20.5%		0.01	0.05	24.1%
R30	0.03	15.5%		0.01	0.04	19.9%
R31	0.04	18.5%		0.01	0.05	22.5%
R32	0.05	24.8%		0.01	0.06	28.2%
R33	0.02	12.2%		0.01	0.03	17.1%
R34	0.07	36.9%		<0.01	0.08	38.7%
R35	0.06	29.2%		<0.01	0.06	30.8%
R36	0.07	35.3%		<0.01	0.07	37.0%

Receptor	Proposed development PC (ng/m³)	PC/AQAL (%)	Background Concentration (ng/m³)	PC from Cumulative Sources (ng/m³)	PEC (ng/m³)	PEC/AQAL (%)
R37	0.10	48.4%		<0.01	0.10	50.3%
R38	0.10	51.7%		<0.01	0.11	54.0%
R39	0.04	20.9%		0.01	0.05	24.3%
R40	0.07	35.8%		<0.01	0.07	37.4%
R41	0.09	45.0%		<0.01	0.09	46.9%
R42	0.04	19.9%		<0.01	0.04	21.3%
R43	0.08	39.7%		<0.01	0.08	41.9%
R44	0.04	22.0%		<0.01	0.05	23.3%
R3_Cement	0.02	9.6%		0.01	0.03	13.9%
R6_Cement	0.02	12.3%		0.03	0.05	26.0%
1_ICT	0.04	19.6%		<0.01	0.04	21.1%
9_ICT	0.04	20.2%		<0.01	0.04	21.5%
Maximum	0.14	70.0%		0.01	0.15	72.9%

AQAL 0.2 ng/m³

Table 18: Predicted Process Contribution 30-min Maximum Formaldehyde Concentrations - FEED 1 Scenario

Receptor	Proposed development PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
R1	0.1	0.1%	No Data Available	0.1	0.1%
R2	0.1	0.1%		0.1	0.1%
R3	0.9	0.9%		0.9	0.9%
R4	1.0	1.0%		1.0	1.0%
R5	1.0	1.0%		1.0	1.0%
R6	0.9	0.9%		0.9	0.9%
R7	1.0	1.0%		1.0	1.0%
R8	1.2	1.2%		1.2	1.2%
R9	1.4	1.4%		1.4	1.4%
R10	1.1	1.1%		1.1	1.1%
R11	1.2	1.2%		1.2	1.2%
R12	1.4	1.4%		1.4	1.4%
R13	1.0	1.0%		1.0	1.0%
R14	1.0	1.0%		1.0	1.0%
R15	0.9	0.9%		0.9	0.9%
R16	0.9	0.9%		0.9	0.9%
R17	1.0	1.0%		1.0	1.0%
R18	1.2	1.2%		1.2	1.2%

Receptor	Proposed development PC (µg/m^3)	PC/AQAL (%)	Background Concentration (µg/m^3)	PEC (µg/m^3)	PEC/AQAL (%)
R19	1.2	1.2%		1.2	1.2%
R20	1.2	1.2%		1.2	1.2%
R21	1.1	1.1%		1.1	1.1%
R22	1.0	1.0%		1.0	1.0%
R23	1.0	1.0%		1.0	1.0%
R24	1.0	1.0%		1.0	1.0%
R25	1.1	1.1%		1.1	1.1%
R26	0.9	0.9%		0.9	0.9%
R27	1.1	1.1%		1.1	1.1%
R28	0.8	0.8%		0.8	0.8%
R29	1.2	1.2%		1.2	1.2%
R30	0.8	0.8%		0.8	0.8%
R31	1.2	1.2%		1.2	1.2%
R32	1.0	1.0%		1.0	1.0%
R33	1.0	1.0%		1.0	1.0%
R34	0.9	0.9%		0.9	0.9%
R35	1.2	1.2%		1.2	1.2%
R36	1.0	1.0%		1.0	1.0%

Receptor	Proposed development PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
R37	1.0	1.0%		1.0	1.0%
R38	1.0	1.0%		1.0	1.0%
R39	1.2	1.2%		1.2	1.2%
R40	1.0	1.0%		1.0	1.0%
R41	1.2	1.2%		1.2	1.2%
R42	1.0	1.0%		1.0	1.0%
R43	1.0	1.0%		1.0	1.0%
R44	1.2	1.2%		1.2	1.2%
R3_Cement	0.8	0.8%		0.8	0.8%
R6_Cement	0.8	0.8%		0.8	0.8%
1_ICT	1.0	1.0%		1.0	1.0%
9_ICT	1.1	1.1%		1.1	1.1%
Maximum	2.0	2.0%		2.0	2.0%

AQAL 100 µg/m³

Table 19: Predicted Process Contribution Annual Mean Formaldehyde Concentrations - FEED 1 Scenario

Receptor	Proposed development PC (µg/m^3)	PC/AQAL (%)	Background Concentration (ng/m^3)	PEC (µg/m^3)	PEC/AQAL (%)
R1	<0.1	<0.1%	No Data Available	<0.1	<0.1%
R2	<0.1	<0.1%		<0.1	<0.1%
R3	<0.1	<0.1%		<0.1	<0.1%
R4	<0.1	0.1%		<0.1	0.1%
R5	<0.1	0.2%		<0.1	0.2%
R6	<0.1	0.3%		<0.1	0.3%
R7	<0.1	0.4%		<0.1	0.4%
R8	<0.1	0.1%		<0.1	0.1%
R9	<0.1	0.1%		<0.1	0.1%
R10	<0.1	0.1%		<0.1	0.1%
R11	<0.1	0.1%		<0.1	0.1%
R12	<0.1	0.2%		<0.1	0.2%
R13	<0.1	0.2%		<0.1	0.2%
R14	<0.1	0.2%		<0.1	0.2%
R15	<0.1	0.5%		<0.1	0.5%
R16	<0.1	0.6%		<0.1	0.6%
R17	<0.1	0.6%		<0.1	0.6%
R18	<0.1	0.5%		<0.1	0.5%

Receptor	Proposed development PC (µg/m^3)	PC/AQAL (%)	Background Concentration (ng/m^3)	PEC (µg/m^3)	PEC/AQAL (%)
R19	<0.1	0.1%		<0.1	0.1%
R20	<0.1	0.1%		<0.1	0.1%
R21	<0.1	0.6%		<0.1	0.6%
R22	<0.1	0.5%		<0.1	0.5%
R23	<0.1	0.5%		<0.1	0.5%
R24	<0.1	0.5%		<0.1	0.5%
R25	<0.1	0.6%		<0.1	0.6%
R26	<0.1	0.5%		<0.1	0.5%
R27	<0.1	0.2%		<0.1	0.2%
R28	<0.1	0.2%		<0.1	0.2%
R29	<0.1	0.2%		<0.1	0.2%
R30	<0.1	0.1%		<0.1	0.1%
R31	<0.1	0.1%		<0.1	0.1%
R32	<0.1	0.2%		<0.1	0.2%
R33	<0.1	0.1%		<0.1	0.1%
R34	<0.1	0.4%		<0.1	0.4%
R35	<0.1	0.3%		<0.1	0.3%
R36	<0.1	0.3%		<0.1	0.3%

Receptor	Proposed development PC (µg/m^3)	PC/AQAL (%)	Background Concentration (ng/m^3)	PEC (µg/m^3)	PEC/AQAL (%)
R37	<0.1	0.5%		<0.1	0.5%
R38	<0.1	0.5%		<0.1	0.5%
R39	<0.1	0.2%		<0.1	0.2%
R40	<0.1	0.3%		<0.1	0.3%
R41	<0.1	0.4%		<0.1	0.4%
R42	<0.1	0.2%		<0.1	0.2%
R43	<0.1	0.3%		<0.1	0.3%
R44	<0.1	0.3%		<0.1	0.3%
R3_Cement	<0.1	0.1%		<0.1	0.1%
R6_Cement	<0.1	0.1%		<0.1	0.1%
1_ICT	<0.1	0.2%		<0.1	0.2%
9_ICT	<0.1	0.2%		<0.1	0.2%
Maximum	<0.1	0.8%		<0.1	0.8%

AQAL 5 µg/m^3

1.5.10 The annual average changes at all human health receptors for NO_2, ammonia and formaldehyde are less than 1% of the relevant AQAL.

1.5.11 The short-term NO_2 PCs are less than the 10% of the relevant AQALs at discrete receptors. The maximum in the study area the hourly NO_2 concentrations is less than 20% of the AQAL minus twice the long-term background concentration.

1.5.12 Predicted concentrations at all human health receptors, except R16, R17, R21, R25, R26, R37, R38, for N-Amines are less than 50% of the NDMA EAL and therefore the change magnitude can be described as imperceptible or very low, following the magnitude descriptors in Table 8-4 **Chapter 8: Air Quality** (**EN010166/APP/6.2.8**). At these receptors, and at the maximum anywhere in the study area, concentrations are less than 75% of the EAL and can be described as low in magnitude.

1.5.13 The assessment for N-Amines 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 assumed no depletion of plume concentrations due to wet or dry deposition;
- the assessment assumes that all nitramines and nitrosamines emitted from the stack(s) 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; 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.

1.5.14 Based on the above, N-Amines impacts would be substantially lower than those presented.

FEED 2 Scenario

1.5.15 The results at the identified human health receptors for the FEED 1 scenario are shown in **Table 20** to **Table 28**.

Table 20: Predicted Process Contribution Annual Mean NO_2 Concentrations – FEED 2 Scenario

Receptor	Proposed development PC (µg/m^3)	Road Emissions PC (µg/m^3)	PC/AQAL (%)	Background Concentration* (µg/m^3)	PC from Cumulative Sources (µg/m^3)	PEC (µg/m^3)	PEC/AQAL (%)
R1	<0.1	<0.1	0.1%	7.5	0.1	7.6	18.9%
R2	<0.1	<0.1	<0.1%	8.0	0.1	8.1	20.3%
R3	<0.1	<0.1	<0.1%	6.5	0.1	6.6	16.4%
R4	<0.1	<0.1	<0.1%	7.4	0.1	7.5	18.7%
R5	<0.1	<0.1	0.1%	8.3	0.1	8.4	21.1%
R6	0.1	<0.1	0.1%	8.3	0.1	8.4	21.0%
R7	0.1	<0.1	0.2%	7.1	0.1	7.2	18.1%
R8	<0.1	<0.1	<0.1%	6.5	0.1	6.6	16.4%
R9	<0.1	<0.1	<0.1%	6.5	0.1	6.6	16.4%
R10	<0.1	<0.1	0.1%	6.5	<0.1	6.6	16.4%
R11	<0.1	<0.1	0.1%	6.5	<0.1	6.6	16.4%
R12	<0.1	<0.1	0.1%	6.5	<0.1	6.6	16.5%
R13	<0.1	<0.1	0.1%	7.5	0.1	7.6	19.0%
R14	<0.1	<0.1	0.1%	8.9	0.1	9.0	22.5%
R15	0.1	<0.1	0.3%	9.7	0.1	9.9	24.8%
R16	0.1	<0.1	0.3%	7.0	0.1	7.2	17.9%
R17	0.1	<0.1	0.3%	8.5	0.1	8.7	21.8%

Receptor	Proposed development PC (µg/m³)	Road Emissions PC (µg/m³)	PC/AQAL (%)	Background Concentration* (µg/m³)	PC from Cumulative Sources (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
R18	0.1	<0.1	0.2%	6.5	0.1	6.7	16.7%
R19	<0.1	<0.1	0.0%	7.0	0.1	7.1	17.6%
R20	<0.1	<0.1	0.0%	6.5	<0.1	6.6	16.4%
R21	0.1	<0.1	0.3%	6.5	0.1	6.7	16.8%
R22	0.1	<0.1	0.3%	9.1	0.1	9.3	23.3%
R23	0.1	<0.1	0.3%	9.7	0.1	9.9	24.8%
R24	0.1	<0.1	0.3%	7.3	0.1	7.5	18.7%
R25	0.1	<0.1	0.3%	6.5	0.1	6.7	16.8%
R26	0.1	<0.1	0.3%	6.5	0.1	6.7	16.8%
R27	<0.1	<0.1	0.1%	6.5	0.1	6.6	16.5%
R28	<0.1	<0.1	0.1%	6.5	<0.1	6.6	16.4%
R29	<0.1	<0.1	0.1%	6.5	0.1	6.6	16.5%
R30	<0.1	<0.1	0.1%	6.5	<0.1	6.6	16.4%
R31	<0.1	<0.1	0.1%	6.5	<0.1	6.6	16.4%
R32	<0.1	<0.1	0.1%	6.5	0.1	6.6	16.5%
R33	<0.1	<0.1	0.1%	6.5	<0.1	6.5	16.4%
R34	0.1	<0.1	0.2%	8.7	0.1	8.9	22.2%
R35	0.1	<0.1	0.2%	6.8	0.1	6.9	17.3%

Receptor	Proposed development PC (µg/m³)	Road Emissions PC (µg/m³)	PC/AQAL (%)	Background Concentration* (µg/m³)	PC from Cumulative Sources (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
R36	0.1	<0.1	0.2%	9.6	0.1	9.8	24.4%
R37	0.1	<0.1	0.3%	8.5	0.1	8.7	21.6%
R38	0.1	<0.1	0.3%	7.5	0.1	7.7	19.2%
R39	<0.1	<0.1	0.1%	7.8	0.1	7.9	19.7%
R40	0.1	<0.1	0.2%	6.6	0.1	6.8	17.0%
R41	0.1	<0.1	0.2%	6.5	0.1	6.7	16.7%
R42	<0.1	<0.1	0.1%	6.5	1.4	8.0	19.9%
R43	0.1	<0.1	0.2%	6.5	0.1	6.7	16.6%
R44	0.1	<0.1	0.2%	6.5	0.3	6.8	17.1%
R3_Cement	<0.1	<0.1	0.1%	6.5	<0.1	6.5	16.4%
R6_Cement	<0.1	<0.1	0.1%	6.5	<0.1	6.6	16.4%
1_ICT	<0.1	<0.1	0.1%	6.5	0.7	7.3	18.2%
9_ICT	<0.1	<0.1	0.1%	6.5	2.2	8.7	21.8%
Maximum	0.2	<0.1	0.4%	6.5	0.1	6.7	16.8%

AQAL 40 µg/m³

*For receptors sensitive to emissions from the Proposed Development and road traffic, background concentrations include the predicted road traffic emissions from the do-minimum scenario.

Table 21: Predicted Process Contribution 1-hour Mean 99.79th Percentile NO_2 Concentrations – FEED 2 Scenario

Receptor	Proposed development PC (µg/m^3)	Road Traffic Emissions PC (µg/m^3)	PC/AQAL (%)	Background Concentration (µg/m^3) *	PC from Cumulative Sources (µg/m^3)	PEC (µg/m^3)	PEC/AQAL (%)
R1	0.1	0.1	0.1%	15.0	1.7	16.8	7.4%
R2	0.1	<0.1	0.1%	16.1	1.6	17.8	7.3%
R3	3.0	<0.1	1.5%	13.0	0.5	16.5	8.2%
R4	3.1	<0.1	1.6%	14.8	<0.1	18.0	8.1%
R5	9.9	<0.1	4.9%	16.7	<0.1	26.6	11.4%
R6	11.3	<0.1	5.6%	16.6	<0.1	27.9	12.1%
R7	14.8	<0.1	7.4%	14.2	<0.1	29.0	13.9%
R8	13.1	<0.1	6.5%	13.0	0.6	26.7	13.3%
R9	12.3	<0.1	6.2%	13.0	0.2	25.5	12.8%
R10	19.7	<0.1	9.8%	13.0	0.2	32.9	16.4%
R11	19.4	<0.1	9.7%	13.0	0.7	33.1	16.6%
R12	20.3	<0.1	10.1%	13.0	0.4	33.7	16.8%
R13	16.9	<0.1	8.5%	15.0	0.7	32.7	15.3%
R14	16.3	<0.1	8.2%	18.0	0.4	34.7	14.9%
R15	16.3	<0.1	8.1%	19.6	<0.1	35.9	14.6%
R16	18.1	<0.1	9.1%	13.9	<0.1	32.0	15.6%
R17	19.2	<0.1	9.6%	17.1	<0.1	36.3	16.1%

Receptor	Proposed development PC (µg/m³)	Road Traffic Emissions PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³) *	PC from Cumulative Sources (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
R18	20.5	<0.1	10.2%	13.0	<0.1	33.5	16.7%
R19	9.2	<0.1	4.6%	13.9	<0.1	23.1	11.1%
R20	12.2	<0.1	6.1%	13.0	<0.1	25.2	12.6%
R21	17.4	<0.1	8.7%	13.0	<0.1	30.4	15.2%
R22	15.8	<0.1	7.9%	18.4	<0.1	34.2	14.4%
R23	15.8	<0.1	7.9%	19.6	<0.1	35.4	14.4%
R24	15.0	<0.1	7.5%	14.6	<0.1	29.6	14.0%
R25	15.4	<0.1	7.7%	13.0	<0.1	28.4	14.2%
R26	15.5	<0.1	7.7%	13.0	<0.1	28.5	14.2%
R27	15.1	<0.1	7.5%	13.0	0.5	28.6	14.3%
R28	14.7	<0.1	7.3%	13.0	0.4	28.1	14.1%
R29	13.6	<0.1	6.8%	13.0	0.3	26.9	13.4%
R30	13.4	<0.1	6.7%	13.0	0.5	26.9	13.4%
R31	12.3	<0.1	6.2%	13.0	0.4	25.7	12.9%
R32	11.9	<0.1	5.9%	13.0	0.1	25.0	12.5%
R33	10.7	<0.1	5.3%	13.0	0.4	24.1	12.0%
R34	12.7	<0.1	6.4%	17.5	<0.1	30.2	12.9%
R35	11.8	<0.1	5.9%	13.5	<0.1	25.3	12.4%

Receptor	Proposed development PC (µg/m^3)	Road Traffic Emissions PC (µg/m^3)	PC/AQAL (%)	Background Concentration (µg/m^3) *	PC from Cumulative Sources (µg/m^3)	PEC (µg/m^3)	PEC/AQAL (%)
R36	11.8	<0.1	5.9%	19.3	<0.1	31.2	12.4%
R37	12.5	<0.1	6.3%	17.0	<0.1	29.5	12.8%
R38	13.1	<0.1	6.5%	15.0	<0.1	28.1	13.0%
R39	13.3	<0.1	6.6%	15.6	<0.1	28.8	13.1%
R40	10.7	<0.1	5.3%	13.2	<0.1	23.9	11.8%
R41	12.5	<0.1	6.2%	13.0	<0.1	25.5	12.7%
R42	11.0	<0.1	5.5%	13.0	0.1	24.1	12.0%
R43	12.4	<0.1	6.2%	13.0	<0.1	25.5	12.7%
R44	9.8	<0.1	4.9%	13.0	<0.1	22.8	11.4%
R3_Cement	8.7	<0.1	4.4%	13.0	<0.1	21.7	10.9%
R6_Cement	9.3	<0.1	4.7%	13.0	<0.1	22.3	11.2%
1_ICT	10.8	<0.1	5.4%	13.0	0.1	24.0	12.0%
9_ICT	9.9	<0.1	5.0%	13.0	5.4	28.3	14.1%
Max	35.2	<0.1	17.6%	13.0	<0.1	48.2	24.1%

AQAL 200 µg/m^3

Table 22: Predicted Process Contribution 8-hour Rolling Maximum CO Concentrations – FEED 2 Scenario

Receptor	Proposed development PC (mg/m^3)	PC/AQAL (%)	Background Concentration (mg/m^3)	PEC (mg/m^3)	PEC/AQAL (%)
R1	<0.1	<0.1%	0.6	0.6	6.1%
R2	<0.1	<0.1%	0.6	0.6	6.1%
R3	<0.1	0.3%	0.5	0.5	5.3%
R4	<0.1	0.3%	0.5	0.5	5.4%
R5	0.1	0.8%	0.5	0.6	5.8%
R6	0.1	0.7%	0.5	0.6	5.7%
R7	0.1	0.8%	0.5	0.6	5.8%
R8	0.1	0.7%	0.5	0.6	5.7%
R9	0.1	1.0%	0.5	0.6	6.0%
R10	0.1	1.0%	0.5	0.6	6.2%
R11	0.1	0.7%	0.5	0.6	5.8%
R12	0.1	1.0%	0.5	0.6	6.1%
R13	0.1	0.9%	0.5	0.6	6.0%
R14	0.1	0.9%	0.5	0.6	6.1%
R15	0.1	0.8%	0.5	0.6	6.0%
R16	0.1	0.8%	0.5	0.6	6.2%
R17	0.1	1.0%	0.5	0.6	5.9%
R18	0.1	1.2%	0.5	0.6	6.2%

Receptor	Proposed development PC (mg/m³)	PC/AQAL (%)	Background Concentration (mg/m³)	PEC (mg/m³)	PEC/AQAL (%)
R19	<0.1	0.4%	0.6	0.6	5.9%
R20	0.1	0.8%	0.6	0.6	6.3%
R21	0.1	0.8%	0.5	0.6	5.8%
R22	0.1	0.8%	0.6	0.6	6.3%
R23	0.1	0.8%	0.5	0.6	6.0%
R24	0.1	0.7%	0.5	0.6	6.0%
R25	0.1	0.7%	0.5	0.6	6.1%
R26	0.1	0.8%	0.6	0.6	6.3%
R27	0.1	0.7%	0.6	0.6	6.3%
R28	0.1	0.7%	0.6	0.6	6.2%
R29	0.1	0.8%	0.6	0.7	6.7%
R30	0.1	0.6%	0.5	0.6	5.6%
R31	0.1	0.6%	0.5	0.6	5.5%
R32	0.1	0.5%	0.5	0.5	5.5%
R33	<0.1	0.4%	0.5	0.5	5.4%
R34	0.1	0.6%	0.5	0.6	5.8%
R35	0.1	0.5%	0.5	0.6	5.7%
R36	0.1	0.5%	0.5	0.6	5.7%

Receptor	Proposed development PC (mg/m^3)	PC/AQAL (%)	Background Concentration (mg/m^3)	PEC (mg/m^3)	PEC/AQAL (%)
R37	0.1	0.6%	0.5	0.6	5.8%
R38	0.1	0.6%	0.5	0.6	6.0%
R39	0.1	0.5%	0.6	0.6	6.3%
R40	<0.1	0.4%	0.6	0.6	6.4%
R41	<0.1	0.4%	0.6	0.6	6.3%
R42	<0.1	0.4%	0.5	0.5	5.4%
R43	<0.1	0.4%	0.6	0.6	6.4%
R44	<0.1	0.5%	0.5	0.6	6.0%
R3_Cement	<0.1	0.3%	0.5	0.6	5.5%
R6_Cement	<0.1	0.3%	0.5	0.5	5.5%
1_ICT	<0.1	0.4%	0.6	0.6	6.4%
9_ICT	<0.1	0.3%	0.6	0.6	6.4%
Max	0.2	1.9%	0.6	0.8	7.9%

AQAL 10 mg/m^3

Table 23: Predicted Process Contribution 24-hour Maximum Amines Concentrations (assessed against MEA AQAL) – FEED 2 Scenario

Receptor	Proposed development PC (µg/m^3)	PC/AQAL (%)	Background Concentration (µg/m^3)	PC from Cumulative Sources (µg/m^3)	PEC (µg/m^3)	PEC/AQAL (%)
R1	<0.1	<0.1%	No Data Available	<0.1	<0.1	<0.1%
R2	<0.1	<0.1%		<0.1	<0.1	<0.1%
R3	<0.1	<0.1%		<0.1	<0.1	<0.1%
R4	<0.1	<0.1%		<0.1	<0.1	<0.1%
R5	<0.1	<0.1%		<0.1	<0.1	<0.1%
R6	<0.1	<0.1%		<0.1	<0.1	<0.1%
R7	<0.1	<0.1%		<0.1	<0.1	<0.1%
R8	<0.1	<0.1%		<0.1	<0.1	<0.1%
R9	<0.1	<0.1%		<0.1	<0.1	<0.1%
R10	<0.1	<0.1%		<0.1	<0.1	<0.1%
R11	<0.1	<0.1%		<0.1	<0.1	<0.1%
R12	<0.1	<0.1%		<0.1	<0.1	<0.1%
R13	<0.1	<0.1%		<0.1	<0.1	<0.1%
R14	<0.1	<0.1%		<0.1	<0.1	<0.1%
R15	<0.1	<0.1%		<0.1	<0.1	<0.1%
R16	0.1	0.1%		<0.1	0.1	0.1%
R17	0.1	0.1%		<0.1	0.1	0.1%

Receptor	Proposed development PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	PC from Cumulative Sources (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
R18	0.1	0.1%		<0.1	0.1	0.1%
R19	<0.1	<0.1%		<0.1	<0.1	<0.1%
R20	<0.1	<0.1%		<0.1	<0.1	<0.1%
R21	0.1	0.1%		<0.1	0.1	0.1%
R22	<0.1	<0.1%		<0.1	<0.1	<0.1%
R23	<0.1	<0.1%		<0.1	<0.1	<0.1%
R24	<0.1	<0.1%		<0.1	<0.1	<0.1%
R25	<0.1	<0.1%		<0.1	<0.1	<0.1%
R26	<0.1	<0.1%		<0.1	<0.1	<0.1%
R27	<0.1	<0.1%		<0.1	<0.1	<0.1%
R28	<0.1	<0.1%		<0.1	<0.1	<0.1%
R29	<0.1	<0.1%		<0.1	<0.1	<0.1%
R30	<0.1	<0.1%		<0.1	<0.1	<0.1%
R31	<0.1	<0.1%		<0.1	<0.1	<0.1%
R32	<0.1	<0.1%		<0.1	<0.1	<0.1%
R33	<0.1	<0.1%		<0.1	<0.1	<0.1%
R34	<0.1	<0.1%		<0.1	<0.1	<0.1%
R35	<0.1	<0.1%		<0.1	<0.1	<0.1%

Receptor	Proposed development PC (µg/m^3)	PC/AQAL (%)	Background Concentration (µg/m^3)	PC from Cumulative Sources (µg/m^3)	PEC (µg/m^3)	PEC/AQAL (%)
R36	<0.1	<0.1%		<0.1	<0.1	<0.1%
R37	<0.1	<0.1%		<0.1	<0.1	<0.1%
R38	<0.1	<0.1%		<0.1	<0.1	<0.1%
R39	<0.1	<0.1%		<0.1	<0.1	<0.1%
R40	<0.1	<0.1%		<0.1	<0.1	<0.1%
R41	<0.1	<0.1%		<0.1	<0.1	<0.1%
R42	<0.1	<0.1%		<0.1	<0.1	<0.1%
R43	<0.1	<0.1%		<0.1	<0.1	<0.1%
R44	<0.1	<0.1%		<0.1	<0.1	<0.1%
R3_Cement	<0.1	<0.1%		<0.1	<0.1	<0.1%
R6_Cement	<0.1	<0.1%		<0.1	<0.1	<0.1%
1_ICT	<0.1	<0.1%		<0.1	<0.1	<0.1%
9_ICT	<0.1	<0.1%		<0.1	<0.1	<0.1%
Maximum	0.1	0.1%		<0.1	0.1	0.1%

AQAL 100 µg/m^3

Table 24: Predicted Process Contribution 1-hour Maximum Amines Concentrations (assessed against MEA AQAL) – FEED 2 Scenario

Receptor	Proposed development PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	PC from Cumulative Sources (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
R1	<0.1	<0.1%	No Data Available	<0.1	<0.1	<0.1%
R2	<0.1	<0.1%		<0.1	<0.1	<0.1%
R3	0.1	<0.1%		<0.1	0.1	<0.1%
R4	0.1	<0.1%		<0.1	0.1	<0.1%
R5	0.2	<0.1%		<0.1	0.2	<0.1%
R6	0.1	<0.1%		<0.1	0.1	<0.1%
R7	0.2	<0.1%		<0.1	0.2	<0.1%
R8	0.2	<0.1%		<0.1	0.2	<0.1%
R9	0.2	<0.1%		<0.1	0.2	<0.1%
R10	0.2	<0.1%		<0.1	0.2	<0.1%
R11	0.2	<0.1%		<0.1	0.2	<0.1%
R12	0.2	<0.1%		<0.1	0.2	0.1%
R13	0.1	<0.1%		<0.1	0.1	<0.1%
R14	0.1	<0.1%		<0.1	0.1	<0.1%
R15	0.1	<0.1%		<0.1	0.1	<0.1%
R16	0.1	<0.1%		<0.1	0.1	<0.1%
R17	0.2	<0.1%		<0.1	0.2	<0.1%

Receptor	Proposed development PC (µg/m^3)	PC/AQAL (%)	Background Concentration (µg/m^3)	PC from Cumulative Sources (µg/m^3)	PEC (µg/m^3)	PEC/AQAL (%)
R18	0.2	<0.1%		<0.1	0.2	<0.1%
R19	0.1	<0.1%		<0.1	0.1	<0.1%
R20	0.1	<0.1%		<0.1	0.1	<0.1%
R21	0.1	<0.1%		<0.1	0.1	<0.1%
R22	0.1	<0.1%		<0.1	0.1	<0.1%
R23	0.1	<0.1%		<0.1	0.1	<0.1%
R24	0.1	<0.1%		<0.1	0.1	<0.1%
R25	0.2	<0.1%		<0.1	0.2	<0.1%
R26	0.1	<0.1%		<0.1	0.1	<0.1%
R27	0.1	<0.1%		<0.1	0.1	<0.1%
R28	0.1	<0.1%		<0.1	0.1	<0.1%
R29	0.1	<0.1%		<0.1	0.1	<0.1%
R30	0.1	<0.1%		<0.1	0.1	<0.1%
R31	0.1	<0.1%		<0.1	0.1	<0.1%
R32	0.1	<0.1%		<0.1	0.1	<0.1%
R33	0.1	<0.1%		<0.1	0.1	<0.1%
R34	0.1	<0.1%		<0.1	0.1	<0.1%
R35	0.2	<0.1%		<0.1	0.2	<0.1%

Receptor	Proposed development PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	PC from Cumulative Sources (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
R36	0.1	<0.1%		<0.1	0.1	<0.1%
R37	0.1	<0.1%		<0.1	0.1	<0.1%
R38	0.2	<0.1%		<0.1	0.2	<0.1%
R39	0.2	<0.1%		<0.1	0.2	<0.1%
R40	0.1	<0.1%		<0.1	0.1	<0.1%
R41	0.2	<0.1%		<0.1	0.2	<0.1%
R42	0.1	<0.1%		<0.1	0.1	<0.1%
R43	0.1	<0.1%		<0.1	0.1	<0.1%
R44	0.2	<0.1%		<0.1	0.2	<0.1%
R3_Cement	0.1	<0.1%		<0.1	0.1	<0.1%
R6_Cement	0.1	<0.1%		<0.1	0.1	<0.1%
1_ICT	0.1	<0.1%		<0.1	0.1	<0.1%
9_ICT	0.1	<0.1%		<0.1	0.1	<0.1%
Maximum	0.3	0.1%		<0.1	0.3	0.1%

AQAL 400 µg/m³

Table 25: Predicted Process Contribution 24-hour Maximum Amine 2 Concentrations (assessed against Amine 2 derived AQAL) – FEED 2 Scenario

Receptor	Proposed development PC (µg/m^3)	PC/AQAL (%)	Background Concentration (µg/m^3)	PEC (µg/m^3)	PEC/AQAL (%)
R1	<0.01	<0.1%	No Data Available	<0.01	<0.1%
R2	<0.01	<0.1%		<0.01	<0.1%
R3	<0.01	<0.1%		<0.01	<0.1%
R4	<0.01	<0.1%		<0.01	<0.1%
R5	0.01	<0.1%		0.01	<0.1%
R6	<0.01	<0.1%		<0.01	<0.1%
R7	0.01	0.1%		0.01	0.1%
R8	0.01	<0.1%		0.01	<0.1%
R9	0.01	0.1%		0.01	0.1%
R10	0.01	0.1%		0.01	0.1%
R11	0.01	0.1%		0.01	0.1%
R12	0.01	0.1%		0.01	0.1%
R13	0.01	0.1%		0.01	0.1%
R14	0.01	0.1%		0.01	0.1%
R15	0.01	0.1%		0.01	0.1%
R16	0.01	0.1%		0.01	0.1%
R17	0.02	0.1%		0.02	0.1%
R18	0.02	0.1%		0.02	0.1%

Receptor	Proposed development PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
R19	<0.01	<0.1%		<0.01	<0.1%
R20	0.01	<0.1%		0.01	<0.1%
R21	0.01	0.1%		0.01	0.1%
R22	0.01	0.1%		0.01	0.1%
R23	0.01	0.1%		0.01	0.1%
R24	0.01	0.1%		0.01	0.1%
R25	0.01	0.1%		0.01	0.1%
R26	0.01	0.1%		0.01	0.1%
R27	0.01	<0.1%		0.01	<0.1%
R28	0.01	0.1%		0.01	0.1%
R29	0.01	<0.1%		0.01	<0.1%
R30	0.01	0.1%		0.01	0.1%
R31	0.01	<0.1%		0.01	<0.1%
R32	0.01	<0.1%		0.01	<0.1%
R33	<0.01	<0.1%		<0.01	<0.1%
R34	0.01	<0.1%		0.01	<0.1%
R35	0.01	<0.1%		0.01	<0.1%
R36	0.01	<0.1%		0.01	<0.1%
R37	0.01	0.1%		0.01	0.1%

Receptor	Proposed development PC (µg/m3)	PC/AQAL (%)	Background Concentration (µg/m3)	PEC (µg/m3)	PEC/AQAL (%)
R38	0.01	0.1%		0.01	0.1%
R39	0.01	0.1%		0.01	0.1%
R40	0.01	<0.1%		0.01	<0.1%
R41	0.01	<0.1%		0.01	<0.1%
R42	<0.01	<0.1%		<0.01	<0.1%
R43	0.01	<0.1%		0.01	<0.1%
R44	0.01	<0.1%		0.01	<0.1%
R3_Cement	<0.01	<0.1%		<0.01	<0.1%
R6_Cement	<0.01	<0.1%		<0.01	<0.1%
1_ICT	<0.01	<0.1%		<0.01	<0.1%
9_ICT	<0.01	<0.1%		<0.01	<0.1%
Maximum	0.02	0.2%		0.02	0.2%

AQAL 15 µg/m3

Table 26: Predicted Process Contribution Annual Mean N-Amines Concentrations (against NDMA AQAL) – FEED 2 Scenario

Receptor	Proposed development PC (ng/m3)	PC/AQAL (%)	Background Concentration (ng/m3)	PC from Cumulative Sources (ng/m3)	PEC (ng/m3)	PEC/AQAL (%)
R1	<0.01	0.1%		0.01	0.01	3.5%

Receptor	Proposed development PC (ng/m3)	PC/AQAL (%)	Background Concentration (ng/m3)	PC from Cumulative Sources (ng/m3)	PEC (ng/m3)	PEC/AQAL (%)
R2	<0.01	0.1%	No Data Available – Assumed to be zero.	0.01	0.01	3.6%
R3	<0.01	2.3%		0.01	0.01	5.4%
R4	<0.01	2.5%		0.01	0.01	5.6%
R5	0.03	14.6%		0.01	0.03	17.2%
R6	0.04	20.1%		0.01	0.05	22.6%
R7	0.06	31.5%		0.01	0.07	34.1%
R8	0.02	8.6%		0.01	0.02	11.9%
R9	0.01	7.2%		0.01	0.02	11.2%
R10	0.02	12.4%		0.01	0.03	16.7%
R11	0.03	16.8%		0.01	0.04	20.5%
R12	0.04	19.6%		0.01	0.05	23.2%
R13	0.04	18.3%		0.01	0.04	21.9%
R14	0.04	18.4%		0.01	0.04	22.2%
R15	0.10	48.9%		<0.01	0.10	51.2%
R16	0.12	59.3%		<0.01	0.12	61.7%
R17	0.11	54.5%		0.01	0.11	57.1%
R18	0.08	41.0%		0.01	0.09	43.7%
R19	0.02	9.4%		0.01	0.03	12.6%

Receptor	Proposed development PC (ng/m^3)	PC/AQAL (%)	Background Concentration (ng/m^3)	PC from Cumulative Sources (ng/m^3)	PEC (ng/m^3)	PEC/AQAL (%)
R20	0.02	10.8%		0.01	0.03	15.8%
R21	0.14	68.4%		<0.01	0.14	70.8%
R22	0.11	53.3%		<0.01	0.11	55.5%
R23	0.11	52.7%		<0.01	0.11	54.8%
R24	0.11	56.0%		<0.01	0.12	58.0%
R25	0.14	72.1%		<0.01	0.15	74.3%
R26	0.13	63.7%		0.01	0.13	66.2%
R27	0.05	25.1%		0.01	0.06	29.1%
R28	0.05	26.2%		0.01	0.06	30.4%
R29	0.06	30.1%		0.01	0.07	33.8%
R30	0.05	23.8%		0.01	0.06	28.1%
R31	0.06	29.3%		0.01	0.07	33.4%
R32	0.07	37.4%		0.01	0.08	40.8%
R33	0.03	17.0%		0.01	0.04	21.9%
R34	0.10	50.1%		<0.01	0.10	51.9%
R35	0.08	38.5%		<0.01	0.08	40.1%
R36	0.10	48.4%		<0.01	0.10	50.1%
R37	0.14	67.7%		<0.01	0.14	69.6%

Receptor	Proposed development PC (ng/m^3)	PC/AQAL (%)	Background Concentration (ng/m^3)	PC from Cumulative Sources (ng/m^3)	PEC (ng/m^3)	PEC/AQAL (%)
R38	0.14	71.0%		<0.01	0.15	73.2%
R39	0.05	26.3%		0.01	0.06	29.7%
R40	0.10	50.5%		<0.01	0.10	52.1%
R41	0.13	66.5%		<0.01	0.14	68.4%
R42	0.05	27.2%		<0.01	0.06	28.5%
R43	0.12	60.4%		<0.01	0.13	62.6%
R44	0.05	26.6%		<0.01	0.06	27.7%
R3_Cement	0.03	14.7%		0.01	0.04	19.0%
R6_Cement	0.04	18.7%		0.03	0.06	32.4%
1_ICT	0.05	27.1%		<0.01	0.06	28.6%
9_ICT	0.05	27.0%		<0.01	0.06	28.3%
Maximum	0.17	85.9%		<0.01	0.18	88.3%

AQAL 0.2 ng/m^3

Table 27: Predicted Process Contribution 30-min Maximum Formaldehyde Concentrations – FEED 2 Scenario

Receptor	Proposed development PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
R1	<0.1	<0.1%	No Data Available	<0.1	<0.1%
R2	<0.1	<0.1%		<0.1	<0.1%
R3	0.1	0.1%		0.1	0.1%
R4	<0.1	<0.1%		<0.1	<0.1%
R5	0.1	0.1%		0.1	0.1%
R6	0.1	0.1%		0.1	0.1%
R7	0.1	0.1%		0.1	0.1%
R8	0.1	0.1%		0.1	0.1%
R9	0.1	0.1%		0.1	0.1%
R10	0.1	0.1%		0.1	0.1%
R11	0.1	0.1%		0.1	0.1%
R12	0.1	0.1%		0.1	0.1%
R13	0.1	0.1%		0.1	0.1%
R14	0.1	0.1%		0.1	0.1%
R15	0.1	0.1%		0.1	0.1%
R16	0.1	0.1%		0.1	0.1%
R17	0.1	0.1%		0.1	0.1%
R18	0.1	0.1%		0.1	0.1%

Receptor	Proposed development PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
R19	0.1	0.1%		0.1	0.1%
R20	0.1	0.1%		0.1	0.1%
R21	0.1	0.1%		0.1	0.1%
R22	0.1	0.1%		0.1	0.1%
R23	0.1	0.1%		0.1	0.1%
R24	0.1	0.1%		0.1	0.1%
R25	0.1	0.1%		0.1	0.1%
R26	0.1	0.1%		0.1	0.1%
R27	0.1	0.1%		0.1	0.1%
R28	0.1	0.1%		0.1	0.1%
R29	0.1	0.1%		0.1	0.1%
R30	0.1	0.1%		0.1	0.1%
R31	0.1	0.1%		0.1	0.1%
R32	0.1	0.1%		0.1	0.1%
R33	0.1	0.1%		0.1	0.1%
R34	0.1	0.1%		0.1	0.1%
R35	0.1	0.1%		0.1	0.1%
R36	0.1	0.1%		0.1	0.1%

Receptor	Proposed development PC (μg/m^3)	PC/AQAL (%)	Background Concentration (μg/m^3)	PEC (μg/m^3)	PEC/AQAL (%)
R37	0.1	0.1%		0.1	0.1%
R38	0.1	0.1%		0.1	0.1%
R39	0.1	0.1%		0.1	0.1%
R40	0.1	0.1%		0.1	0.1%
R41	0.1	0.1%		0.1	0.1%
R42	0.1	0.1%		0.1	0.1%
R43	0.1	0.1%		0.1	0.1%
R44	0.1	0.1%		0.1	0.1%
R3_Cement	0.1	0.1%		0.1	0.1%
R6_Cement	0.1	0.1%		0.1	0.1%
1_ICT	0.1	0.1%		0.1	0.1%
9_ICT	0.1	0.1%		0.1	0.1%
Maximum	0.1	0.1%		0.1	0.1%

AQAL 100 μg/m^3

Table 28: Predicted Process Contribution Annual Mean Formaldehyde Concentrations – FEED 2 Scenario

Receptor	Proposed development PC (µg/m³)	PC/AQAL (%)	Background Concentration (ng/m³)	PEC (µg/m³)	PEC/AQAL (%)
R1	<0.1	<0.1%	No Data Available	<0.1	<0.1%
R2	<0.1	<0.1%		<0.1	<0.1%
R3	<0.1	<0.1%		<0.1	<0.1%
R4	<0.1	<0.1%		<0.1	<0.1%
R5	<0.1	<0.1%		<0.1	<0.1%
R6	<0.1	<0.1%		<0.1	<0.1%
R7	<0.1	<0.1%		<0.1	<0.1%
R8	<0.1	<0.1%		<0.1	<0.1%
R9	<0.1	<0.1%		<0.1	<0.1%
R10	<0.1	<0.1%		<0.1	<0.1%
R11	<0.1	<0.1%		<0.1	<0.1%
R12	<0.1	<0.1%		<0.1	<0.1%
R13	<0.1	<0.1%		<0.1	<0.1%
R14	<0.1	<0.1%		<0.1	<0.1%
R15	<0.1	<0.1%		<0.1	<0.1%
R16	<0.1	<0.1%		<0.1	<0.1%
R17	<0.1	<0.1%		<0.1	<0.1%
R18	<0.1	<0.1%		<0.1	<0.1%

Receptor	Proposed development PC (µg/m³)	PC/AQAL (%)	Background Concentration (ng/m³)	PEC (µg/m³)	PEC/AQAL (%)
R19	<0.1	<0.1%		<0.1	<0.1%
R20	<0.1	<0.1%		<0.1	<0.1%
R21	<0.1	<0.1%		<0.1	<0.1%
R22	<0.1	<0.1%		<0.1	<0.1%
R23	<0.1	<0.1%		<0.1	<0.1%
R24	<0.1	<0.1%		<0.1	<0.1%
R25	<0.1	<0.1%		<0.1	<0.1%
R26	<0.1	<0.1%		<0.1	<0.1%
R27	<0.1	<0.1%		<0.1	<0.1%
R28	<0.1	<0.1%		<0.1	<0.1%
R29	<0.1	<0.1%		<0.1	<0.1%
R30	<0.1	<0.1%		<0.1	<0.1%
R31	<0.1	<0.1%		<0.1	<0.1%
R32	<0.1	<0.1%		<0.1	<0.1%
R33	<0.1	<0.1%		<0.1	<0.1%
R34	<0.1	<0.1%		<0.1	<0.1%
R35	<0.1	<0.1%		<0.1	<0.1%
R36	<0.1	<0.1%		<0.1	<0.1%

Receptor	Proposed development PC (µg/m^3)	PC/AQAL (%)	Background Concentration (ng/m^3)	PEC (µg/m^3)	PEC/AQAL (%)
R37	<0.1	<0.1%		<0.1	<0.1%
R38	<0.1	<0.1%		<0.1	<0.1%
R39	<0.1	<0.1%		<0.1	<0.1%
R40	<0.1	<0.1%		<0.1	<0.1%
R41	<0.1	<0.1%		<0.1	<0.1%
R42	<0.1	<0.1%		<0.1	<0.1%
R43	<0.1	<0.1%		<0.1	<0.1%
R44	<0.1	<0.1%		<0.1	<0.1%
R3_Cement	<0.1	<0.1%		<0.1	<0.1%
R6_Cement	<0.1	<0.1%		<0.1	<0.1%
1_ICT	<0.1	<0.1%		<0.1	<0.1%
9_ICT	<0.1	<0.1%		<0.1	<0.1%
Maximum	<0.1	<0.1%		<0.1	<0.1%

AQAL 5 µg/m^3

1.5.16 The annual average changes at all human health receptors for NO_2, ammonia and formaldehyde are less than 1% of the relevant AQAL.

1.5.17 Likewise, the short-term PCs are less than the 10% of the relevant AQALs at discrete receptors (except R12 and R18). At these two receptor locations, as well as at the maximum in the study area, the hourly NO_2 concentrations is less than 20% of the AQAL minus twice the long-term background concentration.

1.5.18 Predicted concentrations at all human health receptors (except R16, R17, R21 to R26, R34, R37, R38, R40, R41, R43) for N-Amines are less than 50% of the NDMA EAL and therefore the change magnitude can be described as imperceptible or very low, following the magnitude descriptors in Table 8-4 **Chapter 8: Air Quality** (**EN010166/APP/6.2.8**). At these receptors, concentrations are less than 75% of the EAL and can be described as low in magnitude. At the maximum anywhere in the study area concentrations are less than 100% of the EAL and can be described as medium in magnitude.

1.5.19 As with the FEED 1 scenario, this assessment for N-Amines 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 assumed 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; 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.

1.5.20 Based on the above, N-Amines impacts would be substantially lower than those presented.

Unabated Scenario

1.5.21 The results at the identified human health receptors for the unabated scenario are shown in **Table 29** to **Table 31.**

Table 29: Predicted Process Contribution Annual Mean NO_2 Concentrations – Unabated Scenario

Receptor	Proposed development PC (µg/m³)	Road Traffic PC (µg/m³)	PC/AQAL (%)	Background Concentration* (µg/m³)	PC from Cumulative Sources (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
R1	<0.1	<0.1	0.1%	7.5	0.1	7.6	18.9%
R2	<0.1	<0.1	<0.1%	8.0	0.1	8.1	20.3%
R3	<0.1	<0.1	<0.1%	6.5	0.1	6.6	16.4%
R4	<0.1	<0.1	<0.1%	7.4	0.1	7.5	18.7%
R5	<0.1	<0.1	0.1%	8.3	0.1	8.4	21.1%
R6	0.1	<0.1	0.1%	8.3	0.1	8.4	21.0%
R7	0.1	<0.1	0.2%	7.1	0.1	7.3	18.1%
R8	<0.1	<0.1	<0.1%	6.5	0.1	6.6	16.4%
R9	<0.1	<0.1	<0.1%	6.5	0.1	6.6	16.4%
R10	<0.1	<0.1	0.1%	6.5	<0.1	6.6	16.4%
R11	<0.1	<0.1	0.1%	6.5	0.1	6.6	16.5%
R12	<0.1	<0.1	0.1%	6.5	0.1	6.6	16.5%
R13	0.1	<0.1	0.1%	7.5	0.1	7.6	19.0%
R14	0.1	<0.1	0.1%	8.9	0.1	9.0	22.6%
R15	0.2	<0.1	0.4%	9.7	0.1	10.0	24.9%
R16	0.2	<0.1	0.5%	7.0	0.1	7.2	18.1%
R17	0.2	<0.1	0.4%	8.5	0.1	8.8	21.9%

Receptor	Proposed development PC (µg/m³)	Road Traffic PC (µg/m³)	PC/AQAL (%)	Background Concentration* (µg/m³)	PC from Cumulative Sources (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
R18	0.1	<0.1	0.3%	6.5	0.1	6.7	16.7%
R19	<0.1	<0.1	0.1%	7.0	0.1	7.1	17.6%
R20	<0.1	<0.1	0.1%	6.5	<0.1	6.6	16.4%
R21	0.2	<0.1	0.6%	6.5	0.1	6.8	17.0%
R22	0.2	<0.1	0.5%	9.1	0.1	9.4	23.6%
R23	0.2	<0.1	0.4%	9.7	0.1	10.0	25.0%
R24	0.2	<0.1	0.5%	7.3	0.1	7.6	19.0%
R25	0.2	<0.1	0.6%	6.5	0.1	6.8	17.0%
R26	0.2	<0.1	0.5%	6.5	0.1	6.8	16.9%
R27	0.1	<0.1	0.2%	6.5	0.1	6.6	16.5%
R28	0.1	<0.1	0.2%	6.5	<0.1	6.6	16.5%
R29	0.1	<0.1	0.2%	6.5	0.1	6.6	16.6%
R30	0.1	<0.1	0.1%	6.5	<0.1	6.6	16.5%
R31	0.1	<0.1	0.2%	6.5	<0.1	6.6	16.5%
R32	0.1	<0.1	0.2%	6.5	0.1	6.6	16.6%
R33	<0.1	<0.1	0.1%	6.5	<0.1	6.6	16.4%
R34	0.2	<0.1	0.4%	8.7	0.1	9.0	22.4%
R35	0.1	<0.1	0.3%	6.8	0.1	7.0	17.5%

Receptor	Proposed development PC (µg/m³)	Road Traffic PC (µg/m³)	PC/AQAL (%)	Background Concentration* (µg/m³)	PC from Cumulative Sources (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
R36	0.2	<0.1	0.4%	9.6	0.1	9.8	24.6%
R37	0.2	<0.1	0.5%	8.5	0.1	8.8	21.9%
R38	0.2	<0.1	0.6%	7.5	0.1	7.8	19.5%
R39	0.1	<0.1	0.2%	7.6	0.1	7.7	19.3%
R40	0.2	<0.1	0.4%	6.6	0.1	6.9	17.2%
R41	0.2	<0.1	0.5%	6.5	0.1	6.8	17.0%
R42	0.1	<0.1	0.3%	6.5	1.2	7.8	19.6%
R43	0.2	<0.1	0.5%	6.5	0.1	6.8	16.9%
R44	0.1	<0.1	0.3%	6.5	0.3	6.9	17.2%
R3_Cement	<0.1	<0.1	0.1%	6.5	<0.1	6.6	16.4%
R6_Cement	0.1	<0.1	0.1%	6.5	<0.1	6.6	16.5%
1_ICT	0.1	<0.1	0.3%	6.5	0.7	7.3	18.2%
9_ICT	0.1	<0.1	0.3%	6.5	1.8	8.4	21.1%
Maximum	0.2	<0.1	0.6%	6.5	0.1	7.6	18.9%

AQAL 40 µg/m³

*For receptors sensitive to emissions from the Proposed Development and road traffic, background concentrations include the predicted road traffic emissions from the do-minimum scenario.

Table 30: Predicted Process Contribution 1-hour Mean 99.79th Percentile NO_2 Concentrations – Unabated Scenario

Receptor	Proposed development PC (µg/m³)	Road Emissions PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	PC from Cumulative Sources (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
R1	0.1	0.1	0.1%	15.0	1.7	16.8	8.4%
R2	0.1	<0.1	0.1%	16.1	1.7	17.9	9.0%
R3	1.7	<0.1	0.9%	13.0	0.7	15.4	7.7%
R4	0.9	<0.1	0.5%	14.8	1.1	16.9	8.4%
R5	3.0	<0.1	1.5%	16.7	<0.1	19.8	9.9%
R6	4.4	<0.1	2.2%	16.6	<0.1	21.0	10.5%
R7	7.0	<0.1	3.5%	14.2	<0.1	21.2	10.6%
R8	4.1	<0.1	2.1%	13.0	0.6	17.8	8.9%
R9	4.1	<0.1	2.1%	13.0	0.5	17.7	8.8%
R10	6.7	<0.1	3.3%	13.0	0.4	20.1	10.0%
R11	6.8	<0.1	3.4%	13.0	0.6	20.4	10.2%
R12	7.5	<0.1	3.8%	13.0	0.3	20.8	10.4%
R13	9.0	<0.1	4.5%	15.0	0.4	24.4	12.2%
R14	9.1	<0.1	4.6%	17.9	0.4	27.6	13.8%
R15	10.9	<0.1	5.4%	19.6	<0.1	30.5	15.3%
R16	11.7	<0.1	5.9%	13.9	<0.1	25.7	12.8%
R17	12.0	<0.1	6.0%	17.1	<0.1	29.2	14.6%

Receptor	Proposed development PC (µg/m³)	Road Emissions PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	PC from Cumulative Sources (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
R18	11.0	<0.1	5.5%	13.0	<0.1	24.0	12.0%
R19	3.3	<0.1	1.7%	13.9	<0.1	17.2	8.6%
R20	6.1	<0.1	3.1%	13.0	<0.1	19.1	9.6%
R21	12.3	<0.1	6.2%	13.0	<0.1	25.3	12.7%
R22	11.4	<0.1	5.7%	18.4	<0.1	29.8	14.9%
R23	11.5	<0.1	5.7%	19.6	<0.1	31.1	15.5%
R24	11.4	<0.1	5.7%	14.6	<0.1	26.0	13.0%
R25	11.8	<0.1	5.9%	13.0	<0.1	24.8	12.4%
R26	11.7	<0.1	5.8%	13.0	<0.1	24.7	12.3%
R27	10.3	<0.1	5.1%	13.0	0.4	23.6	11.8%
R28	10.3	<0.1	5.1%	13.0	0.4	23.7	11.8%
R29	9.6	<0.1	4.8%	13.0	0.1	22.8	11.4%
R30	8.5	<0.1	4.2%	13.0	0.6	22.1	11.0%
R31	9.2	<0.1	4.6%	13.0	0.3	22.5	11.3%
R32	8.8	<0.1	4.4%	13.0	0.2	22.0	11.0%
R33	8.1	<0.1	4.1%	13.0	0.1	21.2	10.6%
R34	10.0	<0.1	5.0%	17.5	<0.1	27.6	13.8%
R35	9.7	<0.1	4.8%	13.5	<0.1	23.2	11.6%

Receptor	Proposed development PC (μg/m^3)	Road Emissions PC (μg/m^3)	PC/AQAL (%)	Background Concentration (μg/m^3)	PC from Cumulative Sources (μg/m^3)	PEC (μg/m^3)	PEC/AQAL (%)
R36	9.3	<0.1	4.7%	19.3	<0.1	28.7	14.3%
R37	9.9	<0.1	5.0%	17.0	<0.1	27.0	13.5%
R38	10.2	<0.1	5.1%	15.0	<0.1	25.2	12.6%
R39	8.0	<0.1	4.0%	15.6	<0.1	23.5	11.8%
R40	8.4	<0.1	4.2%	13.2	<0.1	21.7	10.8%
R41	8.2	<0.1	4.1%	13.0	<0.1	21.2	10.6%
R42	7.2	<0.1	3.6%	13.0	2.5	22.7	11.4%
R43	9.0	<0.1	4.5%	13.0	<0.1	22.0	11.0%
R44	7.5	<0.1	3.7%	13.0	<0.1	20.5	10.2%
R3_Cement	7.3	<0.1	3.7%	13.0	<0.1	20.3	10.2%
R6_Cement	7.4	<0.1	3.7%	13.0	0.1	20.5	10.3%
1_ICT	7.2	<0.1	3.6%	13.0	<0.1	20.3	10.1%
9_ICT	6.8	<0.1	3.4%	13.0	8.6	28.4	14.2%
Maximum	13.9	0.1	7.0%	13.0	<0.1	27.0	13.5%

AQAL 200 μg/m^3

Table 31: Predicted Process Contribution 8-hour Rolling Maximum CO Concentrations – Unabated Scenario

Receptor	Proposed development PC (mg/m^3)	PC/AQAL (%)	Background Concentration (mg/m^3)	PEC (mg/m^3)	PEC/AQAL (%)
R1	<0.1	<0.1%	0.6	0.6	6.0%
R2	<0.1	<0.1%	0.6	0.6	6.0%
R3	<0.1	0.2%	0.5	0.5	5.2%
R4	<0.1	0.1%	0.5	0.5	5.2%
R5	<0.1	0.1%	0.5	0.5	5.2%
R6	<0.1	0.2%	0.5	0.5	5.3%
R7	<0.1	0.4%	0.5	0.6	5.6%
R8	<0.1	0.3%	0.5	0.5	5.3%
R9	<0.1	0.3%	0.5	0.5	5.5%
R10	<0.1	0.3%	0.5	0.5	5.4%
R11	<0.1	0.4%	0.5	0.5	5.4%
R12	<0.1	0.4%	0.5	0.5	5.5%
R13	0.1	0.5%	0.5	0.6	5.6%
R14	0.1	0.5%	0.5	0.6	5.6%
R15	0.1	0.7%	0.5	0.6	5.9%
R16	0.1	0.6%	0.5	0.6	5.8%
R17	0.1	0.7%	0.5	0.6	5.9%
R18	0.1	0.7%	0.5	0.6	5.9%

Receptor	Proposed development PC (mg/m^3)	PC/AQAL (%)	Background Concentration (mg/m^3)	PEC (mg/m^3)	PEC/AQAL (%)
R19	<0.1	0.2%	0.5	0.5	5.3%
R20	<0.1	0.4%	0.5	0.5	5.4%
R21	0.1	0.6%	0.5	0.6	6.0%
R22	0.1	0.7%	0.5	0.6	5.9%
R23	0.1	0.7%	0.5	0.6	5.9%
R24	0.1	0.6%	0.6	0.6	6.1%
R25	0.1	0.6%	0.5	0.6	6.0%
R26	0.1	0.6%	0.5	0.6	5.9%
R27	0.1	0.5%	0.5	0.6	5.5%
R28	0.1	0.5%	0.5	0.5	5.5%
R29	0.1	0.6%	0.5	0.6	5.5%
R30	<0.1	0.4%	0.5	0.5	5.4%
R31	<0.1	0.4%	0.5	0.5	5.4%
R32	<0.1	0.4%	0.5	0.5	5.4%
R33	<0.1	0.3%	0.5	0.5	5.3%
R34	0.1	0.5%	0.6	0.6	6.0%
R35	<0.1	0.5%	0.6	0.6	6.0%
R36	<0.1	0.5%	0.6	0.6	6.0%

Receptor	Proposed development PC (mg/m^3)	PC/AQAL (%)	Background Concentration (mg/m^3)	PEC (mg/m^3)	PEC/AQAL (%)
R37	<0.1	0.5%	0.6	0.6	6.0%
R38	0.1	0.5%	0.6	0.6	6.2%
R39	<0.1	0.5%	0.6	0.6	6.0%
R40	<0.1	0.4%	0.6	0.6	6.3%
R41	<0.1	0.4%	0.6	0.6	6.3%
R42	<0.1	0.3%	0.6	0.6	6.3%
R43	<0.1	0.3%	0.6	0.6	6.2%
R44	<0.1	0.3%	0.5	0.6	5.8%
R3_Cement	<0.1	0.3%	0.5	0.5	5.5%
R6_Cement	<0.1	0.2%	0.5	0.5	5.4%
1_ICT	<0.1	0.4%	0.6	0.6	6.3%
9_ICT	<0.1	0.3%	0.6	0.6	6.3%
Maximum	0.1	0.9%	0.6	0.7	6.9%

AQAL 10 mg/m^3

1.5.22 The annual average changes at all human health receptors for NO_2, ammonia and formaldehyde are generally less than 1% of the relevant AQAL.

1.5.23 The short-term PCs are less than the 10% of the relevant AQALs and therefore below the short-term screening threshold to demonstrate insignificance.

Ecological Receptor Results

1.5.24 The impacts of the Proposed Development have been modelled at the emission parameters detailed in **Table 2** and **Table 3**.

1.5.25 Where the concentrations from the Proposed Development alone exceed 1% of the AQALs, results from the change in concentration between the Proposed Development and the existing Connah's Quay Power Plant are also presented. These tables set out the predicted change compared to the atmospheric concentrations of NO_X, NH_3 and deposition.

1.5.26 The modelled concentrations have been compared to the AQALs or Critical Loads for each pollutant released. The PC from the operation of the stack have been added to the road emissions with the Proposed Development operational scenario. Receptors labelled as "TE" (for "Traffic Ecological") represent locations within 200m of the affected road network, as described in more details in **Appendix 8-C.**

1.5.27 The "Proposed development PC" column shows the concentrations due to contributions from the various proposed stacks (emission points differ between scenarios). The "Road Traffic Emissions PC" column shows the concentrations due to contributions from additional traffic present on local roads because of the operation of the Proposed Development (not relevant for all pollutants). The "PC/AQAL (%)" column shows the total PC (the addition of the previous two columns) divided by the relevant AQAL. The "Background Concentration" column shows the existing background. The "PC from Cumulative Sources" column shows concentrations due to contributions from the cumulative sources as presented in Annex D (not relevant for all pollutants). The "PEC" column shows total concentrations, i.e. total PC, plus background, plus cumulative sources. "PEC/AQAL (%)" column shows the PEC divided by the relevant AQAL.

FEED 1 Scenario

1.5.28 The results at the identified ecological receptors for the FEED 1 scenario are shown in **Table 32** to **Table 38**.

1.5.29 A discussion of the results listed here can be found in **Chapter 8: Air Quality** (**EN010166/APP/6.2.8**) Section 8.6.

Table 32: Predicted Process Contribution Annual Mean NOx Concentrations – FEED 1 Scenario

Receptor	Proposed Development PC (µg/m³)	Road Emissions PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	Cumulative PC (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
OE01	<0.1	<0.1	0.1%	9.1	0.2	9.4	31.2%
OE02	0.2	<0.1	0.7%	12.7	0.7	13.6	45.4%
OE03	Not Sensitive						
OE04	<0.1	<0.1	0.1%	7.3	0.2	7.5	25.1%
OE05	<0.1	<0.1	0.1%	12.2	0.1	12.3	40.9%
OE06	<0.1	<0.1	0.1%	21.0	0.1	21.1	70.3%
OE07	<0.1	<0.1	0.1%	20.1	0.1	20.2	67.4%
OE08	<0.1	<0.1	0.2%	10.0	0.1	10.2	34.0%
OE09	~~Not Sensitive~~0.1	<0.1	0.3%	10.0	0.6	10.7	35.6%
OE10	0.1	<0.1	0.3%	8.8	0.4	9.4	31.2%
OE11	0.1	<0.1	0.4%	9.8	0.1	10.1	33.6%
OE12	<0.1	<0.1	0.1%	7.4	0.1	7.5	25.0%
OE13	<0.1	<0.1	0.1%	11.5	0.1	11.6	38.7%
OE14	<0.1	<0.1	<0.1%	5.9	<0.1	5.9	19.8%
OE15	<0.1	<0.1	<0.1%	4.6	<0.1	4.7	15.6%
OE16	<0.1	<0.1	<0.1%	5.7	<0.1	5.7	19.0%
OE17	<0.1	<0.1	0.1%	4.9	<0.1	4.9	16.5%

Receptor	Proposed Development PC (µg/m³)	Road Emissions PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	Cumulative PC (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
OE18	<0.1	<0.1	0.1%	7.3	<0.1	7.4	24.5%
OE19	<0.1	<0.1	0.1%	4.7	<0.1	4.8	15.8%
OE20	<0.1	<0.1	0.1%	4.7	<0.1	4.8	15.8%
OE21	<0.1	<0.1	<0.1%	4.5	<0.1	4.5	15.2%
OE22	Not Sensitive						
OE23	Not Sensitive						
OE24	<0.1	<0.1	0.1%	5.2	<0.1	5.2	17.3%
OE25	<0.1	<0.1	<0.1%	4.8	<0.1	4.8	16.1%
OE26	<0.1	<0.1	<0.1%	5.1	<0.1	5.1	17.1%
OE27	<0.1	<0.1	0.1%	7.8	0.1	7.9	26.2%
OE28	<0.1	<0.1	0.1%	7.2	<0.1	7.3	24.3%
OE29	0.1	<0.1	0.3%	10.8	0.3	11.2	37.3%
OE30	0.1	<0.1	0.4%	10.0	0.1	10.3	34.2%
TE1	<0.~~0~~1	<0.~~0~~1	0.1%	9.61	0.1	9.7	32.4%
TE2	<0.~~0~~1	<0.~~0~~1	0.1%	6.49	0.1	6.6	21.9%
TE3	<0.~~0~~1	<0.~~0~~1	0.1%	7.08	0.1	7.2	24.0%
TE4	<0.~~0~~1	<0.~~0~~1	0.1%	7.08	0.1	7.2	24.0%
TE5	<0.~~0~~1	<0.~~0~~1	0.1%	7.45	0.1	7.6	25.2%
TE6	<0.~~0~~1	<0.~~0~~1	0.1%	7.45	0.1	7.6	25.2%

Receptor	Proposed Development PC (µg/m³)	Road Emissions PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	Cumulative PC (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
TE7a	<0.01	<0.01	<0.01%	8.59	<0.01	8.6	28.6%
TE7b	<0.01	<0.01	<0.01%	8.59	<0.01	8.6	28.6%
TE7c	<0.01	<0.01	<0.01%	8.59	<0.01	8.6	28.6%
TE8a	<0.01	<0.01	0.1%	9.61	0.1	9.7	32.5%
TE8b	0.1	<0.01	0.3%	9.04	0.1	9.3	30.9%
TE8c	0.1	<0.01	0.4%	11.99	0.2	12.3	40.8%

AQAL 30 µg/m³

Table 33: Predicted Process Contribution 24-hour Maximum NO_x Concentrations – FEED 1 Scenario

Receptor	Proposed Development PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	Cumulative PC (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
OE01	1.5	2.0%	18.2	0.6	20.4	27.1%
OE02	17.5	23.3%	25.5	<0.1	43.0	57.3%
OE03	Not Sensitive					
OE04	1.4	1.9%	14.6	0.5	16.6	22.1%
OE05	1.2	1.6%	24.3	0.3	25.8	34.5%
OE06	1.6	2.1%	41.9	0.4	43.9	58.5%
OE07	1.1	1.4%	40.3	0.3	41.6	55.5%
OE08	2.1	2.8%	20.0	0.6	22.8	30.3%
OE09	~~Not Sensitive~~4.4	5.8%	20.1	<0.1	24.5	32.6%
OE10	12.5	16.6%	19.6	<0.1	26.1	34.9%
OE11	6.5	8.7%	14.9	0.2	17.5	23.4%
OE12	2.5	3.3%	23.0	<0.1	25.9	34.5%
OE13	2.9	3.9%	11.8	0.2	13.4	17.8%
OE14	1.3	1.8%	9.3	0.5	10.8	14.4%
OE15	1.1	1.4%	11.3	0.4	13.0	17.3%
OE16	1.3	1.8%	9.8	0.3	12.1	16.2%
OE17	2.1	2.8%	14.6	0.6	17.2	23.0%
OE18	2.0	2.7%	9.4	0.2	11.4	15.2%

Receptor	Proposed Development PC (µg/m^3)	PC/AQAL (%)	Background Concentration (µg/m^3)	Cumulative PC (µg/m^3)	PEC (µg/m^3)	PEC/AQAL (%)
OE19	1.8	2.4%	9.4	0.2	11.6	15.5%
OE20	1.9	2.6%	9.0	0.4	10.8	14.3%
OE21	1.3	1.7%	19.6	<0.1	26.1	34.9%
OE22	Not Sensitive					
OE23	Not Sensitive					
OE24	1.4	1.9%	10.3	0.5	12.2	16.2%
OE25	1.4	1.9%	9.6	0.4	11.4	15.3%
OE26	1.6	2.2%	10.2	0.5	12.3	16.4%
OE27	5.1	6.8%	15.5	0.9	21.5	28.7%
OE28	1.9	2.6%	14.4	0.5	16.9	22.5%
OE29	12.1	16.1%	21.6	<0.1	33.7	44.9%
OE30	7.8	10.4%	20.0	0.1	27.9	37.2%

Table 34: Predicted Change in 24 hour Maximum NO_x Concentrations – FEED 1 Scenario

Receptor	Change in PC (µg/m^3)	Change/AQAL (%)
OE02	-8.3	-11.0%
OE10	-11.3	-15.0%
OE29	-17.4	-23.2%

Table 35: Predicted Process Contribution Annual Mean NH_3 Concentrations – FEED 1 Scenario

Receptor	AQAL (µg/m³) (1 used as default)	Proposed Development PC (µg/m³)	Road Emissions PC (µg/m³)	PC/AQAL (%)	Background Conc (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
OE01	1	<0.01	<0.01	0.4%	~~2.~~1.5	~~2.~~1.5	~~211~~152.4%
OE02	1	0.02	<0.01	1.9%	~~2.6~~1.9	~~2.6~~1.9	~~258~~193.9%
OE03	Not Sensitive						
OE04	1	<0.01	<0.01	0.4%	~~2.0~~1.5	~~2.0~~1.5	~~196~~146.4%
OE05	1	<0.01	<0.01	0.2%	~~2.5~~1.8	~~2.5~~1.8	~~247~~180.2%
OE06	1 or 3	<0.01	<0.01	0.2%	~~2.6~~1.9	~~2.6~~1.9	~~259~~189.2%
OE07	1 or 3	<0.01	<0.01	0.2%	~~2.3~~1.7	~~2.3~~1.7	~~227~~169.2%
OE08	3	<0.01	<0.01	0.1%	2.~~7~~0	2.~~7~~0	~~273.4~~66.5 %
OE09	~~Not Sensitive~~1	0.01	<0.01	0.7%	1.9	1.9	192.7%
OE10	3	0.01	<0.01	0.3%	~~2.4~~1.7	~~2.4~~1.7	~~240.9~~58.0 %
OE11	1	0.01	<0.01	1.1%	~~2.5~~1.8	~~2.6~~1.9	~~255~~185.1%
OE12	1	<0.01	<0.01	0.2%	~~2.4~~1.7	~~2.4~~1.7	~~240~~174.2%
OE13	1	<0.01	<0.01	0.3%	~~2.7~~1.9	~~2.7~~1.9	~~266~~191.3%
OE14	1	<0.01	<0.01	0.1%	~~2.~~1.5	~~2.~~1.5	~~205~~145.1%
OE15	1	<0.01	<0.01	0.1%	1.~~6~~2	1.~~6~~2	~~164~~117.1%
OE16	Not Sensitive						

Receptor	AQAL (µg/m³) (1 used as default)	Proposed Development PC (µg/m³)	Road Emissions PC (µg/m³)	PC/AQAL (%)	Background Conc (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
OE17	1	<0.01	<0.01	0.2%	1.~~9~~4	1.~~9~~4	~~191~~143.2%
OE18	1	<0.01	<0.01	0.2%	~~2.2~~1.6	~~2.2~~1.6	~~222~~162.2%
OE19	1	<0.01	<0.01	0.2%	1.~~8~~3	1.~~8~~3	~~182~~131.2%
OE20	1	<0.01	<0.01	0.2%	1.~~8~~3	1.~~8~~3	~~182~~131.2%
OE21	1	<0.01	<0.01	0.1%	~~2.0~~1.5	~~2.0~~1.5	~~202~~147.1%
OE22	Not Sensitive						
OE23	Not Sensitive						
OE24	3	<0.01	<0.01	<0.1%	1.~~9~~4	1.~~9~~4	~~192.1~~47.4 %
OE25	1	<0.01	<0.01	0.1%	1.~~9~~4	1.~~9~~4	~~193~~138.1%
OE26	1	<0.01	<0.01	0.1%	~~2.0~~1.4	~~2.0~~1.4	~~198~~139.1%
OE27	1	<0.01	<0.01	0.3%	~~2.~~1.5	~~2.~~1.5	~~209~~154.3%
OE28	1	<0.01	<0.01	0.2%	~~2.~~1.5	~~2.~~1.5	~~206~~145.2%
OE29	1	0.01	<0.01	0.9%	~~2.5~~1.9	~~2.5~~1.9	~~252~~187.9%
OE30	1	0.01	<0.01	1.1%	~~2.7~~1.9	~~2.7~~1.9	~~266~~195.1%
TE1	1	<0.01	<0.01	0.4%	1.55	1.55	155.4%
TE2	1	<0.01	<0.01	0.2%	1.37	1.37	137.2%
TE3	1	<0.01	<0.01	0.2%	1.71	1.71	171.2%
TE4	1	<0.01	0.01	0.7%	1.71	1.72	171.7%

Receptor	AQAL (µg/m^3) (1 used as default)	Proposed Development PC (µg/m^3)	Road Emissions PC (µg/m^3)	PC/AQAL (%)	Background Conc (µg/m^3)	PEC (µg/m^3)	PEC/AQAL (%)
TE5	1	<0.01	0.01	0.7%	1.66	1.67	166.7%
TE6	1	<0.01	0.01	0.7%	1.66	1.67	166.7%
TE7a	1	<0.01	<0.01	0.2%	1.84	1.84	184.2%
TE7b	1	<0.01	<0.01	0.3%	1.84	1.84	184.3%
TE7c	1	0.01	<0.01	0.6%	1.84	1.85	184.6%
TE8a	1	<0.01	<0.01	0.3%	1.55	1.55	155.3%
TE8b	1	<0.01	<0.01	0.8%	1.73	1.74	173.8%
TE8c	1	0.01	<0.01	0.7%	1.92	1.93	192.7%

Table 36: Predicted Process Contribution Nitrogen Deposition – FEED 1 Scenario

Receptor	Critical Load (AQAL) (kg/ha/yr)	Background Concentration (kg/ha/yr)	Predicted PC (kg/ha/yr)	Predicted Road Emissions PC (kg/ha/yr)	PC/ AQAL (%)	Cumulative PC (kg/ha/yr)	PEC (kg/ha/yr)	PEC/AQAL (%)
OE01	5	15.0	0.03	<0.01	0.6%	0.03	15.03	300.6%
OE02	5	16.3	0.14	<0.01	2.9%	0.10	16.56	331.2%
OE03	Not sensitive							
OE04	5	14.1	0.03	<0.01	0.6%	0.02	14.19	283.8%
OE05	10	29.2	0.02	<0.01	0.2%	0.03	29.29	292.9%
OE06	5	17.3	0.02	<0.01	0.4%	0.01	17.29	345.8%
OE07	10	16.0	0.01	<0.01	0.1%	0.01	16.00	160.0%
OE08	Not Sensitive							
OE09	10	16.2	0.05	<0.01	0.5%	0.08	16.35	163.5%
OE10	10	16.2	0.07	<0.01	0.7%	0.06	16.32	163.2%
OE11	10	30.6	0.14	<0.01	1.4%	0.04	30.79	307.9%
OE12	6	17.5	0.01	<0.01	0.2%	0.01	17.51	291.9%
OE13	5	18.2	0.03	<0.01	0.5%	0.01	18.25	365.0%
OE14	5	17.6	0.01	<0.01	0.2%	0.00	17.59	351.8%
OE15	5	17.0	0.01	<0.01	0.1%	0.00	17.03	340.6%
OE16	10	28.7	0.01	<0.01	0.1%	0.01	28.75	287.5%
OE17	10	28.5	0.02	<0.01	0.2%	0.01	28.53	285.3%

Receptor	Critical Load (AQAL) (kg/ha/yr)	Background Concentration (kg/ha/yr)	Predicted PC (kg/ha/yr)	Predicted Road Emissions PC (kg/ha/yr)	PC/ AQAL (%)	Cumulative PC (kg/ha/yr)	PEC (kg/ha/yr)	PEC/AQAL (%)
OE18	5	15.8	0.01	<0.01	0.3%	0.01	15.77	315.4%
OE19	10	16.7	0.01	<0.01	0.1%	0.00	16.74	167.4%
OE20	6	16.7	0.01	<0.01	0.2%	0.00	16.74	279.1%
OE21	15	28.5	0.01	<0.01	0.1%	0.01	28.53	190.2%
OE22	Not Sensitive							
OE23	Not Sensitive							
OE24	10	16.6	0.01	<0.01	0.1%	0.00	16.57	165.7%
OE25	5	16.6	0.01	<0.01	0.2%	0.00	16.62	332.4%
OE26	5	16.6	0.01	<0.01	0.2%	0.00	16.63	332.7%
OE27	6	16.1	0.02	<0.01	0.4%	0.01	16.10	268.4%
OE28	6	16.1	0.01	<0.01	0.2%	0.01	16.10	268.3%
OE29	5	16.4	0.07	<0.01	1.3%	0.04	16.55	331.0%
OE30	10	31.1	0.14	<0.01	1.4%	0.04	31.28	312.8%
TE1	10	28.23	0.04	<0.01	0.4%	0.02	28.30	283.0%
TE2	10	28.67	0.03	<0.01	0.3%	0.02	28.72	287.2%
TE3	10	29.52	0.03	<0.01	0.3%	0.03	29.57	295.7%
TE4	10	29.52	0.02	0.05	0.7%	0.02	29.61	296.1%
TE5	10	28.91	0.02	0.05	0.7%	0.03	29.01	290.1%

Receptor	Critical Load (AQAL) (kg/ha/yr)	Background Concentration (kg/ha/yr)	Predicted PC (kg/ha/yr)	Predicted Road Emissions PC (kg/ha/yr)	PC/ AQAL (%)	Cumulative PC (kg/ha/yr)	PEC (kg/ha/yr)	PEC/AQAL (%)
TE6	10	28.91	0.02	0.05	0.7%	0.03	29.01	290.1%
TE7a	10	30.61	0.06	<0.01	0.6%	0.03	30.69	306.9%
TE7b	10	30.61	0.08	<0.01	0.8%	0.03	30.72	307.2%
TE7c	10	30.61	0.13	<0.01	1.3%	0.03	30.77	307.7%
TE8a	5	15.99	0.04	<0.01	0.9%	0.03	16.06	321.2%
TE8b	5	16.19	0.09	0.03	2.4%	0.04	16.35	326.9%
TE8c	5	16.81	0.12	0.01	2.5%	0.04	16.98	339.5%

Table 37: Predicted Change in Nitrogen Deposition – FEED 1 Scenario

Receptor	Critical Load (AQAL) (kg/ha/yr)	Background Concentration (kg/ha/yr)	Predicted PC (kg/ha/yr)	PC/ AQAL (%)	Cumulative PC (µg/m^3)	PEC (kg/ha/yr)	PEC/AQAL (%)
OE02	5	16.3	0.13	2.5%	0.10	16.54	330.9%
OE11	10	30.6	0.10	1.0%	0.04	30.75	307.5%
OE29	5	16.4	0.05	1.0%	0.04	16.54	330.7%
TE7c	10	30.61	0.10	1.0%	0.03	30.74	307.4%
TE8b	5	16.19	0.06	1.8%	0.04	16.32	326.4%
TE8c	5	16.81	0.06	1.3%	0.04	16.92	338.4%

Table 38: Predicted Process Contribution Acid Deposition– FEED 1 Scenario

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	Road Emissions PC (µg/m^3)	PC/ AQAL (%)	Cumulative PC (µg/m^3)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
OE01	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	1.23	<0.01	<0.01	0.1%	<0.01	1.23	92.7%
OE02	Min CL min N 0.499 Min CL Max N 1.564 Min CL Max S 0.83	0.95	0.01	<0.01	<0.1%	0.01	0.97	<0.1%
OE03	Not Sensitive							
OE04	Min CL min N 0.499 Min CL Max N 1.052 Min CL Max S 0.91	1.16	<0.01	<0.01	0.2%	<0.01	1.16	110.6%
OE05	Min CL min N 0.499 Min CL Max N 1.721 Min CL Max S 1.364	2.33	<0.01	<0.01	0.1%	<0.01	2.33	135.6%
OE06	Min CL min N 0.499 Min CL Max N 0.511 Min CL Max S 0.19	1.08	<0.01	<0.01	0.3%	<0.01	1.08	211.8%
OE07	Not Sensitive							
OE08	Not Sensitive							
OE09	Not Sensitive							
OE10	Not Sensitive							

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	Road Emissions PC (µg/m^3)	PC/ AQAL (%)	Cumulative PC (µg/m^3)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
OE11	Min CL min N 0.499 Min CL Max N 1.72 Min CL Max S 1.448	No Data Available	0.01	<0.01	<0.1%	<0.01	0.01	<0.1%
OE12	Min CL min N 0.499 Min CL Max N 1.834 Min CL Max S 1.477	No Data Available	<0.01	<0.01	<0.1%	<0.01	<0.01	<0.1%
OE13	Min CL min N 0.499 Min CL Max N 1.828 Min CL Max S 1.471	No Data Available	<0.01	<0.01	<0.1%	<0.01	<0.01	<0.1%
OE14	Min CL min N 0.499 Min CL Max N 0.634 Min CL Max S 0.349	2.35	<0.01	<0.01	0.1%	<0.01	2.35	370.8%
OE15	Min CL min N 0.499 Min CL Max N 6.197 Min CL Max S 6.055	1.37	<0.01	<0.01	<0.1%	<0.01	1.37	22.1%
OE16	Min CL min N 0.499 Min CL Max N 1.769 Min CL Max S 1.627	2.25	<0.01	<0.01	0.1%	<0.01	2.25	127.3%
OE17	Min CL min N 0.499 Min CL Max N 1.863 Min CL Max S 1.721	No Data Available	<0.01	<0.01	<0.1%	<0.01	<0.01	<0.1%
OE18	Min CL min N 0.499 Min CL Max N 1.006 Min CL Max S 0.721	No Data Available	<0.01	<0.01	<0.1%	<0.01	<0.01	<0.1%

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	Road Emissions PC (µg/m^3)	PC/ AQAL (%)	Cumulative PC (µg/m^3)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
OE19	Min CL min N 0.499 Min CL Max N 4.856 Min CL Max S 4	1.35	<0.01	<0.01	<0.1%	<0.01	1.35	27.8%
OE20	Min CL min N 0.499 Min CL Max N 4.856 Min CL Max S 4	1.35	<0.01	<0.01	<0.1%	<0.01	1.35	27.8%
OE21	Min CL min N 0.499 Min CL Max N 5.989 Min CL Max S 5.847	2.23	<0.01	<0.01	<0.1%	<0.01	2.23	37.3%
OE22	Not Sensitive							
OE23	Not Sensitive							
OE24	Not Sensitive							
OE25	Min CL min N 0.499 Min CL Max N 6.023 Min CL Max S 5.881	1.34	<0.01	<0.01	<0.1%	<0.01	1.34	22.3%
OE26	Min CL min N 0.499 Min CL Max N 4.268 Min CL Max S 4.09	1.34	<0.01	<0.01	<0.1%	<0.01	1.34	31.4%
OE27	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	2.29	<0.01	<0.01	0.1%	<0.01	2.29	126.6%

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	Road Emissions PC (µg/m^3)	PC/ AQAL (%)	Cumulative PC (µg/m^3)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
OE28	Min CL min N 0.499 Min CL Max N 5.071 Min CL Max S 4	1.3	<0.01	<0.01	<0.1%	<0.01	1.30	25.7%
OE29	Min CL min N 0.499 Min CL Max N 5.071 Min CL Max S 4	1.02	<0.01	<0.01	<0.1%	<0.01	1.03	<0.1%
OE30	Min CL min N 0.499 Min CL Max N 1.72 Min CL Max S 1.448	No Data Available	0.01	<0.01	<0.1%	<0.01	0.01	<0.1%
TE1	Min CL min N 0.499 Min CL Max N 1.782 Min CL Max S 1.425	2.37	<0.01	<0.01	0.2%	<0.01	2.38	133.3%
TE2	Min CL min N 0.499 Min CL Max N 1.782 Min CL Max S 1.425	2.35	<0.01	<0.01	0.1%	<0.01	2.36	138.0%
TE3	Min CL min N 0.499 Min CL Max N 1.782 Min CL Max S 1.425	2.44	<0.01	<0.01	0.1%	<0.01	2.45	134.9%
TE4	Min CL min N 0.499 Min CL Max N 1.705 Min CL Max S 1.563	2.44	<0.01	<0.01	0.3%	<0.01	2.45	135.1%
TE5	Min CL min N 0.499 Min CL Max N 1.705 Min CL Max S 1.563	2.42	<0.01	<0.01	0.3%	<0.01	2.43	136.3%

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	Road Emissions PC (µg/m^3)	PC/ AQAL (%)	Cumulative PC (µg/m^3)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
TE6	Min CL min N 0.499 Min CL Max N 1.705 Min CL Max S 1.563	2.42	<0.01	<0.01	0.3%	<0.01	2.43	136.3%
TE7a	Min CL min N 0.499 Min CL Max N 1.705 Min CL Max S 1.563	2.48	<0.01	<0.01	0.2%	<0.01	2.49	144.5%
TE7b	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	2.49	0.01	<0.01	0.4%	<0.01	2.50	144.6%
TE7c	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	2.49	0.01	<0.01	0.6%	<0.01	2.50	144.9%
TE8a	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	1.42	<0.01	<0.01	0.2%	<0.01	1.43	90.5%
TE8b	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	No Data Available	0.01	<0.01	<0.1%	<0.01	0.02	<0.1%
TE8c	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	1.47	0.01	<0.01	0.2%	<0.01	1.48	30.5%

FEED 2 Scenario

1.5.30 The results at the identified ecological receptors for the FEED 2 scenario are shown in **Table 39** to **Table 45**.

1.5.31 A discussion of the results listed here can be found in **Chapter 8: Air Quality** (**EN010166/APP/6.2.8**) Section 8.6.

Table 39: Predicted Process Contribution Annual Mean NO_x Concentrations – FEED 2 Scenario

Receptor	Proposed Development PC (µg/m³)	Road Emissions PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	Cumulative PC (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
OE01	0.1	<0.1	0.2%	9.1	0.2	9.4	31.3%
OE02	0.2	<0.1	0.7%	12.7	0.7	13.6	45.5%
OE03	Not Sensitive						
OE04	0.1	<0.1	0.2%	7.3	0.2	7.5	25.1%
OE05	<0.1	<0.1	0.1%	12.2	0.1	12.3	41.0%
OE06	<0.1	<0.1	0.1%	21.0	0.1	21.1	70.3%
OE07	<0.1	<0.1	0.1%	20.1	<0.1	20.2	67.4%
OE08	0.1	<0.1	0.2%	1<0.1	0.1	10.2	34.0%
OE09	0.1	<0.1	0.3%	10.0	0.6	10.7	35.8%
OE10	0.1	<0.1	0.4%	8.8	0.4	9.4	31.3%
OE11	0.2	<0.1	0.5%	9.8	0.1	10.1	33.7%
OE12	<0.1	<0.1	0.1%	7.4	0.1	7.5	25.1%
OE13	<0.1	<0.1	0.2%	11.5	0.1	11.6	38.7%
OE14	<0.1	<0.1	0.1%	5.9	<0.1	5.9	19.8%
OE15	<0.1	<0.1	<0.1%	4.6	<0.1	4.7	15.6%
OE16	<0.1	<0.1	0.1%	5.7	<0.1	5.7	19.0%
OE17	<0.1	<0.1	0.1%	4.9	<0.1	4.9	16.5%
OE18	<0.1	<0.1	0.1%	7.3	<0.1	7.4	24.5%

Receptor	Proposed Development PC (µg/m³)	Road Emissions PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	Cumulative PC (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
OE19	<0.1	<0.1	0.1%	4.7	<0.1	4.8	15.9%
OE20	<0.1	<0.1	0.1%	4.7	<0.1	4.8	15.9%
OE21	<0.1	<0.1	<0.1%	4.5	<0.1	4.6	15.2%
OE22	Not Sensitive						
OE23	Not Sensitive						
OE24	<0.1	<0.1	0.1%	5.2	<0.1	5.2	17.3%
OE25	<0.1	<0.1	0.1%	4.8	<0.1	4.8	16.1%
OE26	<0.1	<0.1	0.1%	5.1	<0.1	5.1	17.1%
OE27	<0.1	<0.1	0.1%	7.8	0.1	7.9	26.2%
OE28	<0.1	<0.1	0.1%	7.2	<0.1	7.3	24.3%
OE29	0.1	<0.1	0.4%	10.8	0.3	11.2	37.3%
OE30	0.2	<0.1	0.5%	10.0	0.1	10.3	34.3%
TE1	<0.1	<0.1	0.1%	9.61	0.1	9.7	32.4%
TE2	<0.1	<0.1	0.1%	6.49	0.1	6.6	21.9%
TE3	<0.1	<0.1	0.1%	7.08	0.1	7.2	24.0%
TE4	<0.1	<0.1	0.1%	7.08	0.1	7.2	24.0%
TE5	<0.1	<0.1	0.1%	7.45	0.1	7.6	25.2%
TE6	<0.1	<0.1	0.1%	7.45	0.1	7.6	25.2%
TE7a	0.1	<0.1	0.2%	8.59	0.1	8.7	29.1%

Receptor	Proposed Development PC (µg/m³)	Road Emissions PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	Cumulative PC (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
TE7b	0.1	<0.1	0.3%	8.59	0.1	8.8	29.2%
TE7c	0.1	<0.1	0.5%	8.59	0.1	8.8	29.4%
TE8a	<0.1	<0.1	0.1%	9.61	0.1	9.7	32.4%
TE8b	0.1	<0.1	0.3%	9.04	0.1	9.3	30.9%
TE8c	0.1	<0.1	0.4%	11.99	0.2	12.3	40.9%

AQAL 30 µg/m³

Table 40: Predicted Process Contribution 24-hour Maximum NO_x Concentrations – FEED 2 Scenario

Receptor	Proposed Development PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	Cumulative PC (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
OE01	2.0	2.7%	18.2	0.6	20.9	27.9%
OE02	19.3	25.8%	25.5	<0.1	44.8	59.8%
OE03	Not Sensitive					
OE04	2.0	2.6%	14.6	0.5	17.1	22.8%
OE05	1.7	2.2%	24.3	0.2	26.2	34.9%
OE06	2.1	2.7%	41.9	0.4	44.4	59.2%
OE07	1.4	1.9%	40.3	0.3	42.0	56.0%
OE08	2.8	3.7%	20.0	0.6	23.4	31.2%
OE09	~~Not Sensitive~~5.6	7.4%	20.1	<0.1	25.7	34.2%
OE10	13.1	17.5%	17.7	<0.1	30.8	41.1%
OE11	8.8	11.7%	19.6	<0.1	28.4	37.8%
OE12	3.1	4.2%	14.9	0.3	18.3	24.4%
OE13	2.8	3.8%	23.0	0.4	26.2	34.9%
OE14	1.7	2.3%	11.8	0.2	13.7	18.3%
OE15	1.5	2.0%	9.3	0.3	11.1	14.8%
OE16	1.8	2.3%	11.3	0.4	13.4	17.9%
OE17	2.5	3.3%	9.8	0.3	12.5	16.7%
OE18	2.6	3.4%	14.6	0.6	17.8	23.7%

Receptor	Proposed Development PC (µg/m^3)	PC/AQAL (%)	Background Concentration (µg/m^3)	Cumulative PC (µg/m^3)	PEC (µg/m^3)	PEC/AQAL (%)
OE19	2.3	3.0%	9.4	0.2	11.9	15.8%
OE20	2.4	3.2%	9.4	0.2	12.0	16.1%
OE21	1.8	2.3%	9.0	0.4	11.2	15.0%
OE22	Not Sensitive					
OE23	Not Sensitive					
OE24	2.1	2.9%	10.3	0.5	12.9	17.2%
OE25	2.0	2.7%	9.6	0.4	12.0	15.9%
OE26	2.1	2.9%	10.2	0.5	12.8	17.1%
OE27	6.1	8.1%	15.5	0.9	22.5	30.0%
OE28	2.5	3.3%	14.4	0.5	17.5	23.3%
OE29	14.9	19.9%	21.6	<0.1	36.5	48.7%
OE30	8.6	11.5%	20.0	0.1	28.8	38.3%

Table 41: Predicted Change in 24 hour Maximum NO_x Concentrations – FEED 2 Scenario

Receptor	Change in PC (µg/m³)	Change/AQAL (%)
OE02	-8.12	-10.8%
OE10	-10.69	-14.3%
OE29	-16.74	-22.3%

Table 42: Predicted Process Contribution Annual Mean NH_3 Concentrations

Receptor	AQAL (µg/m³) (1 used as default)	Proposed Development PC (µg/m³)	Road Emissions PC (µg/m³)	PC/AQAL (%)	Background Conc (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
OE01	1	<0.01	<0.01	0.4%	2.1.5	2.1.5	211152.4%
OE02	1	0.01	<0.01	1.4%	2.61.9	2.61.9	258193.4%
OE03	Not Sensitive						
OE04	1	<0.01	<0.01	0.4%	2.01.5	2.01.5	196146.4%
OE05	1	<0.01	<0.01	0.2%	2.51.8	2.51.8	247180.2%
OE06	1 or 3	<0.01	<0.01	0.2%	2.61.9	2.61.9	259189.2%
OE07	1 or 3	<0.01	<0.01	0.2%	2.31.7	2.31.7	227169.2%
OE08	3	<0.01	<0.01	0.1%	2.70	2.70	273.466.5%
OE09	Not Sensitive1	0.01	<0.01	0.6%	1.9	1.9	192.6%
OE10	3	0.01	<0.01	0.2%	2.41.7	2.41.7	240.757.9%
OE11	1	0.01	<0.01	1.0%	2.51.8	2.61.9	255185.0%

Receptor	AQAL (µg/m³) (1 used as default)	Proposed Development PC (µg/m³)	Road Emissions PC (µg/m³)	PC/AQAL (%)	Background Conc (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
OE12	1	<0.01	<0.01	0.2%	~~2.4~~1.7	~~2.4~~1.7	~~240~~174.2 %
OE13	1	<0.01	<0.01	0.3%	~~2.7~~1.9	~~2.7~~1.9	~~266~~191.3 %
OE14	1	<0.01	<0.01	0.1%	~~2.~~1.5	~~2.~~1.5	~~205~~145.1 %
OE15	1	<0.01	<0.01	0.1%	1.~~6~~2	1.~~6~~2	~~164~~117.1 %
OE16	Not Sensitive						
OE17	1	<0.01	<0.01	0.2%	1.~~9~~4	1.~~9~~4	~~191~~143.2 %
OE18	1	<0.01	<0.01	0.2%	~~2.2~~1.6	~~2.2~~1.6	~~222~~162.2 %
OE19	1	<0.01	<0.01	0.1%	1.~~8~~3	1.~~8~~3	~~182~~131.1 %
OE20	1	<0.01	<0.01	0.1%	1.~~8~~3	1.~~8~~3	~~182~~131.1 %
OE21	1	<0.01	<0.01	0.1%	~~2.0~~1.5	~~2.0~~1.5	~~202~~147.1 %
OE22	Not Sensitive						
OE23	Not Sensitive						

Receptor	AQAL (µg/m³) (1 used as default)	Proposed Development PC (µg/m³)	Road Emissions PC (µg/m³)	PC/AQAL (%)	Background Conc (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
OE24	3	<0.01	<0.01	<0.1%	1.~~9~~4	1.~~9~~4	~~192.1~~147.4 %
OE25	1	<0.01	<0.01	0.1%	1.~~9~~4	1.~~9~~4	~~193~~138.1 %
OE26	1	<0.01	<0.01	0.1%	~~2.0~~1.4	~~2.0~~1.4	~~198~~139.1 %
OE27	1	<0.01	<0.01	0.3%	~~2.~~1.5	~~2.~~1.5	~~209~~154.3 %
OE28	1	<0.01	<0.01	0.2%	~~2.~~1.5	~~2.~~1.5	~~206~~145.2 %
OE29	1	0.01	<0.01	0.7%	~~2.5~~1.9	~~2.5~~1.9	~~252~~187.7 %
OE30	1	0.01	<0.01	1.0%	~~2.7~~1.9	2.~~7~~0	~~266~~195.0 %
TE1	1	<0.01	<0.01	0.2%	1.55	1.55	155.2%
TE2	1	<0.01	<0.01	0.2%	1.37	1.37	137.2%
TE3	1	<0.01	<0.01	0.2%	1.71	1.71	171.2%
TE4	1	<0.01	0.01	0.7%	1.71	1.72	171.7%
TE5	1	<0.01	0.01	0.7%	1.66	1.67	166.7%
TE6	1	<0.01	0.01	0.7%	1.~~84~~66	1.~~85~~67	~~184~~166.7 %

Receptor	AQAL (µg/m³) (1 used as default)	Proposed Development PC (µg/m³)	Road Emissions PC (µg/m³)	PC/AQAL (%)	Background Conc (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
TE7a	1	<0.01	<0.01	0.4%	1.~~55~~84	1.~~55~~84	~~155~~184.4%
TE7b	1	0.01	<0.01	0.6%	1.~~73~~84	1.~~74~~85	~~173~~184.6%
TE7c	1	0.01	<0.01	1.0%	1.~~92~~84	1.~~93~~85	~~193~~185.0%
TE8a	1	<0.01	<0.01	0.3%	1.~~84~~55	1.~~84~~55	~~184~~155.3%
TE8b	1	0.01	<0.01	1.0%	1.~~84~~73	1.~~85~~74	~~185~~174.0%
TE8c	1	0.01	<0.01	0.9%	1.~~66~~92	1.~~67~~93	~~166~~192.9%

Table 43: Predicted Process Contribution Nitrogen Deposition – FEED 2 Scenario

Receptor	Critical Load (AQAL) (kg/ha/yr)	Background Concentration (kg/ha/yr)	Predicted PC (kg/ha/yr)	Predicted Road Emissions PC (kg/ha/yr)	PC/ AQAL (%)	Cumulative PC (kg/ha/yr)	PEC (kg/ha/yr)	PEC/AQAL (%)
OE01	5	15.0	0.03	<0.01	0.5%	0.03	15.03	300.5%
OE02	5	16.3	0.011	<0.01	2.2%	0.10	16.53	330.6%
OE03	Not Sensitive							
OE04	5	14.1	0.03	<0.01	0.6%	0.03	14.19	283.8%
OE05	10	29.2	0.02	<0.01	0.2%	0.02	29.29	292.9%
OE06	5	17.3	0.02	<0.01	0.4%	0.02	17.29	345.8%
OE07	10	16.0	0.01	<0.01	0.1%	0.01	16.00	160.0%
OE08	Not Sensitive							
OE09	10	16.2	0.05	<0.01	0.5%	0.08	16.35	163.5%
OE10	10	16.2	0.06	<0.01	0.6%	0.06	16.31	163.1%
OE11	10	30.6	0.13	<0.01	1.3%	0.04	30.78	307.8%
OE12	6	17.5	0.01	<0.01	0.2%	0.01	17.51	291.9%
OE13	5	18.2	0.02	<0.01	0.5%	0.01	18.25	364.9%
OE14	5	17.6	0.01	<0.01	0.2%	<0.01	17.59	351.9%
OE15	5	17.0	0.01	<0.01	0.1%	<0.01	17.03	340.6%
OE16	10	28.7	0.01	<0.01	0.1%	0.01	28.75	287.5%
OE17	10	28.5	0.02	<0.01	0.2%	0.01	28.53	285.3%

Receptor	Critical Load (AQAL) (kg/ha/yr)	Background Concentration (kg/ha/yr)	Predicted PC (kg/ha/yr)	Predicted Road Emissions PC (kg/ha/yr)	PC/ AQAL (%)	Cumulative PC (kg/ha/yr)	PEC (kg/ha/yr)	PEC/AQAL (%)
OE18	5	15.8	0.01	<0.01	0.3%	0.01	15.77	315.4%
OE19	10	16.7	0.01	<0.01	0.1%	<0.01	16.74	167.4%
OE20	6	16.7	0.01	<0.01	0.2%	<0.01	16.75	279.1%
OE21	15	28.5	0.01	<0.01	0.1%	0.01	28.53	190.2%
OE22	Not Sensitive							
OE23	Not Sensitive							
OE24	10	16.6	0.01	<0.01	0.1%	<0.01	16.57	165.7%
OE25	5	16.6	0.01	<0.01	0.2%	<0.01	16.62	332.4%
OE26	5	16.6	0.01	<0.01	0.2%	<0.01	16.63	332.7%
OE27	6	16.1	0.02	<0.01	0.3%	0.01	16.10	268.3%
OE28	6	16.1	0.01	<0.01	0.2%	0.01	16.10	268.3%
OE29	5	16.4	0.06	<0.01	1.1%	0.04	16.54	330.8%
OE30	10	31.1	0.13	<0.01	1.3%	0.04	31.27	312.7%
TE1	10	28.23	0.03	<0.01	0.3%	0.02	28.28	282.8%
TE2	10	28.67	0.03	<0.01	0.3%	0.02	28.72	287.2%
TE3	10	29.52	0.02	<0.01	0.2%	0.03	29.57	295.7%
TE4	10	29.52	0.02	0.05	0.7%	0.02	29.61	296.1%
TE5	10	28.91	0.01	0.05	0.6%	0.03	29.00	290.0%
TE6	10	28.91	0.01	0.05	0.7%	0.03	29.00	290.0%

Receptor	Critical Load (AQAL) (kg/ha/yr)	Background Concentration (kg/ha/yr)	Predicted PC (kg/ha/yr)	Predicted Road Emissions PC (kg/ha/yr)	PC/ AQAL (%)	Cumulative PC (kg/ha/yr)	PEC (kg/ha/yr)	PEC/AQAL (%)
TE7a	10	30.61	0.05	<0.01	0.5%	0.03	30.68	306.8%
TE7b	10	30.61	0.07	<0.01	0.7%	0.03	30.71	307.1%
TE7c	10	30.61	0.12	<0.01	1.2%	0.03	30.76	307.6%
TE8a	5	15.99	0.03	<0.01	0.6%	0.03	16.05	320.9%
TE8b	5	16.19	0.07	0.03	1.9%	0.04	16.32	326.5%
TE8c	5	16.81	0.10	0.01	2.2%	0.04	16.96	339.2%

Table 44: Predicted Change in Nitrogen Deposition – FEED 2 Scenario

Receptor	Critical Load (AQAL) (kg/ha/yr)	Background Concentration (kg/ha/yr)	Predicted PC (kg/ha/yr)	PC/ AQAL (%)	Cumulative PC (µg/m^3)	PEC (kg/ha/yr)	PEC/AQAL (%)
OE02	5	16.3	0.11	2.2%	0.10	16.53	330.6%
OE11	10	30.6	0.08	0.8%	0.04	30.78	307.8%
OE29	5	16.4	0.06	1.1%	0.04	16.54	330.8%
TE7c	10	30.61	0.09	0.9%	0.03	30.73	307.3%
TE8b	5	16.19	0.04	1.3%	0.04	16.29	325.9%
TE8c	5	16.81	0.04	1.0%	0.04	16.90	338.0%

Table 45: Predicted Process Contribution Acid Deposition – FEED 2 Scenario

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	Road Emissions PC (µg/m^3)	PC/AQAL (%)	Cumulative PC (µg/m^3)	PEC (Keq/ha/yr)	PEC/AQAL (%)
OE01	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	1.23	<0.01	<0.01	0.1%	<0.01	1.23	92.6%
OE02	Min CL min N 0.499 Min CL Max N 1.564 Min CL Max S 0.83	0.95	<0.01	<0.01	<0.1%	0.01	0.96	<0.1%
OE03	Not Sensitive							
OE04	Min CL min N 0.499 Min CL Max N 1.052 Min CL Max S 0.91	1.16	<0.01	<0.01	0.2%	<0.01	1.16	110.6%
OE05	Min CL min N 0.499 Min CL Max N 1.721 Min CL Max S 1.364	2.33	<0.01	<0.01	0.1%	<0.01	2.33	135.6%
OE06	Min CL min N 0.499 Min CL Max N 0.511 Min CL Max S 0.19	1.08	<0.01	<0.01	0.3%	<0.01	1.08	211.8%
OE07	Not Sensitive							
OE08	Not Sensitive							
OE09	Not Sensitive							
OE10	Not Sensitive							

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	Road Emissions PC (µg/m^3)	PC/AQAL (%)	Cumulative PC (µg/m^3)	PEC (Keq/ha/yr)	PEC/AQAL (%)
OE11	Min CL min N 0.499 Min CL Max N 1.72 Min CL Max S 1.448	No Data Available	0.01	<0.01	<0.1%	<0.01	0.01	<0.1%
OE12	Min CL min N 0.499 Min CL Max N 1.834 Min CL Max S 1.477	No Data Available	<0.01	<0.01	<0.1%	<0.01	<0.01	<0.1%
OE13	Min CL min N 0.499 Min CL Max N 1.828 Min CL Max S 1.471	No Data Available	<0.01	<0.01	<0.1%	<0.01	<0.01	<0.1%
OE14	Min CL min N 0.499 Min CL Max N 0.634 Min CL Max S 0.349	2.35	<0.01	<0.01	0.1%	<0.01	2.35	370.8%
OE15	Min CL min N 0.499 Min CL Max N 6.197 Min CL Max S 6.055	1.37	<0.01	<0.01	<0.1%	<0.01	1.37	22.1%
OE16	Min CL min N 0.499 Min CL Max N 1.769 Min CL Max S 1.627	2.25	<0.01	<0.01	0.1%	<0.01	2.25	127.3%
OE17	Min CL min N 0.499 Min CL Max N 1.863 Min CL Max S 1.721	No Data Available	<0.01	<0.01	<0.1%	<0.01	<0.01	<0.1%
OE18	Min CL min N 0.499 Min CL Max N 1.006 Min CL Max S 0.721	No Data Available	<0.01	<0.01	<0.1%	<0.01	<0.01	0.0%

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	Road Emissions PC ($\mu g/m^3$)	PC/AQAL (%)	Cumulative PC ($\mu g/m^3$)	PEC (Keq/ha/yr)	PEC/AQAL (%)
OE19	Min CL min N 0.499 Min CL Max N 4.856 Min CL Max S 4	1.35	<0.01	<0.01	<0.1%	<0.01	1.35	27.8%
OE20	Min CL min N 0.499 Min CL Max N 4.856 Min CL Max S 4	1.35	<0.01	<0.01	<0.1%	<0.01	1.35	27.8%
OE21	Min CL min N 0.499 Min CL Max N 5.989 Min CL Max S 5.847	2.23	<0.01	<0.01	<0.1%	<0.01	2.23	37.3%
OE22	Not Sensitive							
OE23	Not Sensitive							
OE24	Not Sensitive							
OE25	Min CL min N 0.499 Min CL Max N 6.023 Min CL Max S 5.881	1.34	<0.01	<0.01	<0.1%	<0.01	1.34	22.3%
OE26	Min CL min N 0.499 Min CL Max N 4.268 Min CL Max S 4.09	1.34	<0.01	<0.01	<0.1%	<0.01	1.34	31.4%
OE27	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	2.29	<0.01	<0.01	0.1%	<0.01	2.29	126.6%

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	Road Emissions PC (µg/m³)	PC/AQAL (%)	Cumulative PC (µg/m³)	PEC (Keq/ha/yr)	PEC/AQAL (%)
OE28	Min CL min N 0.499 Min CL Max N 5.071 Min CL Max S 4	1.3	<0.01	<0.01	<0.1%	<0.01	1.30	25.7%
OE29	Min CL min N 0.499 Min CL Max N 5.071 Min CL Max S 4	1.02	0.01	<0.01	<0.1%	<0.01	1.03	<0.1%
OE30	Min CL min N 0.499 Min CL Max N 1.72 Min CL Max S 1.448	No Data Available	0.01	<0.01	<0.1%	<0.01	0.01	<0.1%
TE1	Min CL min N 0.499 Min CL Max N 1.782 Min CL Max S 1.425	2.37	<0.01	<0.01	0.2%	<0.01	2.37	133.2%
TE2	Min CL min N 0.499 Min CL Max N 1.782 Min CL Max S 1.425	2.35	<0.01	<0.01	0.2%	<0.01	2.35	138.0%
TE3	Min CL min N 0.499 Min CL Max N 1.782 Min CL Max S 1.425	2.44	<0.01	<0.01	0.2%	<0.01	2.44	134.9%
TE4	Min CL min N 0.499 Min CL Max N 1.705 Min CL Max S 1.563	2.44	<0.01	<0.01	0.4%	<0.01	2.45	135.1%
TE5	Min CL min N 0.499 Min CL Max N 1.705 Min CL Max S 1.563	2.42	<0.01	<0.01	0.4%	<0.01	2.43	136.2%

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	Road Emissions PC (µg/m^3)	PC/AQAL (%)	Cumulative PC (µg/m^3)	PEC (Keq/ha/yr)	PEC/AQAL (%)
TE6	Min CL min N 0.499 Min CL Max N 1.705 Min CL Max S 1.563	2.42	<0.01	<0.01	0.4%	<0.01	2.43	136.2%
TE7a	Min CL min N 0.499 Min CL Max N 1.705 Min CL Max S 1.563	2.48	0.01	<0.01	0.3%	<0.01	2.49	144.5%
TE7b	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	2.49	0.01	<0.01	0.4%	<0.01	2.49	144.6%
TE7c	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	2.49	0.01	<0.01	0.6%	<0.01	2.49	144.8%
TE8a	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	1.42	<0.01	<0.01	0.3%	<0.01	1.42	90.5%
TE8b	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	No Data Available	0.01	<0.01	<0.1%	<0.01	0.01	<0.1%
TE8c	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	1.47	0.01	<0.01	0.2%	<0.01	1.47	30.5%

Unabated Scenario

1.5.32 The results at the identified ecological receptors for the unabated scenario are shown in **Table 46** to **Table 51**.

1.5.33 A discussion of the results listed here can be found in **Chapter 8: Air Quality** (**EN010166/APP/6.2.8**) Section 8.6.

Table 46: Predicted Process Contribution Annual Mean NO_x Concentrations – Unabated Scenario

Receptor	Proposed Development PC (µg/m³)	PC from Road Traffic Emissions (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	PEC (µg/m³)	Cumulative PC (µg/m³)	PEC/AQAL (%)
OE01	0.1	<0.1	0.4%	9.1	0.2	9.5	31.5%
OE02	0.2	<0.1	0.8%	12.7	0.8	13.8	46.0%
OE03	Not Sensitive						
OE04	0.1	<0.1	0.4%	7.3	0.2	7.6	25.4%
OE05	0.1	<0.1	0.2%	12.2	0.1	12.3	41.1%
OE06	0.1	<0.1	0.3%	21.0	0.1	21.2	70.5%
OE07	0.1	<0.1	0.2%	20.1	0.1	20.3	67.5%
OE08	0.1	<0.1	0.4%	10.0	0.1	10.3	34.3%
OE09	~~Not Sensitive~~0.2	<0.1	0.6%	10.0	0.6	10.8	36.1%
OE10	0.2	<0.1	0.7%	8.8	0.5	9.5	31.7%
OE11	0.3	<0.1	1.0%	9.8	0.1	10.3	34.2%
OE12	<0.1	<0.1	0.1%	7.4	0.1	7.5	25.1%
OE13	0.1	<0.1	0.3%	11.5	0.1	11.7	38.9%
OE14	<0.1	<0.1	0.1%	5.9	<0.1	6.0	19.9%
OE15	<0.1	<0.1	0.1%	4.6	<0.1	4.7	15.7%
OE16	<0.1	<0.1	0.1%	5.7	<0.1	5.7	19.1%
OE17	<0.1	<0.1	0.2%	4.9	<0.1	5.0	16.6%

Receptor	Proposed Development PC (µg/m³)	PC from Road Traffic Emissions (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	PEC (µg/m³)	Cumulative PC (µg/m³)	PEC/AQAL (%)
OE18	0.1	<0.1	0.2%	7.3	<0.1	7.4	24.7%
OE19	<0.1	<0.1	0.2%	4.7	<0.1	4.8	15.9%
OE20	<0.1	<0.1	0.2%	4.7	<0.1	4.8	15.9%
OE21	<0.1	<0.1	0.1%	4.5	<0.1	4.6	15.2%
OE22	Not Sensitive						
OE23	Not Sensitive						
OE24	<0.1	<0.1	0.1%	5.2	<0.1	5.2	17.4%
OE25	<0.1	<0.1	0.1%	4.8	<0.1	4.8	16.2%
OE26	<0.1	<0.1	0.1%	5.1	<0.1	5.1	17.1%
OE27	0.1	<0.1	0.2%	7.8	0.1	7.9	26.3%
OE28	0.1	<0.1	0.2%	7.2	<0.1	7.3	24.4%
OE29	0.2	<0.1	0.6%	10.8	0.3	11.3	37.6%
OE30	0.3	<0.1	1.0%	10.0	0.1	10.5	34.8%
TE1	<0.1	<0.1	0.1%	9.61	0.1	9.7	32.4%
TE2	0.1	<0.1	0.2%	6.49	0.1	6.6	22.0%
TE3	<0.1	<0.1	0.1%	7.08	0.1	7.2	24.0%
TE4	<0.1	<0.1	0.1%	7.08	0.1	7.2	24.0%
TE5	<0.1	<0.1	0.1%	7.45	0.1	7.6	25.2%

Receptor	Proposed Development PC (µg/m^3)	PC from Road Traffic Emissions (µg/m^3)	PC/AQAL (%)	Background Concentration (µg/m^3)	PEC (µg/m^3)	Cumulative PC (µg/m^3)	PEC/AQAL (%)
TE6	<0.1	<0.1	0.1%	7.45	0.1	7.6	25.2%
TE7a	0.1	<0.1	0.3%	8.59	0.1	8.8	29.2%
TE7b	0.1	<0.1	0.4%	8.59	0.1	8.8	29.4%
TE7c	0.2	<0.1	0.8%	8.59	0.1	8.9	29.8%
TE8a	0.1	<0.1	0.2%	9.61	0.1	9.8	32.5%
TE8b	0.1	<0.1	0.5%	9.04	0.2	9.3	31.1%
TE8c	0.2	<0.1	0.8%	11.99	0.2	12.4	41.2%

AQAL 30 µg/m^3

Table 47: Predicted Process Contribution 24-hour Maximum NOx Concentrations – Unabated Scenario

Receptor	Proposed Development PC (μg/m³)	PC/AQAL (%)	Background Concentration (μg/m³)	Cumulative PC (μg/m³)	PEC (μg/m³)	PEC/AQAL (%)
OE01	1.6	2.1%	18.2	1.2	21.0	28.0%
OE02	10.0	13.3%	25.5	5.8	41.3	55.0%
OE03	Not Sensitive					
OE04	1.6	2.1%	14.6	1.0	17.2	23.0%
OE05	1.6	2.1%	24.3	0.8	26.7	35.7%
OE06	1.9	2.5%	41.9	0.7	44.6	59.5%
OE07	1.4	1.9%	40.3	0.5	42.1	56.2%
OE08	2.3	3.1%	20.0	1.0	23.4	31.1%
OE09	~~Not Sensitive~~4.2	5.6%	20.1	3.1	27.3	36.4%
OE10	6.9	9.2%	17.7	9.9	34.4	45.9%
OE11	6.6	8.8%	19.6	2.9	29.1	38.8%
OE12	2.0	2.7%	14.9	1.2	18.1	24.1%
OE13	2.3	3.0%	23.0	1.6	26.8	35.7%
OE14	1.6	2.1%	11.8	0.6	14.0	18.6%
OE15	1.1	1.5%	9.3	0.6	11.0	14.7%
OE16	1.2	1.5%	11.3	0.8	13.2	17.6%
OE17	1.5	2.0%	9.8	0.8	12.0	16.1%
OE18	2.1	2.8%	14.6	0.8	17.5	23.4%

Receptor	Proposed Development PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	Cumulative PC (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
OE19	1.5	2.0%	9.4	0.7	11.6	15.5%
OE20	1.5	2.0%	9.4	0.7	11.7	15.6%
OE21	1.4	1.9%	9.0	0.4	10.9	14.5%
OE22	Not Sensitive					
OE23	Not Sensitive					
OE24	1.4	1.9%	10.3	0.7	12.4	16.5%
OE25	1.4	1.9%	9.6	0.5	11.4	15.2%
OE26	1.6	2.1%	10.2	0.5	12.3	16.3%
OE27	3.2	4.3%	15.5	1.3	20.0	26.7%
OE28	1.8	2.4%	14.4	0.9	17.1	22.8%
OE29	8.4	11.2%	21.6	3.7	33.6	44.9%
OE30	6.1	8.2%	20.0	2.4	28.6	38.1%

AQAL 75 µg/m³

Table 48: Predicted Process Contribution Annual Mean NH_3 Concentrations – Unabated Scenario

Receptor	AQAL (µg/m³) (1 used as default)	Proposed Development PC (µg/m³)	PC from road traffic emissions (µg/m³)	PEC/AQAL (%)	Background Conc (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
OE01	1	<0.01	<0.01	0.4%	~~2.~~1.5	~~2.~~1.5	~~211~~152.4%
OE02	1	0.01	<0.01	0.8%	~~2.6~~1.9	~~2.6~~1.9	~~257~~192.8%
OE03	Not Sensitive						
OE04	1	<0.01	<0.01	0.4%	~~2.0~~1.5	~~2.0~~1.5	~~196~~146.4%
OE05	1	<0.01	<0.01	0.2%	~~2.5~~1.8	~~2.5~~1.8	~~247~~180.2%
OE06	1 or 3	<0.01	<0.01	0.3%	~~2.6~~1.9	~~2.6~~1.9	~~259~~189.3%
OE07	1 or 3	<0.01	<0.01	0.2%	~~2.3~~1.7	~~2.3~~1.7	~~227~~169.2%
OE08	3	<0.01	<0.01	0.1%	2.~~7~~0	2.~~7~~0	~~273.4~~66.5%
OE09	~~Not Sensitive~~1	0.01	<0.01	0.6%	1.9	1.9	192.6%
OE10	3	0.01	<0.01	0.2%	~~2.4~~1.7	~~2.4~~1.7	~~240.7~~57.9%
OE11	1	0.01	<0.01	1.0%	~~2.5~~1.8	~~2.6~~1.9	~~255~~185.0%

Receptor	AQAL (µg/m³) (1 used as default)	Proposed Development PC (µg/m³)	PC from road traffic emissions (µg/m³)	PEC/AQAL (%)	Background Conc (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
OE12	1	<0.01	<0.01	0.1%	~~2.4~~1.7	~~2.4~~1.7	~~240~~174.1%
OE13	1	<0.01	<0.01	0.3%	~~2.7~~1.9	~~2.7~~1.9	~~266~~191.3%
OE14	1	<0.01	<0.01	0.1%	~~2.~~1.5	~~2.~~1.5	~~205~~145.1%
OE15	1	<0.01	<0.01	0.1%	1.~~6~~2	1.~~6~~2	~~164~~117.1%
OE16	Not Sensitive						
OE17	1	<0.01	<0.01	0.2%	1.~~9~~4	1.~~9~~4	~~191~~143.2%
OE18	1	<0.01	<0.01	0.2%	~~2.2~~1.6	~~2.2~~1.6	~~222~~162.2%
OE19	1	<0.01	<0.01	0.2%	1.~~8~~3	1.~~8~~3	~~182~~131.2%
OE20	1	<0.01	<0.01	0.2%	1.~~8~~3	1.~~8~~3	~~182~~131.2%
OE21	1	<0.01	<0.01	0.1%	~~2.0~~1.5	~~2.0~~1.5	~~202~~147.1%
OE22	Not Sensitive						
OE23	Not Sensitive						

Receptor	AQAL (µg/m³) (1 used as default)	Proposed Development PC (µg/m³)	PC from road traffic emissions (µg/m³)	PEC/AQAL (%)	Background Conc (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
OE24	3	<0.01	<0.01	<0.1%	1.~~9~~4	1.~~9~~4	~~192.1~~47.4%
OE25	1	<0.01	<0.01	0.1%	1.~~9~~4	1.~~9~~4	~~193~~138.1%
OE26	1	<0.01	<0.01	0.1%	~~2.0~~1.4	~~2.0~~1.4	~~198~~139.1%
OE27	1	<0.01	<0.01	0.2%	~~2.~~1.5	~~2.~~1.5	~~209~~154.2%
OE28	1	<0.01	<0.01	0.2%	~~2.~~1.5	~~2.~~1.5	~~206~~145.2%
OE29	1	0.01	<0.01	0.6%	~~2.5~~1.9	~~2.5~~1.9	~~252~~187.6%
OE30	1	0.01	<0.01	1.0%	~~2.7~~1.9	2.~~7~~0	~~266~~195.0%
TE1	1	<0.01	<0.01	0.1%	1.55	1.55	155.1%
TE2	1	<0.01	<0.01	0.2%	1.~~55~~37	1.~~55~~37	~~155~~137.2%
TE3	1	<0.01	<0.01	0.1%	1.~~55~~71	1.~~55~~71	~~155~~171.1%
TE4	1	<0.01	0.01	0.7%	1.~~37~~71	1.~~38~~72	~~137~~171.7%

Receptor	AQAL (µg/m³) (1 used as default)	Proposed Development PC (µg/m³)	PC from road traffic emissions (µg/m³)	PEC/AQAL (%)	Background Conc (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
TE5	1	<0.01	0.01	0.7%	1.~~37~~66	1.~~38~~67	~~137~~166.7%
TE6	1	<0.01	0.01	0.7%	1.~~37~~66	1.~~38~~67	~~137~~166.7%
TE7a	1	<0.01	<0.01	0.3%	1.~~37~~84	1.~~37~~84	~~137~~184.3%
TE7b	1	<0.01	<0.01	0.4%	1.~~71~~84	1.~~71~~84	~~171~~184.4%
TE7c	1	0.01	<0.01	0.8%	1.~~71~~84	1.~~72~~85	~~171~~184.8%
TE8a	1	<0.01	<0.01	0.2%	1.~~71~~55	1.~~71~~55	~~171~~155.2%
TE8b	1	<0.01	<0.01	0.9%	1.~~71~~73	1.~~72~~74	~~171~~173.9%
TE8c	1	0.01	<0.01	0.8%	1.~~71~~92	1.~~72~~93	~~171~~192.8%

Table 49: Predicted Process Contribution Nitrogen Deposition – Unabated Scenario

Receptor	Critical Load (AQAL) (kg/ha/yr)	Background Concentration (kg/ha/yr)	Predicted PC (kg/ha/yr)	PC from road traffic emissions (µg/m³)	PC/AQAL %	Cumulative PC (µg/m³)	PEC (kg/ha/yr)	PEC/AQAL (%)
OE01	5	15.0	0.04	<0.01	0.8%	0.03	15.04	301%
OE02	5	16.3	0.08	<0.01	1.6%	0.12	16.52	330%
OE03	Not Sensitive							
OE04	5	14.1	0.04	<0.01	0.8%	0.02	14.21	284%
OE05	10	29.2	0.03	<0.01	0.3%	0.03	29.30	293%
OE06	5	17.3	0.03	<0.01	0.6%	0.01	17.30	346%
OE07	10	16.0	0.02	<0.01	0.2%	0.01	16.01	160%
OE08	Not Sensitive							
OE09	10	16.2	0.06	<0.01	0.6%	0.09	16.36	164%
OE10	10	16.2	0.07	<0.01	0.7%	0.07	16.32	163%
OE11	10	30.6	0.17	<0.01	1.7%	0.04	30.82	308%
OE12	6	17.5	0.01	<0.01	0.2%	0.01	17.51	292%
OE13	5	18.2	0.03	<0.01	0.6%	0.01	18.25	365%
OE14	5	17.6	0.01	<0.01	0.3%	<0.01	17.60	352%
OE15	5	17.0	0.01	<0.01	0.2%	<0.01	17.03	341%
OE16	10	28.7	0.02	<0.01	0.2%	0.01	28.76	288%
OE17	10	28.5	0.03	<0.01	0.3%	0.01	28.54	285%

Receptor	Critical Load (AQAL) (kg/ha/yr)	Background Concentration (kg/ha/yr)	Predicted PC (kg/ha/yr)	PC from road traffic emissions (µg/m^3)	PC/AQAL %	Cumulative PC (µg/m^3)	PEC (kg/ha/yr)	PEC/AQAL (%)
OE18	5	15.8	0.02	<0.01	0.5%	0.01	15.78	316%
OE19	10	16.7	0.02	<0.01	0.2%	<0.01	16.75	167%
OE20	6	16.7	0.02	<0.01	0.3%	<0.01	16.75	279%
OE21	15	28.5	0.02	<0.01	0.1%	0.01	28.53	190%
OE22	Not Sensitive							
OE23								
OE24	10	16.6	0.01	<0.01	0.1%	<0.01	16.58	166%
OE25	5	16.6	0.01	<0.01	0.2%	<0.01	16.62	332%
OE26	5	16.6	0.01	<0.01	0.2%	<0.01	16.64	333%
OE27	6	16.1	0.02	<0.01	0.3%	0.01	16.10	268%
OE28	6	16.1	0.02	<0.01	0.3%	0.01	16.11	268%
OE29	5	16.4	0.06	<0.01	1.1%	0.05	16.54	331%
OE30	10	31.1	0.17	<0.01	1.7%	0.04	31.31	313%
TE1	10	28.23	0.02	<0.01	0.2%	0.02	28.27	282.7%
TE2	10	28.67	0.03	<0.01	0.3%	0.02	28.71	287.1%
TE3	10	29.52	0.02	<0.01	0.2%	0.02	29.56	295.6%
TE4	10	29.52	0.02	0.05	0.6%	0.02	29.61	296.1%
TE5	10	28.91	0.01	0.05	0.6%	0.03	28.99	289.9%

Receptor	Critical Load (AQAL) (kg/ha/yr)	Background Concentration (kg/ha/yr)	Predicted PC (kg/ha/yr)	PC from road traffic emissions (µg/m^3)	PC/AQAL %	Cumulative PC (µg/m^3)	PEC (kg/ha/yr)	PEC/AQAL (%)
TE6	10	28.91	0.01	0.05	0.6%	0.03	29.00	290.0%
TE7a	10	30.61	0.04	<0.01	0.4%	0.03	30.68	306.8%
TE7b	10	30.61	0.07	<0.01	0.7%	0.03	30.71	307.1%
TE7c	10	30.61	0.14	<0.01	1.4%	0.03	30.78	307.8%
TE8a	5	15.99	0.02	<0.01	0.4%	0.01	16.02	320.5%
TE8b	5	16.19	0.04	0.03	1.3%	0.02	16.28	325.5%
TE8c	5	16.81	0.07	0.01	1.5%	0.02	16.91	338.2%

Table 50: Predicted Change in Nitrogen Deposition – Unabated Scenario

Receptor	Critical Load (AQAL) (kg/ha/yr)	Background Concentration (kg/ha/yr)	Predicted PC (kg/ha/yr)	PC/ AQAL as MEA (%)	Cumulative PC (µg/m^3)	PEC (kg/ha/yr)	PEC/AQAL (%)
OE02	5	16.3	0.06	1.1%	0.12	16.49	329.9%
OE11	10	30.6	0.12	1.2%	0.04	30.77	307.7%
OE29	5	16.4	0.03	0.6%	0.05	16.52	330.4%

Table 51: Predicted Process Contribution Acid Deposition– Unabated Scenario

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC (Keq/ha/yr)	PC from road traffic emissions (μg/m^3)	PC/ AQAL (%)	Cumulative PC (μg/m^3)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
OE01	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	1.23	<0.01	<0.01	0.6%	<0.01	1.23	0.6%
OE02	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	0.95	0.01	<0.01	0.7%	<0.01	0.96	0.7%
OE03	Not Sensitive							
OE04	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	1.16	<0.01	<0.01	0.3%	<0.01	1.16	110.5%
OE05	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	2.33	<0.01	<0.01	0.2%	<0.01	2.33	0.2%
OE06	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	1.08	<0.01	<0.01	0.4%	<0.01	1.08	211.8%
OE07	Not Sensitive							
OE08	Not Sensitive							
OE09	Not Sensitive							
OE10	Not Sensitive							

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC (Keq/ha/yr)	PC from road traffic emissions (µg/m^3)	PC/ AQAL (%)	Cumulative PC (µg/m^3)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
OE11	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	No Data Available	0.01	<0.01	0.5%	<0.01	0.01	0.5%
OE12	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	No Data Available	<0.01	<0.01	0.1%	<0.01	<0.01	0.1%
OE13	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	No Data Available	<0.01	<0.01	0.1%	<0.01	<0.01	0.1%
OE14	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	2.35	<0.01	<0.01	0.2%	<0.01	2.35	370.8%
OE15	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	1.37	<0.01	<0.01	0.0%	<0.01	1.37	22.1%
OE16	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	2.25	<0.01	<0.01	0.1%	<0.01	2.25	127.3%
OE17	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	No Data Available	<0.01	<0.01	0.1%	<0.01	<0.01	0.1%

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC (Keq/ha/yr)	PC from road traffic emissions (µg/m^3)	PC/ AQAL (%)	Cumulative PC (µg/m^3)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
OE18	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	No Data Available	<0.01	<0.01	0.2%	<0.01	<0.01	0.2%
OE19	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	1.35	<0.01	<0.01	<0.1%	<0.01	1.35	<0.1%
OE20	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	1.35	<0.01	<0.01	<0.1%	<0.01	1.35	<0.1%
OE21	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	2.23	<0.01	<0.01	<0.1%	<0.01	2.23	37.3%
OE22	Not Sensitive							
OE23	Not Sensitive							
OE24	Not Sensitive							
OE25	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	1.34	<0.01	<0.01	<0.1%	<0.01	1.34	22.3%
OE26	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	1.34	<0.01	<0.01	<0.1%	<0.01	1.34	<0.1%

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC (Keq/ha/yr)	PC from road traffic emissions (µg/m^3)	PC/ AQAL (%)	Cumulative PC (µg/m^3)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
OE27	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	2.29	<0.01	<0.01	0.1%	<0.01	2.29	0.1%
OE28	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	1.3	<0.01	<0.01	<0.1%	<0.01	1.30	<0.1%
OE29	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	1.02	<0.01	<0.01	0.1%	<0.01	1.03	0.1%
OE30	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	No Data Available	0.01	<0.01	0.8%	<0.01	0.02	0.8%
TE1	Min CL min N 0.499 Min CL Max N 1.782 Min CL Max S 1.425	2.37	<0.01	<0.01	0.1%	<0.01	2.37	133.1%
TE2	Min CL min N 0.499 Min CL Max N 1.782 Min CL Max S 1.425	2.35	<0.01	<0.01	0.1%	<0.01	2.35	138.0%
TE3	Min CL min N 0.499 Min CL Max N 1.782 Min CL Max S 1.425	2.44	<0.01	<0.01	0.1%	<0.01	2.44	134.8%

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC (Keq/ha/yr)	PC from road traffic emissions (µg/m³)	PC/ AQAL (%)	Cumulative PC (µg/m³)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
TE4	Min CL min N 0.499 Min CL Max N 1.705 Min CL Max S 1.563	2.44	<0.01	<0.01	0.2%	<0.01	2.45	135.0%
TE5	Min CL min N 0.499 Min CL Max N 1.705 Min CL Max S 1.563	2.42	<0.01	<0.01	0.2%	<0.01	2.43	136.1%
TE6	Min CL min N 0.499 Min CL Max N 1.705 Min CL Max S 1.563	2.42	<0.01	<0.01	0.2%	<0.01	2.43	136.1%
TE7a	Min CL min N 0.499 Min CL Max N 1.705 Min CL Max S 1.563	2.48	<0.01	<0.01	0.2%	<0.01	2.48	144.4%
TE7b	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	2.48	0.01	<0.01	0.3%	<0.01	2.49	144.5%
TE7c	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	2.48	0.01	<0.01	0.6%	<0.01	2.49	144.8%
TE8a	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	1.42	<0.01	<0.01	0.1%	<0.01	1.42	90.3%

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC (Keq/ha/yr)	PC from road traffic emissions (µg/m³)	PC/ AQAL (%)	Cumulative PC (µg/m³)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
TE8b	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	No Data Available	<0.01	<0.01	<0.1%	<0.01	0.01	<0.1%
TE8c	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	1.46	0.01	<0.01	0.1%	<0.01	1.47	30.4%

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Annex A - Assessment of Amine Degradation Products

A.1 Introduction

A.1.1 The air quality assessment of emissions of amines from the Proposed Development on human health and the environment has been included in this appendix in a similar way that other pollutants are considered. However, amines can degrade to form other species, including nitrosamines and nitramines (collectively referred to as N-amines) which are potentially carcinogenic, therefore consideration of these species is also required within the air quality assessment. The assessment of these species is complex and therefore additional details are included separately within this annex.

A.1.2 The assessment of N-amines includes direct N-amine emissions from the CCP absorber stacks. These are N-amines that form as a result of degradation within the carbon capture process itself and therefore are released directly from the stack as N-amines. The assessment also considered indirect N-amine impacts, which are the N-amines that form as a result of atmospheric processes following the release of amines from the CCP absorber stacks. This annex has been prepared to describe the atmospheric processes effecting both these species. Their potential impacts at receptor locations are considered above in the main section of this appendix.

A.2 Scope

CCP Emissions

A.2.1 When the Proposed Development is operating with carbon capture, an amine-based solvent would be utilised as the scrubbing medium within the CCPs, to remove the carbon dioxide (CO_2) within the flue gas streams. 'Amine slip' can occur during the carbon capture process, resulting in direct emission of amines from the absorber stacks. Over time, the amine solvent used in the CCPs can degrade, through for example, reaction with nitrogen dioxide (NO_2) within the flue gases, which can result in the generation of N-amines within the amine solvent. Degradation is minimised through continuous solvent replenishment, monitoring and process control, as would be required under the Environmental Permits covering the CCP activities. Nevertheless, the amine slip emission from the CCPs is likely to include a very small fraction of N-amines, which is considered in this assessment as the direct N-amine emission.

A.2.2 Potentially of more significance is the subsequent atmospheric degradation of the amines released from the CCPs absorber stacks. This is considered in the assessment as the indirect N-amine emission.

A.2.3 The atmospheric chemistry of amines and N-amines is complex, dependent on atmospheric ozone and NO_2 concentrations, and with the generation of hydroxyl radical intermediates and other unstable intermediate species in UV light, however the principal mechanisms are understood and many studies have been made of the primary reaction rates and subsequent interactions between degradation products and these atmospheric species.

A.2.4 This annex details the amine chemistry mechanisms likely to occur following release of amines and N-amines from the CCPs absorber stacks, and the specific parameters used for the modelling assessment for N-amines from the Proposed Development.

A.2.5 The assessment has considered the impact of emissions on local air quality, under normal operating conditions, with the Proposed Development operating in carbon capture mode for 8,760 hours per year.

A.2.6 A comparison has been made between predicted model output concentrations, and the Air Quality Assessment Level (AQAL) for N-nitroso-dimethylamine (NDMA), as detailed in **Chapter 8: Air Quality** (**EN010166/APP/6.2.8**).

A.3 Sources of Information

A.3.1 The assessment of N-amine emissions from the Proposed Development has been undertaken using the advanced dispersion model ADMS (version V6.0.2), supplied by Cambridge Environmental Research Consultants Limited (CERC), as the assessment detailed in the main sections of this appendix. CERC have developed an Amine Chemistry module to simulate the atmospheric chemistry of amines and N-amines following their release from stacks. The chemistry scheme is based on the reactions initiated by the attack of an emitted gaseous amine or N-amine by a hydroxl radical, and predicts the subsequent formation of nitrosamine and nitrosamines.

A.3.2 The assessment includes pertinent information from:

- data on the amine and N-amine emission concentrations to atmosphere from the Applicant;
- **Figure 3-3: Areas Described in the ES** (**EN010166/APP/6.3**);
- Ordnance Survey mapping;
- reaction rate constants required for the ADMS Amines Chemistry module, as specified in CCSA Position Paper Carbon Capture Chemistry Parameters N-Amines Chemistry (Ref 6);
- other constants required for the ADMS Amines Chemistry module derived from literature sources (as detailed throughout the text);
- Environment Agency 'AQMAU recommendations for the regulation of impacts to air quality from amine-based post-combustion carbon capture plant' AQMAU-C2025-RP01 (Ref 7);
- Environment Agency 'AQMAU Proposed assessment method to include amines and degradation products in nutrient nitrogen deposition estimations at ecological sites' AQMAU-C2600-RP01 (Ref 8); and
- meteorological data supplied by ADM Ltd.

A.4 Discussion of Amines and N-amines

General amine information

A.4.1 The group of chemicals known as amines are based on ammonia (NH_3). Primary amines have one hydrogen (H) atom replaced with an organic (hydrocarbon-based) functional group, secondary amines have two H atoms replaced, and tertiary amines have three H atoms replaced.

A.4.2 Typical amine solvents used in carbon capture plant tend to be primary or secondary amine compounds consisting of hydroxyl (OH) and amino functional groups (referred to as alkanolamines). Examples of typical solvents used are Monoethanolamine (MEA) and Monomethylamine (MMA), both primary amines, and Dimethylamine (DMA) a secondary amine.

A.4.3 That said, amine solvents are being optimised and improved over time to improve their performance, in terms of their carbon capture efficiency, lower energy requirements and also to reduce emissions. This has led to some amine solvents now comprising tertiary amines and alkanolamines, and cyclic amines, such as Piperazine (Pz).

A.4.4 Amines can react to create new compounds, both within the carbon capture process itself, and after they are emitted to the environment in the absorber exhaust gas. The fate of the released amines is determined by atmospheric processes such as chemical transformation, dispersion and deposition.

General n-amine information

A.4.5 Nitrosamines typically comprise nitroso- (NO-) compounds of the original alkanolamine solvent. The stability of the N-amines produced through amine degradation varies, for example, primary amines MEA and MMA are not considered to form stable nitrosamines, such that, following formation, the nitrosamine either reverts to the amine radical intermediate or rapidly isomerises (changes structure) and then reacts very quickly with O_2 to form an imine (R-N group) (Ref 9). However, MEA can degrade to the nitrosamine NDELA via the secondary amine DEA.

A.4.6 Secondary amines can form more stable nitrosamines (Ref 9), as can tertiary amines although they are less likely to do so than secondary amines. Degradation reactions for tertiary amines are not well studied, and therefore there is little information available to inform this assessment.

A.4.7 N-nitroso-dimethylamine (NDMA) is the nitrosamine formed from DMA degradation, and is the most widely studied nitrosamine, due to its toxicity and carcinogenicity. The proposed EAL for the assessment of N-amines in the UK has been derived for NDMA. In the absence of other published values for N-amines, the AQAL for NDMA has been applied to all N-amines, in order to carry out a conservative assessment.

Toxicity of N-Amines

A.4.8 Many nitrosamines and nitramines are known or potential carcinogens. Whilst there is toxicity data available for a few of the more generally researched substances (e.g. NDMA and Nitrosodiethanolamine (NDELA)), the environmental toxicity of many of the other individual compounds is not well understood (Ref 10). NDMA is understood to be the most mutagenic (having the ability to cause a permanent change in an organism's genes) of the nitrosamines tested (Ref 11).

A.4.9 The World Health Organization has published a Concise International Chemical Assessment Document on NDMA (Ref 12), which states that NDMA is carcinogenic.

A.4.10 NDMA can be produced during water treatment processes involving chlorination and is also found in low levels in cured meat, fish, beer and tobacco smoke.

A.4.11 There is less information available on the toxicity of nitramines, which include nitro (-NO_2) compounds of the amine, such as dimethylnitramine (DMNA), however it is generally considered that they are of lower toxicity than nitrosamines. Although they are suspected carcinogens, none are classified as such by the International Agency for Research on Cancer (IARC). Animal carcinogenicity studies have indicated that DMNA is at least 6 times less toxic than NDMA (Ref 13). This paper goes on to state that further quantitative evaluation of relevant nitramines is required to rank them against nitrosamine toxicity, in order that more refined and less conservative assessments, where currently all N-amines are assumed to be as toxic as the most toxic nitrosamine, can be carried out.

A.4.12 Based data provided by the two FEED contractors, it is considered that the toxicity of the N-amines potentially formed is significantly lower than NDMA. Given the likely lower toxicity of nitramines and the higher relative toxicity of NDMA to other nitrosamines, comparison of the predicted process contributions to the NDMA AQAL is considered to be very conservative.

A.5 N-Amine Emissions from Carbon Capture Processes

Direct N-Amine Emission

A.5.1 The amine solvent used in the CCPs is contained and recycled within the CCP. Within the process, the amine solvent can degrade to N-amines through oxidation, thermal degradation and acid gas/ trace impurity reactions. Losses via the CCP absorber stack can therefore occur through entrainment of the solvent within the exhaust gas.

A.5.2 The main cause of degradation of the amine solvent is understood to be thermal degradation and therefore this can be reduced by making sure that the maximum operating temperature of the re-boiler and stripper in the CCP is carefully controlled.

A.5.3 Acid gas reactions can occur due to the other trace pollutant species present in the emission, in particular the NO_2 within the exhaust gases from the Main Development Area. High NO_2 concentrations in the exhaust gas increases the rate of amine degradation to N-amines, and therefore the lower the overall NOx release, the less N-amines would be generated by this mechanism.

A.5.4 The facility would most likely require the addition of Selective Catalytic Reduction (SCR) abatement to reduce the NO_2 within the exhaust gas, prior to it entering the CCP. Appropriate measures to reduce sulphur dioxide (SO_2) emissions would also be applied, if required, and therefore reduce degradation of the solvent.

A.5.5 The solvent inventory would be managed to minimise the formation and release of degradation products through continuous bleed and regeneration of solvent within the process.

A.5.6 It is considered that through best practice storage and management measures for the amine solvent, that its degradation within the CCPs can be minimised, and this requirement would be managed through the Environmental Permits for the Proposed Development. As a result, the direct emissions of N-amines into the atmosphere from the CCPs absorber stacks, are expected to be at very low levels (i.e. in the parts per billion (ppb) range).

Indirect N-Amine Emission

A.5.7 The majority of N-amines resulting from releases from the carbon capture process are considered to form through reactions in the atmosphere post release. These atmospheric reactions are complex, and the rate of N-amine formation and subsequent destruction depends upon a range of factors.

A.5.8 The amine degradation process in the atmosphere requires the presence of either an OH or a nitrate (NO_3) radical. The primary method for formation of N-amines in the atmosphere is a two-step process:

- an OH radical (daytime) or an NO_3 radical (night-time) removes a single hydrogen atom in the amine molecule to form a highly unstable amine radical; then
- the amine radical reacts with either an NO group to form a nitrosamine, or an NO_2 group to form a nitramine.

A.5.9 A variety of competing reactions can also take place, preventing the formation of N-amines:

- the amine can degrade to other radical species via removal of a non-amine hydrogen, or methyl group (this potential is known as the branching ratio);
- the amine radical can undergo competing reactions, with NO_2 and O_2 to form an imine (stable, and not toxic (Ref 14)); and
- the nitrosamine or nitramine can undergo further degradation or reverse reaction to the radical.

A.5.10 During daylight hours, atmospheric amine degradation is initiated by reaction with the OH radical (generated by photolysis of water (H_2O) by the action of ultraviolet light from sunlight). At night, in the absence of UV light, no OH radical is generated. Night-time reactions instead proceed by the much slower pathway of NO with ozone (O_3) to form NO_2 and subsequent reaction of NO_2 with O_3 to form the NO_3 radical; amine degradation is then initiated by reaction with the NO_3 radical to form N-amines. The nitrate radical is rapidly photolyzed (decomposed or separated by the action of light) in daylight and does not represent a likely reaction pathway during the daytime.

A.5.11 The concentration of NOx and O_3 available in the atmosphere therefore influences the reaction of amine to N-amines. The night-time reactions are slower than the daytime reactions as a result of the intermediate reaction step, therefore a higher rate of formation of N-amines results from daytime reactions.

A.5.12 The steady state concentration of N-amines can be calculated using reaction rate constants, usually derived through experimental studies. Such studies have indicated that not all amines released would convert to N-amines in the atmosphere, and the conversion of those amines that would degrade in the atmosphere to N-amines can take many hours to occur. Typical conversion rates are <1% although chamber experiments show a range of between 0 and 10%.

A.5.13 The ratio of reaction coefficients in the formation of (1) the amine radical (that can proceed to N-amine formation) or (2) an alternative species radical (that does not form N-amine) is described as the branching ratio; and for several amine species these have been published, although values range between published sources. The higher the branching ratio of the amine, the more likely it is to form N-amines.

Table A-1: Amine Branching Ratios

Amine Species	Branching Ratio	Source
Monoethanolamine (MEA)	0.05 – 0.15	Ref 15 and Ref 16
Monomethylamine (MMA)	0.25	Ref 9
Dimethylamine (DMA)	0.38 - 0.42	Ref 15
Piperazine	0.09	Ref 17

A.5.14 As can be seen in **Table A-1,** the branching ratios for the primary amines MEA and MMA, and piperazine, are lower than those for the secondary amine, DMA, therefore secondary amines are more likely to form N-amines. Tertiary amines must first degrade to a primary or secondary amine, through elimination of a hydrocarbon group, before further reaction to N-amine or other species can occur. Therefore, as other competing reactions may also occur, the likelihood of forming N-amine must also be lower than for a secondary amine; however, there is limited published data for tertiary amine reaction constants.

A.5.15 In addition to the branching ratio, the concentration of ambient NOx also influences the generation of N-amines from amines. From laboratory tests, it is known that when more NOx is present, more amines are converted into N-amines. This function is called the "amino radical/NO_2 reaction rate constant [k4]".

A.5.16 There is a relatively limited data set available for establishing the proportion of amine that forms N-amines, upon which a simulation of atmospheric chemistry can be based. The reaction rate data that has been identified from laboratory experiments for DMA is set out in **Table A-2**. Within this data set, the NOx concentrations, and whether the simulation is undertaken for daytime or night-time simulations, is identified.

Table A-2: Amine Conversion Proportions

Final Species	NOx/NO_2 Concentration in Experiment	Proportion Of Amine Converted To N-Amine	Reference	Comments
Nitramines	0.2 – 10ppb	<2.5%	Ref 9	Daytime simulation
	20 – 50ppb	<8%	Ref 9	Daytime simulation
Nitrosamines	0.2 – 10ppb	<0.6%	Ref 9	Daytime simulation
	20 – 50ppb	<2.3%	Ref 9	Daytime simulation
	0.08ppm NO - 0.16ppm NO_2	1%	Ref 18	Night-time simulation
	2ppm NO_2 - 2ppm NO	10 – 30%	Ref 18	

A.5.17 In the flue gas from the CCPs, the NOx is composed of around 90-95% NO to 5-10% NO_2. Once in the atmosphere, the NO would react with OH to form NO_2. The reaction of OH is preferential to NO rather than the amine as NO is more reactive. Therefore, as NO concentrations decrease spatially due to reaction with OH, there becomes more available OH radicals to react with the amines, so amine reaction would occur at greater distance from the stack. The details of this process are too uncertain to be accurately represented in the ADMS amines chemistry model and therefore the model does not include this time-delay in the initiation of the amine degradation reaction, assuming that this occurs instantly on release, therefore potentially resulting in higher concentrations in close proximity to the stack. This is therefore considered to be very conservative.

A.5.18 Only a proportion of the N-amines released or generated would remain as N-amines, as during daylight hours, N-amines are degraded to more basic amines, amides, ethanoic acid, ketones and simple nitrogen compounds in the presence of sunlight. At night no destruction of N-amines occurs.

A.5.19 The WHO document (Ref 12) states that photolysis is the major pathway for the removal of NDMA from surface water, air, and land and that it is unlikely to be transported over long distances in air or to partition to soil and sediments.

A.5.20 Not all amines released would convert to N-amine in the environment and the conversion of those amines that would degrade in the atmosphere to N-amine can take many hours to occur. This is described by the work carried out by Ref 19, which demonstrated that less than 5% of the amines that would convert to N-amines would have do so in the first 10 minutes after release. After 2 hours, only 20% of the amines that would convert to N-amine would have done so. The work then goes on to estimate that it would take in the order of 10 hours for 100% conversion to occur. A graph showing this process is provided in.

A.5.21 The fact that this time-delay is not taken into account in the ADMS amines chemistry module therefore is considered to result in an over-prediction in the process contributions predicted by the model.

A.5.22 The conversion fraction of amines to N-Amine in the atmosphere over time is shown in **Plate 3**.

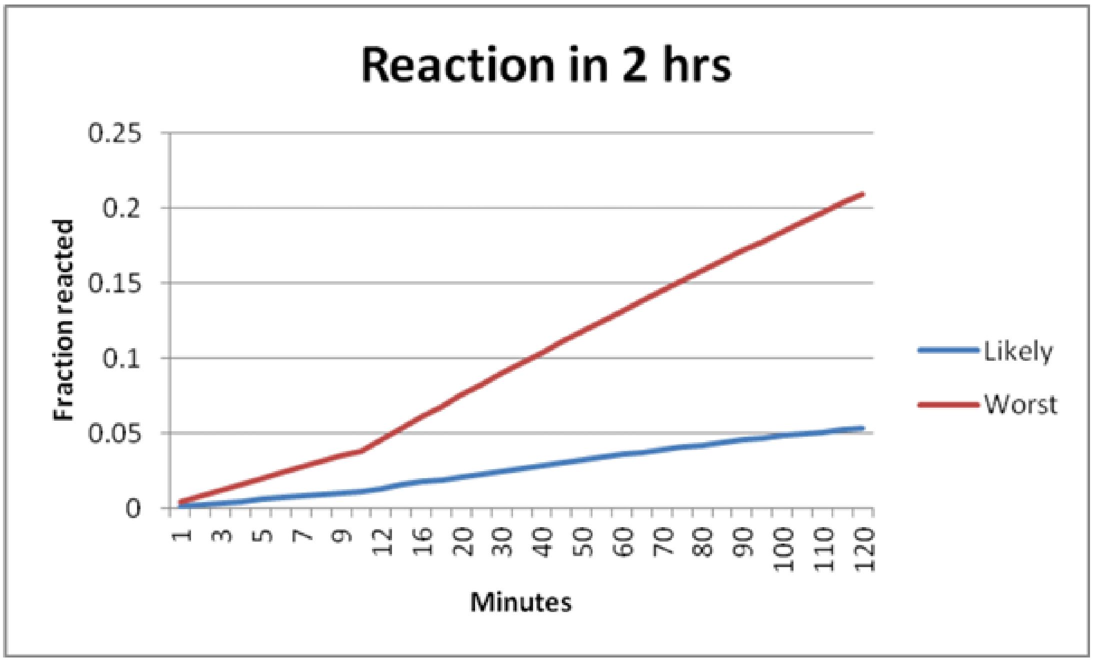

Plate 3: Conversion of Amines to N-Amine in the Atmosphere Over Time

A.5.23 At night-time the NO_3 radical is formed from the reaction of O_3 with NO, and then NO_2. Therefore, the reaction of NO to NO_2 is likely to be preferential to the reaction of NO_2 to NO_3 or NO_3 reacting with amines, which again would slow down the formation of N-amines. These details again are too uncertain to be accurately represented in the amines chemistry module and therefore are not included.

A.5.24 Only a proportion of the N-amines released or generated would remain as N-amines, as during daylight hours, N-amines are degraded to more basic amines, amides, ethanoic acid, ketones and simple nitrogen compounds in the presence of sunlight. At night no destruction of N-amines occurs.

A.6 Assessment Methodology

Dispersion Model Input Parameters

A.6.1 As discussed above, the treatment of chemistry within the ADMS amines model requires a suite of reaction rate parameters derived from laboratory studies and other sources. The parameters required by the model in order to simulate amine chemistry for a specific amine(s) are detailed in **Table A-3**.

Table A-3: Amine Chemistry Model Input Parameters

Parameter	Units	Notes
Amines Release	g/s	Emission concentrations for Amine 1 and Amine 2 present in the solvent have been provided by Shell.
Direct N-amine Release	g/s	Emission concentrations for N-amine 1 and N-amine 2 present in the solvent have been provided by Shell.
k1 = Amine/OH radical reaction rate constant	ppb/s	Rate constant provided by Shell for the reaction of the amine with the hydroxyl radical ('●') (OH●).
k2 = Amino radical/O2 reaction rate constant	ppb/s	Rate constant provided by Shell for the reaction of the amine● with O_2 (to form imine).
k3 = Rate constant for formation of nitrosamine	ppb/s	Rate constant provided by Shell for formation of nitrosamine from amine● and NO.
k4a = Rate constant for formation of nitramine	ppb/s	Rate constant provided by Shell for formation of nitramine from amine● and NO_2
k4 = Amino radical/NO_2 reaction rate constant	ppb/s	Rate constant provided by Shell for the reaction of the amine● with NO_2 (to form imine or nitramine).
Branching Ratio	dimensionless	Branching ratio provided by Shell for the amine/ OH● reaction – representing the reaction split, in formation of amine radical (amine● which further reacts to nitrosamine/ nitramine) and alternative hydrocarbyl radical species.
Ratio of J (nitrosamine) to NO_2	dimensionless	The ratio of the photolysis rate constants for the nitrosamine and NO_2 - representing the relative atmospheric fluctuations of NO_2 and nitrosamine formation as a result of UV light action.
c = OH concentration constant	s	OH concentration constant, derived for typical daytime atmosphere for the Sites' location. Site specific value calculated following the derivation of J (NO_2).

Parameter	Units	Notes
Atmospheric oxygen concentration	ppb	Representing 21% O_2 in air.
NOx baseline	μg/m^3	Hourly values obtained for South Killingholme automatic monitor for the years of meteorological data used in the model.
NO_2 baseline	μg/m^3	
Ozone Baseline	μg/m^3	Hourly values obtained for Hull Freetown automatic monitor (being the closest site with O3 data available) for the years of meteorological data used in the model

A.6.2 These parameters are entered into an ADMS Additional Information (AAI) file, which characterises the amine chemistry for the amine or N-amine species being assessed.

A.6.3 The majority of published data for amine degradation to nitrosamine and nitramines are presented as relative rates of reaction (for example for the reaction of the amine radical to form either the imine or nitramines, and the k1a/k1 branching ratio), rather than the absolute rates for each reaction required for the Amines module (i.e. k1, k2, k3, k4a and k4). The absolute rates of reaction may be derived through scientific research through experimental observation, for the more stable intermediate reaction species, or through theoretical computational calculations such as Transition State Theory.

A.6.4 The two FEED contractors have provided the required kinetic data relating to the amine species potentially emitted from the absorber stacks by their technology based, in each case, on an expert review of the literature data. The provided data is shown in **Table A-4**.

Table A-4: N-Amine Chemistry Parameters

Parameter	Units	Feed 1 - Amine 1	Feed 1 - Amine 2	Feed 2 - Amine 1	Feed 2 - Amine 2	Source
Ratio of NO_X to NO_2 in the exhaust gas	%	5 – 10%	5 – 10%	5 – 10%	5 – 10%	Typical range in combustion emissions
k1 = Amine/OH radical reaction rate constant	ppb/s	0.7	7.0	6.15	6.89	Technology supplier
k2 = Amino radical/O_2 reaction rate constant	ppb/s	3.75×10^{-9}	3.75×10^{-11}	1.33×10^{-9}	1.33×10^{-9}	Technology supplier
k3 = Rate constant for formation of nitrosamine	ppb/s	2.00×10^{-3}	1.25×10^{-3}	5.24×10^{-3}	2.35×10^{-3}	Technology supplier
k4a = Rate constant for formation of nitramine	ppb/s	8.00×10^{-3}	8.00×10^{-3}	7.82×10^{-3}	7.82×10^{-3}	Technology supplier
k4 = Amino radical/NO_2	ppb/s	8.00×10^{-3}	8.00×10^{-3}	9.39×10^{-3}	1.02×10^{-2}	Technology supplier

Parameter	Units	Feed 1 - Amine 1	Feed 1 - Amine 2	Feed 2 - Amine 1	Feed 2 - Amine 2	Source
reaction rate constant						
Branching Ratio	dimensionless	0.30	0.20	0.37	0.18	Technology supplier
Ratio of J (nitrosamine) to NO_2	dimensionless	0.50	0.30	0.34	0.34	Technology supplier
OH concentration constant c	Seconds	2019 – 1.24×10^{-3} 2020 – 1.19×10^{-3} 2021 – 1.22×10^{-3} 2022 – 1.37×10^{-3} 2023 – 1,36x10^{-3}				Specifically derived for the Sites location following CERC methodology

A.6.5 The model includes an option to take into account the effects of dilution of pollutant species and the entrainment of background pollutants. This 'dilution and entrainment' effect can be switched on and off, however it is recommended that it is switched on for all model runs involving amine chemistry. This is employed in the ADMS chemistry module (and recommended by CERC for low concentration plumes for the amines module) to represent slower mixing of the ambient air within the plume – rather than instantaneous mixing with an ambient air 'parcel' at plume release. The use of the dilution and entrainment option leads to a higher process contribution. The dilution and entrainment option has therefore been included for the main assessment for conservatism.

A.6.6 In addition, the amine module includes an option for modelling unstable nitrosamines, which can be employed when modelling primary amines that do not form stable nitrosamines. In effect, this means that the model results generated when this option is selected include no nitrosamine component, with only nitramines being predicted to form. This option has not been included in the assessment, as it is considered that the results would also be valid for predicting likely concentrations of tertiary amines, as they are more likely to form stable nitrosamines than primary amines.

Hydroxyl radical (OH) annual concentration

A.6.7 There is very limited information on OH concentrations as they are not possible to measure and need to be derived through modelling. For the purposed of this assessment, the local OH concentration was extracted from a run carried by the UK Centre for Ecology & Hydrology (UKCEH) for 2019, using the atmospheric chemistry transport model, EMEP4UK (Ref 20), and presented in CERC's report on Improving Post-Combustion Carbon Capture Air Quality Risk Assessment Techniques (Ref 15).

Nutrient Nitrogen Deposition Estimations

A.6.8 In October 2023, AQMAU published a proposed assessment method to include amines and degradation products in nutrient nitrogen deposition estimations at ecological sites (Ref 8). This guidance has been followed for this assessment and is summarised below.

A.6.9 Overall, the framework recommended by AQMAU is:

- step 1: identification of pollutants with nutrifying effect;
- step 2: approaching potential screening; and
- step 3: detailed assessment.

Step 1: Identification of pollutants with nutrifying effect

A.6.10 Identify the pollutants with nitrogen in their chemical structure, the amine(s) chemical reaction(s) and their molecular weight(s). In this case, the substances are:

- directly emitted pollutants (direct) with nitrogen in their chemical structure: amines, nitrosamines, in addition to NO_2 and NH_3; and
- pollutants formed through atmospheric reactions (indirect) with nitrogen in their chemical structure: nitrosamines, nitramines.

Step 2: Approaching potential screening

A.6.11 Calculate the nutrient nitrogen PCs per pollutant with the assumption that emitted amines do not react and the directly emitted nitrosamines are stable (i.e., pollutants only transport and disperse modelling).

A.6.12 Evaluate how much each pollutant contributes to the total nutrient nitrogen deposition at the ecological receptor. Use these results, contour plots and air dispersion modelling knowledge to estimate the level of uncertainty in the total nutrient nitrogen PCs and judge whether you may need to carry out a detailed assessment using the available transformation and deposition models (i.e., Step 3).

Step 3: Detailed assessment

A.6.13 As deposition cannot be modelled in conjunction with amine chemistry in ADMS, the CERC ADMS 6 amines chemistry supplement (Ref 21) proposes the following method to estimate the deposition fluxes (µg/m^2/s), D:

$$D = C1 \times (\frac{D2}{C3})$$

Where:

- C1 is the output concentration from run with the amines chemistry ON (Run 1);
- D2 is the output deposition flux from run with amines chemistry OFF and deposition ON (Run 2); and
- C3 is the output concentration from run with amines chemistry OFF and deposition OFF (Run 3)

A.6.14 Following the ADMS amines chemistry supplement, add the deposition velocity in the pollutants palette (Ref 22).

A.6.15 Carry out the suggested model runs and calculations to judge the significance of your results:

- estimate the deposition fluxes, D, according to the equation presented above. Then convert to kg N/ha-y to calculate the nutrient nitrogen deposition PCs; and
- evaluate the significance of your nutrient nitrogen deposition PCs against the critical loads at the ecological site.

A.7 Assessment Limitations and Assumptions

A.7.1 This section outlined the potential limitations associated with the dispersion modelling assessment. Where assumptions have been made, this is also detailed here.

A.7.2 The greatest uncertainty associated with any air quality modelling assessment arises through the inherent uncertainty of the dispersion modelling process itself. The use of dispersion modelling is nevertheless a useful and widely applied and accepted approach for the prediction of impacts from industrial sources.

A.7.3 We understand that NRW agrees with the Environment Agency position of recognising that the level of uncertainty within the ADMS amines chemistry model is high (Ref 5), however, as the only commercially available model, recognises that it represents the best available technique and follows first principles based on currently available knowledge on the mechanisms of formation of toxic pollutants from amine emissions in ambient air.

ADMS Amines Chemistry Module

No time-delay in N-amine Formation

A.7.4 The amines chemistry module does not account for the time delay in the initiation of the amine degradation (Ref 19). This time delay indicates that only around 15% of the amines that react to form N-amines would have done so within 1 hour, as a worst-case. The ADMS model assumes that a 'steady state' is achieved within 1 hour (N-amine formation/ destruction). The time taken for the peak concentration to reach a receptor at 1km from the source is between 1 - 30 minutes. The model only calculates spatial dispersion, not temporal change. In the real world, as the plume travels further from the source, the amine concentration reduces but the OH concentration may increase (less NOx for the preferential reaction to occur) leading to higher potential N-amine formation, but when balanced against N-amine and amine dispersion, the nett result is a lower N-amine concentration with distance. The model has to assume reaction completion at the point of calculation, and therefore it is considered that this is overly conservative.

No interaction between different amine species

A.7.5 The amines chemistry module does not allow for any interactions between different amines/ degradation species as only one amine species can be modelled at a time. This could result in missing N-amine removal pathways and therefore result in higher predicted results.

No consideration of other potential radical species present

A.7.6 Other reactions with chlorine atoms, nitrate radicals are not taken into account, although these are considered to be less significant.

No further degradation assumed after the initial reactions

A.7.7 Once the N-amine has formed in the atmosphere, further degradation/ destruction processes would occur due to photolysis by sunlight, however this destruction of N-amine is not accounted for in the model. It is therefore considered that this leads to potentially significant overprediction of the potential impact.

A.7.8 Furthermore, no photolysis of the direct N-amine emission is considered in the model, and this would again lead to an overprediction of the potential impact.

A.7.9 The amines chemistry module also does not account for further amine degradation, for example the primary amine MEA can degrade to the secondary amine DEA (which could subsequently degrade into NDMA). This could result in an increase in N-amine formation but over longer time periods, which could be counterbalanced by the destruction of N-amine over time, as discussed above.

Only day-time reactions are considered

A.7.10 The amines chemistry module accounts for diurnal variation in the photolysis (OH) reaction but does not account for the slower NO_2 degradation reaction that occurs during night-time.

No consideration of phase partitioning

A.7.11 Once emitted to the air, amines, nitrosamines and nitramines undergo multiphase chemistry, i.e. gas, aqueous (aerosols, cloud droplets, fog and rain) and particle phase (aerosol). Therefore, the mass of starting amine may be partitioned (e.g. gas or aqueous phase). The amines chemistry module is only concerned with the gaseous phase, however it is considered that the solubility of amines would put them out of the gas phase (Ref 23) therefore decreasing the amount of amines in the ambient air.

Other Assessment Limitations

Limited reaction rate constants available

A.7.12 The majority of published data for amine degradation to nitrosamine and nitramines are presented as relative rates of reaction (for example for the reaction of the amine radical to form either the imine or nitramines, and the k1a/k1 branching ratio), rather than the absolute rates for each reaction required for the Amines module (i.e. k1, k2, k3, k4a and k4, described in **Table A-4**. The absolute rates of reaction may be derived through scientific research through experimental observation, for the more stable intermediate reaction species, or through theoretical computational calculations such as Transition State Theory. A review of the available literature indicates that the availability of published absolute reaction rates for a whole amine reaction scheme is currently limited to a few primary and secondary amine species (namely MEA, DMA and MMA). In addition, some kinetic parameters reported for the same type of amine show different values in published reports. For this assessment, the kinetic parameters have been shared by each FEED supplier and used for the respective scenarios.

OH Value

A.7.13 The main reaction of amines in the atmosphere is with the OH radicals and it is this reaction on which the ADMS amine module is based. The model set up therefore requires a OH value to calculate the "c-value" for the reaction rate. The modelled predicted impact is directly proportional to c-value, and therefore it is important that local data is obtained and used in the model set-up. Halving of the OH value would result in a halving of the modelled N-amine impact.

A.7.14 There is limited data on OH concentrations in atmosphere and the concentration is highly variable with sunlight, ozone concentration, NOx concentration etc. and the radical is short-lived. This, therefore, represents a significant uncertainty in the modelled results.

Use of the NDMA EAL for all N-amines

A.7.15 The use of the NDMA EAL for the assessment of all N-amines is likely to lead to an over-prediction of the potential impact. As previously stated, NDMA is considered to be one of the most toxic nitrosamines, with nitramines being considered much less so (up to 15 times less toxic). It is therefore reasonable to assume that were EALs to be developed for other N-amine species that these would be higher than that proposed for NDMA.

A.7.16 The model output typically presents much higher predicted process contributions of nitramines (three to ten times higher) than for nitrosamines. For comparison against the EAL for the purpose of assessment, the nitrosamine and nitramine predicted process contributions have been combined. As stated previously, nitramines are known to be less toxic that nitrosamines, and therefore it is considered that this leads to an overly conservative assessment.

Annex B – Sensitivity Testing of Model Inputs

B.1.1 The maximum predicted concentrations of NO_2 at the worst-affected human health receptor and NOx at the worst-affected statutory designated ecological receptor associated with different meteorological model inputs, are presented in **Table B-1** as the percentage of maximum reported values in the main assessment for the Future Assessment.

Table B-1: Model Sensitivity Testing, based on changes in concentrations from the PC

Variable	Human health receptor / Max anywhere		Ecological receptor	
	Short Term	Long Term	Short Term	Long Term
Meteorological data (five year min to max) NO_2	55%	55%	59%	69%

B.1.2 The main uncertainty associated with the model is considered to be the meteorological data, with a NO_2 process contribution variation of 55% in the annual mean NO_2 results; this is equivalent to an overall uncertainty at the worst-affected receptor of -8.5 µg/m^3 (or -4.3% of the relevant AQAL).

Annex C – Plume Visibility Assessment

C.1 Introduction

C.1.1 The proposed CCGT units would burn natural gas fuel, and water vapour would form part of the composition of the combustion gases released from the stacks, for all scenarios. Under certain conditions this water vapour can cool and condense in close enough proximity to the stack exit to form a visible plume. This annex contains an assessment of plume visibility to consider if plume grounding could occur, and if so with what frequency.

C.1.2 The ADMS dispersion model used to evaluate the impact on local air quality due to the operation of the Proposed Development contains a plume visibility module and this has been used to evaluate the number of hours per year where a visible plume could form, using information on the emissions from the stacks and representative meteorological data from Hawarden Airport.

C.1.3 For the purposes of this assessment a stack plume is described as being 'visible' when condensed water is present in the plume. This definition does not take account of whether or not the plume can actually be seen (for example at night), and for this reason can be considered to be a precautionary approach likely to over-estimate the frequency of visible emissions. The procedure used in this assessment is based on that outlined in the 2003 version of the NRW's H1 horizontal guidance.

C.2 Modelling Methodology

C.2.1 The model setup is identical to that used for the assessment of pollutant emissions, except for the selection of the plume visibility module option and the input of initial water content in the plume. ADMS 6 defines the plume to be 'visible' at a particular downwind distance if the ambient humidity at the plume centreline is below 98%, above which it is considered the plume would be indistinguishable from clouds. The modelling was undertaken for the three scenarios assessed, namely FEED 1, FEED 2 and Unabated.

C.2.2 For the FEED 1 scenario, the initial water vapour mixing ratio of the plume was 0.05 kg/kg (mass of water vapour per unit mass of dry release at the stacks), and was calculated on the following basis:

- the exhaust stack flow from each unit is 788.9 kg/s;
- the exhaust flow contains 7.7% of water, as a molar fraction of the total; and
- this equates to 5% of the total flow on a mass basis.

C.2.3 For the FEED 2 scenario, the initial water vapour mixing ratio of the plume was 0.06 kg/kg (mass of water vapour per unit mass of dry release at the stacks), and was calculated on the following basis:

- the exhaust stack flow from each unit is 1055.9 kg/s;

- the exhaust flow contains 9.3% of water, as a molar fraction of the total; and
- this equates to 6% of the total flow on a mass basis.

C.2.4 For the Unabated scenario, the initial water vapour mixing ratio of the plume was 0.06 kg/kg (mass of water vapour per unit mass of dry release at the stacks), and was calculated on the following basis:

- the exhaust stack flow from each unit is 1100.0 kg/s;
- the exhaust flow contains 9.6% of water, as a molar fraction of the total; and
- this equates to 6% of the total flow on a mass basis.

C.3 Model Results

C.3.1 The results from the model have been summarised in **Table C-1** to **Table C-3**, for each scenario assessed. The results are per stack.

C.3.2 The results are different for each scenario, with the Unabated scenario producing an overall less visible plume, due to its higher temperature, followed by the FEED 1 scenario, which has a lower water content than FEED 2, and the FEED 2 scenario, with the highest "percentage time plume is visible", due to the combined low temperature and higher water content, as well as a higher mass flow rate.

C.3.3 The modelling has not predicted any groundings of a visible plume, at any point in the 5 years of meteorological data assessed.

Table C-1: Plume Visibility Assessment Results per Stack - FEED 1

Met Data Year	Percentage Time Plume Is Visible	Longest Visible Plume Length (m)	Average Visible Plume Length (m)	Percentage of Time There Is A Visible Plume Over 100 m	Number of Visible Plume Groundings
2019	33.1%	1,066.3	25.5	7.5%	0
2020	28.9%	1,307.9	20.6	6.0%	0
2021	31.8%	836.4	26.0	7.6%	0
2022	26.5%	956.4	19.0	5.1%	0
2023	24.6%	1,097.8	19.0	5.1%	0

Table C-2: Plume Visibility Assessment Results per Stack - FEED 2

Met Data Year	Percentage Time Plume Is Visible	Longest Visible Plume Length (m)	Average Visible Plume Length (m)	Percentage of Time There Is A Visible Plume Over 100 m	Number of Visible Plume Groundings
2019	66.2%	2,346.2	60.5	16.7%	0
2020	65.2%	2,105.9	56.1	14.4%	0
2021	61.4%	2,346.9	59.3	16.3%	0
2022	59.1%	1,648.0	48.4	12.6%	0
2023	58.1%	1,559.9	48.0	11.6%	0

Table C-3: Plume Visibility Assessment Results per Stack - Unabated

Met Data Year	Percentage Time Plume Is Visible	Longest Visible Plume Length (m)	Average Visible Plume Length (m)	Percentage of Time There Is A Visible Plume Over 100 m	Number of Visible Plume Groundings
2019	13.4%	922.4	14.3	4.6%	0
2020	8.9%	1,602.7	10.4	3.3%	0
2021	13.8%	1,150.0	16.4	5.1%	0
2022	10.0%	1,357.2	10.1	3.0%	0
2023	9.7%	1,152.9	10.9	3.1%	0

C.3.4 The reported longest 'visible' plume lengths are based on the physical properties of water at the plume centre line, i.e if the water is present at conditions that would result in droplet formation. At distances beyond a few hundred metres the water droplets would be too dispersed for the plume to be visible to the eye.

C.3.5 The effects of the plume visibility are discussed in **Chapter 15: Landscape and Visual Amenity** (**EN010166/APP/6.2.15**).

Annex D – Cumulative Assessment Inputs and In-Combination Results

D.1 Introduction

D.1.1 This annex provides the details of the developments considered within the point sources assessment to provide an inherently cumulative air quality assessment. Traffic sources are considered in **Chapter 10: Traffic and Transport** (**EN010166/APP/6.2.10**).

D.1.2 This section is presented to inform on the cumulative inputs for the air quality model which have been utilised within the main air quality assessment, as well as present the In-Combination results used in the Habitats Regulations Assessment (HRA).

D.1.3 Cumulative impacts from existing sources of pollution in the area are accounted for in the adoption of site-specific background pollutant concentrations from archive sources and a programme of project-specific baseline air quality monitoring in close proximity to the Proposed Development site. It is recognised, however, that there is a potential impact on local air quality from emission sources which have either received or are about to receive planning permission but have yet to come into operation. Those that are relevant for consideration due to their potential operational air quality impacts are:

- ID 38: Enfinium Parc Adfer ERF Carbon Capture, SCO/000970/23;
- ID 55: Shotton Paper Mill CHP Facility, DNS/3279559;
- ID 103: Padeswood Cement Works Carbon Capture, DNS CAS-02009-W1R1Z7; and
- ID 144: New Paper Processing Mill, 63721.

D.1.4 Although future emissions from the enfinium project would need to be considered for cumulative impacts, there is no available data aside from a scoping report at the time this assessment is completed. Therefore, this development cannot be included in the dispersion modelling and the project won't be considered further.

D.1.5 Information on the emissions from these sources has been derived from the available Planning Applications and has been included in the ADMS model. Due to the nature of these emissions, the cumulative assessment has only included emissions of NOx, PM_{10}, CO, ammonia and amines when present, as these are the only pollutant species common to all the cumulative schemes.

D.2 Model Inputs

D.2.1 All cumulative model schemes have been assumed to run continuously at full output, therefore providing a robust assessment of the potential cumulative impact. The model inputs for the Proposed Development are as described in **Table 1** and **Table 2**, and those for the cumulative schemes are shown in **Table D-1** and **Table D-2**.

Table D-1: Emission Inventory for the Cumulative Schemes (1)

Scheme	Shotton Paper Mill					Padeswood Cement Works
Source name	SPP_CHP1	SPP_CHP2	SPP_CHP3	SPP_CHP4	SPP_Dryer	Cement
Stack Location	330395, 371511	330408, 371514	330438, 371520	330452, 371522	330553, 371618	328914, 362078
Temperature (°C)	130	130	130	130	183	100
Velocity (m/s)	19.3	19.3	18.2	18.2	17.0	15.1
Height (m)	106.0	106.0	106.0	106.0	35.5	117.9
Diameter (m)	2.10	2.10	2.00	2.00	1.57	3.10
NOx (g/s)	3.28	3.28	2.81	2.81	0.35	-
Amine 3 (g/s)	-	-	-	-	-	2.08×10^{-2}
Amine 4 (g/s)	-	-	-	-	-	2.08×10^{-2}
Nitrosamine 4 (g/s)	-	-	-	-	-	2.30×10^{-3}
Amine 5 (g/s)	-	-	-	-	-	2.49×10^{-2}

Table D-2: Emission Inventory for the Cumulative Schemes (2)

Scheme	New Paper Processing Mill						
Source name	Cogen1	Cogen2	Cogen3	Boiler1A	Boiler1B	Boiler3A	Boiler3B
Stack Location	332020, 369755	332090, 369653	332108, 369628	332377, 369851	332375, 369855	332425, 369778	332423, 369781
Temperature (°C)	220	220	220	120	120	120	120
Velocity (m/s)	19.7	19.7	19.7	5.8	5.8	5.8	5.8
Height (m)	28.5	28.5	28.5	12.5	12.5	12.5	12.5

Scheme	New Paper Processing Mill						
Diameter (m)	1.80	1.80	1.80	0.45	0.45	0.45	0.45
NOx (g/s)	2.50	2.50	2.50	0.09	0.09	0.09	0.09

D.2.2 The buildings for each of the cumulative schemes, that may affect the dispersion of the emissions from the stacks have been included in the model run for the assessment of cumulative impacts. The buildings included in the model are shown in **Table D-3**.

Table D-3: Modelled Buildings

Building	Building Centre (X)	Building Centre (Y)	Height (m)	Length (m)	Width (m)	Angle (°)
PackingPlant	329064	362063	101	25	20	287
ClinkerTransport	329256	362166	49	16	15	106
Quencher	328890	362094	46	7	7	113
Regenerator	328912	362097	46	6	6	NA
1	332177	369997	13	107	31	146
2	332086	369942	40	95	176	146
3	332147	369597	20	102	40	58
4	332067	369713	20	102	80	58
5	332129	369619	14	102	10	58
6	332092	369674	14	102	9	58
7	332039	369751	14	102	9	58
8	332353	369897	12	118	12	146
9	332300	369804	12	211	180	146
10	332083	369798	15	60	22	146
11	332189	369715	12	194	104	146

D.3 Cumulative Assessment Results – Human Health and Ecological Receptors

D.3.1 Results of the cumulative assessment are as presented in Section 1.5. The results presented within the assessment are inherently cumulative, in that the Predicted Environmental Concentrations (PEC) presented include contributions from the committed developments listed above, as well as the background and Proposed Development's contributions.

D.4 In Combination Assessment results – Ecological Receptors

D.4.1 The in-combination assessment results below have been considered in the **Report to Inform Habitats Regulations Assessment** (**EN010166/APP/6.12**) submitted with the Application.

FEED 1 Scenario

1.5.34 The results at the identified ecological receptors for the FEED 1 scenario are shown in **Table D-4** to **Table D-8**.

1.5.35 The "Proposed development PC" column shows the concentrations due to contributions from the various proposed stacks (emission points differ between scenarios) and from the cumulative sources as presented above. The "Road Traffic Emissions PC" column shows the concentrations due to contributions from additional traffic present on local roads because of the operation of the Proposed Development (not relevant for all pollutants). The "PC/AQAL (%)" column shows the total PC (the addition of the previous two columns) divided by the relevant AQAL. The "Background Concentration" column shows the existing background. The "PEC" column shows total concentrations, i.e. total PC, plus background, plus cumulative sources. "PEC/AQAL (%)" column shows the PEC divided by the relevant AQAL.

Table D-4: Predicted Process Contribution Annual Mean NOx Concentrations – FEED 1 Scenario

Receptor	Proposed Development PC (μg/m³)	Road Emissions PC (μg/m³)	PC/AQAL (%)	Background Concentration (μg/m³)	PEC (μg/m³)	PEC/AQAL (%)
OE01	0.2	<0.1	0.8%	9.1	9.4	31.2%
OE02	0.9	<0.1	2.9%	12.7	13.6	45.4%
OE03	Not Sensitive					
OE04	0.2	<0.1	0.7%	7.3	7.5	25.1%
OE05	0.1	<0.1	0.4%	12.2	12.3	40.9%
OE06	0.1	<0.1	0.4%	21.0	21.1	70.3%
OE07	0.1	<0.1	0.2%	20.1	20.2	67.4%
OE08	0.2	<0.1	0.6%	10.0	10.2	34.0%
OE09	~~Not Sensitive~~0.7	<0.1	2.2%	10.0	10.7	35.6%
OE10	0.5	<0.1	1.8%	8.8	9.4	31.2%
OE11	0.3	<0.1	0.9%	9.8	10.1	33.6%
OE12	0.1	<0.1	0.3%	7.4	7.5	25.0%
OE13	0.1	<0.1	0.4%	11.5	11.6	38.7%
OE14	<0.1	<0.1	0.1%	5.9	5.9	19.8%
OE15	<0.1	<0.1	0.1%	4.6	4.7	15.6%
OE16	<0.1	<0.1	0.2%	5.7	5.7	19.0%
OE17	<0.1	<0.1	0.2%	4.9	4.9	16.5%
OE18	0.1	<0.1	0.2%	7.3	7.4	24.5%

Receptor	Proposed Development PC (μg/m³)	Road Emissions PC (μg/m³)	PC/AQAL (%)	Background Concentration (μg/m³)	PEC (μg/m³)	PEC/AQAL (%)
OE19	<0.1	<0.1	0.1%	4.7	4.8	15.8%
OE20	<0.1	<0.1	0.1%	4.7	4.8	15.8%
OE21	<0.1	<0.1	0.1%	4.5	4.5	15.2%
OE22	Not Sensitive					
OE23	Not Sensitive					
OE24	<0.1	<0.1	0.1%	5.2	5.2	17.3%
OE25	<0.1	<0.1	0.1%	4.8	4.8	16.1%
OE26	<0.1	<0.1	0.1%	5.1	5.1	17.1%
OE27	0.1	<0.1	0.3%	7.8	7.9	26.2%
OE28	0.1	<0.1	0.2%	7.2	7.3	24.3%
OE29	0.4	<0.1	1.3%	10.8	11.2	37.3%
OE30	0.3	<0.1	0.9%	10.0	10.3	34.2%
TE1	0.1	<0.~~0~~1	0.5%	9.61	9.8	32.5%
TE2	0.1	<0.~~0~~1	0.3%	6.49	6.6	21.9%
TE3	0.1	0.2	0.9%	7.08	7.4	24.5%
TE4	0.1	0.1	0.7%	7.08	7.3	24.3%
TE5	0.1	0.1	0.7%	7.45	7.7	25.5%
TE6	0.1	0.1	0.7%	7.45	7.7	25.5%
TE7a	<0.~~0~~1	0.3	1.1%	8.59	8.9	29.7%

Receptor	Proposed Development PC (µg/m³)	Road Emissions PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
TE7b	<0.~~0~~1	<0.~~0~~1	0.1%	8.59	8.6	28.8%
TE7c	<0.~~0~~1	<0.~~0~~1	0.1%	8.59	8.6	28.8%
TE8a	0.1	0.1	0.7%	9.61	9.8	32.8%
TE8b	0.2	0.4	2.1%	9.04	9.7	32.2%
TE8c	0.3	0.1	1.2%	11.99	12.4	41.2%

AQAL 30 µg/m³

Table D-5: Predicted Process Contribution 24-hour Maximum NO_x Concentrations – FEED 1 Scenario

Receptor	Proposed Development PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
OE01	2.1	2.8%	18.2	20.4	27.1%
OE02	17.5	23.3%	25.5	43.0	57.3%
OE03	Not Sensitive				
OE04	1.9	2.6%	14.6	16.6	22.1%
OE05	1.5	2.0%	24.3	25.8	34.5%
OE06	1.9	2.6%	41.9	43.9	58.5%
OE07	1.3	1.8%	40.3	41.6	55.5%
OE08	2.8	3.7%	20.0	22.8	30.3%
OE09	~~Not Sensitive~~4.4	5.9%	20.1	24.5	32.6%
OE10	12.5	16.6%	17.7	30.1	40.2%
OE11	6.5	8.7%	19.6	26.1	34.9%
OE12	2.7	3.6%	14.9	17.5	23.4%
OE13	2.9	3.9%	23.0	25.9	34.5%
OE14	1.5	2.1%	11.8	13.4	17.8%
OE15	1.5	2.1%	9.3	10.8	14.4%
OE16	1.7	2.3%	11.3	13.0	17.3%
OE17	2.4	3.1%	9.8	12.1	16.2%
OE18	2.6	3.5%	14.6	17.2	23.0%

Receptor	Proposed Development PC (µg/m3)	PC/AQAL (%)	Background Concentration (µg/m3)	PEC (µg/m3)	PEC/AQAL (%)
OE19	2.0	2.7%	9.4	11.4	15.2%
OE20	2.2	2.9%	9.4	11.6	15.5%
OE21	1.7	2.3%	9.0	10.8	14.3%
OE22	Not Sensitive				
OE23	Not Sensitive				
OE24	1.9	2.5%	10.3	12.2	16.2%
OE25	1.9	2.5%	9.6	11.4	15.3%
OE26	2.2	2.9%	10.2	12.3	16.4%
OE27	6.0	8.0%	15.5	21.5	28.7%
OE28	2.5	3.3%	14.4	16.9	22.5%
OE29	12.1	16.1%	21.6	33.7	44.9%
OE30	7.9	10.5%	20.0	27.9	37.2%

~~Table D-6~~Table D-6: Predicted In-combination Process Contribution Annual Mean NH_3 Concentrations – Abated FEED 1 Scenario

Receptor	AQAL (µg/m³) (1 used as default)	In-combination Proposed Development PC (µg/m³)	In-combination Road Emissions PC (µg/m³)	PC/AQAL (%)	Background Conc (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
TE1	1	<0.01	0.01	1.4%	1.55	1.56	156.4%
TE2	1	<0.01	<0.01	0.3%	1.37	1.37	137.3%
TE3	1	<0.01	0.05	5.4%	1.71	1.76	176.4%
TE4	1	<0.01	0.04	3.7%	1.71	1.75	174.7%
TE5	1	<0.01	0.03	3.5%	1.66	1.70	169.5%
TE6	1	<0.01	0.03	3.6%	1.66	1.70	169.6%
TE7a	1	<0.01	0.08	8.4%	1.84	1.92	192.4%
TE7b	1	<0.01	0.01	1.4%	1.84	1.85	185.4%
TE7c	1	0.01	0.01	1.7%	1.84	1.86	185.7%
TE8a	1	<0.01	0.03	3.5%	1.55	1.58	158.5%
TE8b	1	<0.01	0.14	14.3%	1.73	1.87	187.3%
TE8c	1	0.01	0.03	3.6%	1.92	1.96	195.6%

Table D-7: Predicted Process Contribution Nitrogen Deposition – FEED 1 Scenario

Receptor	Critical Load (AQAL) (kg/ha/yr)	Background Concentration (kg/ha/yr)	Predicted PC (kg/ha/yr)	Predicted Road Emissions PC (kg/ha/yr)	PC/AQAL (%)	PEC (kg/ha/yr)	PEC/AQAL (%)
OE01	5	15.0	0.06	<0.01	1.2%	15.03	300.6%
OE02	5	16.3	0.24	<0.01	4.8%	16.56	331.2%
OE03	Not ~~sensitive~~Sensitive						
OE04	5	14.1	0.05	<0.01	1.0%	14.19	283.8%
OE05	10	29.2	0.05	<0.01	0.5%	29.29	292.9%
OE06	5	17.3	0.03	<0.01	0.6%	17.29	345.8%
OE07	10	16.0	0.02	<0.01	0.2%	16.00	160.0%
OE08	Not Sensitive						
OE09	10	16.2	0.14	<0.01	1.4%	16.35	163.5%
OE10	10	16.2	0.13	<0.01	1.3%	16.32	163.2%
OE11	10	30.6	0.18	<0.01	1.8%	30.79	307.9%
OE12	6	17.5	0.02	<0.01	0.4%	17.51	291.9%
OE13	5	18.2	0.04	<0.01	0.8%	18.25	365.0%
OE14	5	17.6	0.01	<0.01	0.2%	17.59	351.8%
OE15	5	17.0	0.01	<0.01	0.2%	17.03	340.6%
OE16	10	28.7	0.02	<0.01	0.2%	28.75	287.5%
OE17	10	28.5	0.03	<0.01	0.3%	28.53	285.3%

Receptor	Critical Load (AQAL) (kg/ha/yr)	Background Concentration (kg/ha/yr)	Predicted PC (kg/ha/yr)	Predicted Road Emissions PC (kg/ha/yr)	PC/AQAL (%)	PEC (kg/ha/yr)	PEC/AQAL (%)
OE18	5	15.8	0.02	<0.01	0.4%	15.77	315.4%
OE19	10	16.7	0.01	<0.01	0.1%	16.74	167.4%
OE20	6	16.7	0.01	<0.01	0.2%	16.74	279.1%
OE21	15	28.5	0.02	<0.01	0.1%	28.53	190.2%
OE22	Not Sensitive						
OE23	Not Sensitive						
OE24	10	16.6	0.01	<0.01	0.1%	16.57	165.7%
OE25	5	16.6	0.01	<0.01	0.2%	16.62	332.4%
OE26	5	16.6	0.01	<0.01	0.3%	16.63	332.7%
OE27	6	16.1	0.03	<0.01	0.5%	16.10	268.4%
OE28	6	16.1	0.02	<0.01	0.3%	16.10	268.3%
OE29	5	16.4	0.11	<0.01	2.2%	16.55	331.0%
OE30	10	31.1	0.18	<0.01	1.8%	31.28	312.8%
TE1	10	28.23	0.06	0.09	1.5%	28.38	283.8%
TE2	10	28.67	0.05	0.01	0.6%	28.73	287.3%
TE3	10	29.52	0.05	0.43	4.9%	30.01	300.1%
TE4	10	29.52	0.05	0.30	3.4%	29.86	298.6%
TE5	10	28.91	0.04	0.28	3.2%	29.23	292.3%

Receptor	Critical Load (AQAL) (kg/ha/yr)	Background Concentration (kg/ha/yr)	Predicted PC (kg/ha/yr)	Predicted Road Emissions PC (kg/ha/yr)	PC/AQAL (%)	PEC (kg/ha/yr)	PEC/AQAL (%)
TE6	10	28.91	0.05	0.28	3.3%	29.24	292.4%
TE7a	10	30.61	0.08	0.68	7.7%	31.38	313.8%
TE7b	10	30.61	0.11	0.09	2.0%	30.81	308.1%
TE7c	10	30.61	0.16	0.09	2.6%	30.87	308.7%
TE8a	5	15.99	0.07	0.17	4.8%	16.23	324.6%
TE8b	5	16.19	0.13	0.75	17.7%	17.07	341.5%
TE8c	5	16.81	0.16	0.17	6.5%	17.14	342.7%

Table D-8: Predicted Process Contribution Acid Deposition– FEED 1 Scenario

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	Road Emissions PC (µg/m^3)	PC/ AQAL (%)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
OE01	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	1.23	<0.01	<0.01	0.3%	1.23	92.7%
OE02	Min CL min N 0.499 Min CL Max N 1.564 Min CL Max S 0.83	0.95	<0.01	<0.01	<0.1%	0.97	<0.1%
OE03	Not Sensitive						
OE04	Min CL min N 0.499 Min CL Max N 1.052 Min CL Max S 0.91	1.16	<0.01	<0.01	0.4%	1.16	110.6%
OE05	Min CL min N 0.499 Min CL Max N 1.721 Min CL Max S 1.364	2.33	<0.01	<0.01	0.2%	2.33	135.6%
OE06	Min CL min N 0.499 Min CL Max N 0.511 Min CL Max S 0.19	1.08	<0.01	<0.01	0.4%	1.08	211.8%
OE07	Not Sensitive						
OE08	Not Sensitive						
OE09	Not Sensitive						
OE10	Not Sensitive						

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	Road Emissions PC (µg/m^3)	PC/ AQAL (%)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
OE11	Min CL min N 0.499 Min CL Max N 1.72 Min CL Max S 1.448	No Data Available	0.01	<0.01	<0.1%	0.01	<0.1%
OE12	Min CL min N 0.499 Min CL Max N 1.834 Min CL Max S 1.477	No Data Available	<0.01	<0.01	<0.1%	<0.01	<0.1%
OE13	Min CL min N 0.499 Min CL Max N 1.828 Min CL Max S 1.471	No Data Available	<0.01	<0.01	<0.1%	<0.01	<0.1%
OE14	Min CL min N 0.499 Min CL Max N 0.634 Min CL Max S 0.349	2.35	<0.01	<0.01	0.1%	2.35	370.8%
OE15	Min CL min N 0.499 Min CL Max N 6.197 Min CL Max S 6.055	1.37	<0.01	<0.01	<0.1%	1.37	22.1%
OE16	Min CL min N 0.499 Min CL Max N 1.769 Min CL Max S 1.627	2.25	<0.01	<0.01	0.1%	2.25	127.3%
OE17	Min CL min N 0.499 Min CL Max N 1.863 Min CL Max S 1.721	No Data Available	<0.01	<0.01	<0.1%	<0.01	<0.1%
OE18	Min CL min N 0.499 Min CL Max N 1.006 Min CL Max S 0.721	No Data Available	<0.01	<0.01	<0.1%	<0.01	<0.1%

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	Road Emissions PC (µg/m^3)	PC/ AQAL (%)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
OE19	Min CL min N 0.499 Min CL Max N 4.856 Min CL Max S 4	1.35	<0.01	<0.01	<0.1%	1.35	27.8%
OE20	Min CL min N 0.499 Min CL Max N 4.856 Min CL Max S 4	1.35	<0.01	<0.01	<0.1%	1.35	27.8%
OE21	Min CL min N 0.499 Min CL Max N 5.989 Min CL Max S 5.847	2.23	<0.01	<0.01	<0.1%	2.23	37.3%
OE22	Not Sensitive						
OE23	Not Sensitive						
OE24	Not Sensitive						
OE25	Min CL min N 0.499 Min CL Max N 6.023 Min CL Max S 5.881	1.34	<0.01	<0.01	<0.1%	1.34	22.3%
OE26	Min CL min N 0.499 Min CL Max N 4.268 Min CL Max S 4.09	1.34	<0.01	<0.01	<0.1%	1.34	31.4%
OE27	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	2.29	<0.01	<0.01	0.1%	2.29	126.6%

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	Road Emissions PC (µg/m^3)	PC/ AQAL (%)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
OE28	Min CL min N 0.499 Min CL Max N 5.071 Min CL Max S 4	1.3	<0.01	<0.01	<0.1%	1.30	25.7%
OE29	Min CL min N 0.499 Min CL Max N 5.071 Min CL Max S 4	1.02	0.01	<0.01	<0.1%	1.03	<0.1%
OE30	Min CL min N 0.499 Min CL Max N 1.72 Min CL Max S 1.448	No Data Available	0.01	<0.01	<0.1%	0.01	<0.1%
TE1	Min CL min N 0.499 Min CL Max N 1.782 Min CL Max S 1.425	2.37	<0.01	0.01	0.6%	2.39	133.6%
TE2	Min CL min N 0.499 Min CL Max N 1.782 Min CL Max S 1.425	2.35	<0.01	<0.01	0.2%	2.36	138.1%
TE3	Min CL min N 0.499 Min CL Max N 1.782 Min CL Max S 1.425	2.44	<0.01	0.03	1.9%	2.48	136.6%
TE4	Min CL min N 0.499 Min CL Max N 1.705 Min CL Max S 1.563	2.44	<0.01	0.02	1.4%	2.47	136.1%
TE5	Min CL min N 0.499 Min CL Max N 1.705 Min CL Max S 1.563	2.42	<0.01	0.02	1.3%	2.45	137.2%

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	Road Emissions PC (μg/m^3)	PC/ AQAL (%)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
TE6	Min CL min N 0.499 Min CL Max N 1.705 Min CL Max S 1.563	2.42	<0.01	0.02	1.3%	2.45	137.2%
TE7a	Min CL min N 0.499 Min CL Max N 1.705 Min CL Max S 1.563	2.48	0.01	0.05	3.3%	2.54	147.5%
TE7b	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	2.49	0.01	0.01	0.9%	2.50	145.1%
TE7c	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	2.49	0.01	0.01	1.1%	2.51	145.3%
TE8a	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	1.42	<0.01	0.01	1.2%	1.44	91.4%
TE8b	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	No Data Available	0.01	0.05	<0.1%	0.07	<0.1%
TE8c	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	1.47	0.01	0.01	0.5%	1.49	30.7%

FEED 2 Scenario

1.5.36 The results at the identified ecological receptors for the FEED 1 scenario are shown in **Table D-9** to **Table D-13**.

Table D-9: Predicted Process Contribution Annual Mean NO_x Concentrations – FEED 2 Scenario

Receptor	Proposed Development PC (µg/m³)	Road Emissions PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
OE01	0.3	<0.1~~%~~	0.9%	9.1	9.4	31.3%
OE02	0.9	<0.1~~%~~	3.0%	12.7	13.6	45.5%
OE03	Not Sensitive					
OE04	0.2	<0.1~~%~~	0.7%	7.3	7.5	25.1%
OE05	0.1	<0.1~~%~~	0.4%	12.2	12.3	41.0%
OE06	0.1	<0.1~~%~~	0.4%	21.0	21.1	70.3%
OE07	0.1	<0.1~~%~~	0.2%	20.1	20.2	67.4%
OE08	0.2	<0.1~~%~~	0.7%	1<0.1	10.2	34.0%
OE09	~~Not Sensitive~~0.7	<0.1	2.3%	10.0	10.7	35.8%
OE10	0.5	<0.1~~%~~	1.8%	8.8	9.4	31.3%
OE11	0.3	<0.1~~%~~	1.0%	9.8	10.1	33.7%
OE12	0.1	<0.1~~%~~	0.3%	7.4	7.5	25.1%
OE13	0.1	<0.1~~%~~	0.4%	11.5	11.6	38.7%
OE14	<0.1	<0.1~~%~~	0.1%	5.9	5.9	19.8%
OE15	<0.1	<0.1~~%~~	0.1%	4.6	4.7	15.6%
OE16	0.1	<0.1~~%~~	0.2%	5.7	5.7	19.0%
OE17	0.1	<0.1~~%~~	0.2%	4.9	4.9	16.5%
OE18	0.1	<0.1~~%~~	0.2%	7.3	7.4	24.5%

Receptor	Proposed Development PC (µg/m^3)	Road Emissions PC (µg/m^3)	PC/AQAL (%)	Background Concentration (µg/m^3)	PEC (µg/m^3)	PEC/AQAL (%)
OE19	<0.1	<0.1~~%~~	0.2%	4.7	4.8	15.9%
OE20	<0.1	<0.1~~%~~	0.2%	4.7	4.8	15.9%
OE21	<0.1	<0.1~~%~~	0.1%	4.5	4.6	15.2%
OE22	Not Sensitive					
OE23	Not Sensitive					
OE24	<0.1	<0.1~~%~~	0.1%	5.2	5.2	17.3%
OE25	<0.1	<0.1~~%~~	0.1%	4.8	4.8	16.1%
OE26	<0.1	<0.1~~%~~	0.1%	5.1	5.1	17.1%
OE27	0.1	<0.1~~%~~	0.3%	7.8	7.9	26.2%
OE28	0.1	<0.1~~%~~	0.2%	7.2	7.3	24.3%
OE29	0.4	<0.1~~%~~	1.4%	10.8	11.2	37.3%
OE30	0.3	<0.1~~%~~	1.0%	10.0	10.3	34.3%
TE1	0.1	0.0	0.5%	9.61	9.8	32.5%
TE2	0.1	0.0	0.3%	6.49	6.6	21.9%
TE3	0.1	0.2	0.9%	7.08	7.4	24.5%
TE4	0.1	0.1	0.7%	7.08	7.3	24.3%
TE5	0.1	0.1	0.7%	7.45	7.7	25.5%
TE6	0.1	0.1	0.7%	7.45	7.7	25.5%
TE7a	0.1	0.3	1.4%	8.59	9.0	30.0%

Receptor	Proposed Development PC (µg/m³)	Road Emissions PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
TE7b	0.1	0.0	0.4%	8.59	8.7	29.1%
TE7c	0.1	0.0	0.5%	8.59	8.7	29.1%
TE8a	0.1	0.1	0.6%	9.61	9.8	32.7%
TE8b	0.1	0.4	1.8%	9.04	9.6	31.9%
TE8c	0.2	0.1	0.8%	11.99	12.2	40.8%

AQAL 30 µg/m³

Table D-10: Predicted Process Contribution 24-hour Maximum NO_x Concentrations – FEED 2 Scenario

Receptor	Proposed Development PC (µg/m^3)	PC/AQAL (%)	Background Concentration (µg/m^3)	PEC (µg/m^3)	PEC/AQAL (%)
OE01	2.7	3.6%	18.2	20.9	27.9%
OE02	19.3	25.8%	25.5	44.8	59.8%
OE03	Not Sensitive				
OE04	2.5	3.3%	14.6	17.1	22.8%
OE05	1.9	2.5%	24.3	26.2	34.9%
OE06	2.4	3.2%	41.9	44.4	59.2%
OE07	1.7	2.3%	40.3	42.0	56.0%
OE08	3.4	4.6%	20.0	23.4	31.2%
OE09	~~Not Sensitive~~5.6	7.5%	20.1	25.7	34.2%
OE10	13.1	17.5%	17.7	30.8	41.1%
OE11	8.8	11.7%	19.6	28.4	37.8%
OE12	3.4	4.6%	14.9	18.3	24.4%
OE13	3.2	4.2%	23.0	26.2	34.9%
OE14	1.9	2.5%	11.8	13.7	18.3%
OE15	1.8	2.4%	9.3	11.1	14.8%
OE16	2.1	2.9%	11.3	13.4	17.9%
OE17	2.8	3.7%	9.8	12.5	16.7%
OE18	3.2	4.3%	14.6	17.8	23.7%

Receptor	Proposed Development PC (µg/m^3)	PC/AQAL (%)	Background Concentration (µg/m^3)	PEC (µg/m^3)	PEC/AQAL (%)
OE19	2.4	3.2%	9.4	11.9	15.8%
OE20	2.6	3.5%	9.4	12.0	16.1%
OE21	2.2	2.9%	9.0	11.2	15.0%
OE22	Not Sensitive				
OE23	Not Sensitive				
OE24	2.6	3.5%	10.3	12.9	17.2%
OE25	2.4	3.2%	9.6	12.0	15.9%
OE26	2.6	3.5%	10.2	12.8	17.1%
OE27	7.0	9.3%	15.5	22.5	30.0%
OE28	3.0	4.0%	14.4	17.5	23.3%
OE29	14.9	19.9%	21.6	36.5	48.7%
OE30	8.8	11.7%	20.0	28.8	38.3%

~~Table D-10~~AQAL 75 µg/m^3

Table D-11: Predicted In-combination Process Contribution Annual Mean NH_3 Concentrations – Abated FEED 2 Scenario

Receptor	AQAL (µg/m^3) (1 used as default)	In-combination Proposed Development PC (µg/m^3)	In-combination Road Emissions PC (µg/m^3)	PC/AQAL (%)	Background Conc (µg/m^3)	PEC (µg/m^3)	PEC/AQAL (%)
TE1	1	<0.01	0.01	1.3%	1.55	1.56	156.3%
TE2	1	<0.01	<0.01	0.3%	1.37	1.37	137.3%
TE3	1	<0.01	0.05	5.4%	1.71	1.76	176.4%
TE4	1	<0.01	0.04	3.7%	1.71	1.75	174.7%
TE5	1	<0.01	0.03	3.5%	1.66	1.69	169.5%
TE6	1	<0.01	0.03	3.6%	1.66	1.70	169.6%
TE7a	1	<0.01	0.08	8.6%	1.84	1.93	192.6%
TE7b	1	0.01	0.01	1.7%	1.84	1.86	185.7%
TE7c	1	0.01	0.01	2.1%	1.84	1.86	186.1%
TE8a	1	<0.01	0.03	3.4%	1.55	1.58	158.4%
TE8b	1	0.01	0.14	14.5%	1.73	1.87	187.5%
TE8c	1	0.01	0.03	3.9%	1.92	1.96	195.9%

Table D-12: Predicted Process Contribution Nitrogen Deposition – FEED 2 Scenario

Receptor	Critical Load (AQAL) (kg/ha/yr)	Background Concentration (kg/ha/yr)	Predicted PC (kg/ha/yr)	Predicted Road Emissions PC (kg/ha/yr)	PC/ AQAL (%)	PEC (kg/ha/yr)	PEC/AQAL (%)
OE01	5	15.0	0.06	<0.01	1.1%	15.03	300.5%
OE02	5	16.3	0.21	<0.01	4.2%	16.53	330.6%
OE03	Not Sensitive						
OE04	5	14.1	0.05	<0.01	1.0%	14.19	283.8%
OE05	10	29.2	0.05	<0.01	0.5%	29.29	292.9%
OE06	5	17.3	0.03	<0.01	0.6%	17.29	345.8%
OE07	10	16.0	0.02	<0.01	0.2%	16.00	160.0%
OE08	Not Sensitive						
OE09	10	16.2	0.14	<0.01	1.4%	16.35	163.5%
OE10	10	16.2	0.12	<0.01	1.2%	16.31	163.1%
OE11	10	30.6	0.17	<0.01	1.7%	30.78	307.8%
OE12	6	17.5	0.02	<0.01	0.4%	17.51	291.9%
OE13	5	18.2	0.04	<0.01	0.7%	18.25	364.9%
OE14	5	17.6	0.01	<0.01	0.3%	17.59	351.9%
OE15	5	17.0	0.01	<0.01	0.2%	17.03	340.6%
OE16	10	28.7	0.02	<0.01	0.2%	28.75	287.5%
OE17	10	28.5	0.03	<0.01	0.3%	28.53	285.3%
OE18	5	15.8	0.02	<0.01	0.4%	15.77	315.4%

Receptor	Critical Load (AQAL) (kg/ha/yr)	Background Concentration (kg/ha/yr)	Predicted PC (kg/ha/yr)	Predicted Road Emissions PC (kg/ha/yr)	PC/ AQAL (%)	PEC (kg/ha/yr)	PEC/AQAL (%)
OE19	10	16.7	0.01	<0.01	0.1%	16.74	167.4%
OE20	6	16.7	0.02	<0.01	0.3%	16.75	279.1%
OE21	15	28.5	0.02	<0.01	0.1%	28.53	190.2%
OE22	Not Sensitive						
OE23	Not Sensitive						
OE24	10	16.6	0.01	<0.01	0.1%	16.57	165.7%
OE25	5	16.6	0.01	<0.01	0.2%	16.62	332.4%
OE26	5	16.6	0.01	<0.01	0.3%	16.63	332.7%
OE27	6	16.1	0.03	<0.01	0.5%	16.10	268.3%
OE28	6	16.1	0.02	<0.01	0.3%	16.10	268.3%
OE29	5	16.4	0.10	<0.01	2.0%	16.54	330.8%
OE30	10	31.1	0.17	<0.01	1.7%	31.27	312.7%
TE1	10	28.23	0.05	0.09	1.4%	28.37	283.7%
TE2	10	28.67	0.05	0.01	0.5%	28.72	287.2%
TE3	10	29.52	0.05	0.43	4.8%	30.00	300.0%
TE4	10	29.52	0.04	0.30	3.4%	29.86	298.6%
TE5	10	28.91	0.04	0.28	3.2%	29.23	292.3%
TE6	10	28.91	0.04	0.28	3.2%	29.23	292.3%
TE7a	10	30.61	0.07	0.68	7.6%	31.37	313.7%

Receptor	Critical Load (AQAL) (kg/ha/yr)	Background Concentration (kg/ha/yr)	Predicted PC (kg/ha/yr)	Predicted Road Emissions PC (kg/ha/yr)	PC/ AQAL (%)	PEC (kg/ha/yr)	PEC/AQAL (%)
TE7b	10	30.61	0.10	0.09	1.9%	30.80	308.0%
TE7c	10	30.61	0.15	0.09	2.4%	30.85	308.5%
TE8a	5	15.99	0.05	0.17	4.6%	16.22	324.4%
TE8b	5	16.19	0.11	0.75	17.2%	17.05	341.0%
TE8c	5	16.81	0.15	0.17	6.2%	17.12	342.4%

Table D-13: Predicted Process Contribution Acid Deposition – FEED 2 Scenario

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	Road Emissions PC (µg/m^3)	PC/ AQAL (%)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
OE01	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	1.23	<0.01	<0.01	0.1%	1.23	92.6%
OE02	Min CL min N 0.499 Min CL Max N 1.564 Min CL Max S 0.83	0.95	0.01	<0.01	<0.1%	0.96	<0.1%
OE03	Not Sensitive						
OE04	Min CL min N 0.499 Min CL Max N 1.052 Min CL Max S 0.91	1.16	<0.01	<0.01	0.2%	1.16	110.6%
OE05	Min CL min N 0.499 Min CL Max N 1.721 Min CL Max S 1.364	2.33	<0.01	<0.01	0.1%	2.33	135.6%
OE06	Min CL min N 0.499 Min CL Max N 0.511 Min CL Max S 0.19	1.08	<0.01	<0.01	0.3%	1.08	211.8%
OE07	Not Sensitive						
OE08	Not Sensitive						
OE09	Not Sensitive						
OE10	Not Sensitive						

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	Road Emissions PC (μg/m^3)	PC/ AQAL (%)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
OE11	Min CL min N 0.499 Min CL Max N 1.72 Min CL Max S 1.448	No Data Available	0.01	<0.01	<0.1%	0.01	<0.1%
OE12	Min CL min N 0.499 Min CL Max N 1.834 Min CL Max S 1.477	No Data Available	<0.01	<0.01	<0.1%	<0.01	<0.1%
OE13	Min CL min N 0.499 Min CL Max N 1.828 Min CL Max S 1.471	No Data Available	<0.01	<0.01	<0.1%	<0.01	<0.1%
OE14	Min CL min N 0.499 Min CL Max N 0.634 Min CL Max S 0.349	2.35	<0.01	<0.01	0.1%	2.35	370.8%
OE15	Min CL min N 0.499 Min CL Max N 6.197 Min CL Max S 6.055	1.37	<0.01	<0.01	<0.1%	1.37	22.1%
OE16	Min CL min N 0.499 Min CL Max N 1.769 Min CL Max S 1.627	2.25	<0.01	<0.01	0.1%	2.25	127.3%
OE17	Min CL min N 0.499 Min CL Max N 1.863 Min CL Max S 1.721	No Data Available	<0.01	<0.01	<0.1%	<0.01	<0.1%
OE18	Min CL min N 0.499 Min CL Max N 1.006 Min CL Max S 0.721	No Data Available	<0.01	<0.01	<0.1%	<0.01	<0.1%

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	Road Emissions PC (µg/m^3)	PC/ AQAL (%)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
OE19	Min CL min N 0.499 Min CL Max N 4.856 Min CL Max S 4	1.35	<0.01	<0.01	<0.1%	1.35	27.8%
OE20	Min CL min N 0.499 Min CL Max N 4.856 Min CL Max S 4	1.35	<0.01	<0.01	<0.1%	1.35	27.8%
OE21	Min CL min N 0.499 Min CL Max N 5.989 Min CL Max S 5.847	2.23	<0.01	<0.01	<0.1%	2.23	37.3%
OE22	Not Sensitive						
OE23	Not Sensitive						
OE24	Not Sensitive						
OE25	Min CL min N 0.499 Min CL Max N 6.023 Min CL Max S 5.881	1.34	<0.01	<0.01	<0.1%	1.34	22.3%
OE26	Min CL min N 0.499 Min CL Max N 4.268 Min CL Max S 4.09	1.34	<0.01	<0.01	<0.1%	1.34	31.4%
OE27	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	2.29	<0.01	<0.01	0.1%	2.29	126.6%

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	Road Emissions PC (µg/m^3)	PC/ AQAL (%)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
OE28	Min CL min N 0.499 Min CL Max N 5.071 Min CL Max S 4	1.3	<0.01	<0.01	<0.1%	1.30	25.7%
OE29	Min CL min N 0.499 Min CL Max N 5.071 Min CL Max S 4	1.02	0.01	<0.01	<0.1%	1.03	<0.1%
OE30	Min CL min N 0.499 Min CL Max N 1.72 Min CL Max S 1.448	No Data Available	0.01	<0.01	<0.1%	0.01	<0.1%
TE1	Min CL min N 0.499 Min CL Max N 1.782 Min CL Max S 1.425	2.37	<0.01	0.01	0.6%	2.37	133.6%
TE2	Min CL min N 0.499 Min CL Max N 1.782 Min CL Max S 1.425	2.35	<0.01	<0.01	0.2%	2.35	138.1%
TE3	Min CL min N 0.499 Min CL Max N 1.782 Min CL Max S 1.425	2.44	<0.01	0.03	1.9%	2.47	136.6%
TE4	Min CL min N 0.499 Min CL Max N 1.705 Min CL Max S 1.563	2.44	<0.01	0.02	1.3%	2.46	136.1%
TE5	Min CL min N 0.499 Min CL Max N 1.705 Min CL Max S 1.563	2.42	<0.01	0.02	1.3%	2.44	137.2%

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	Road Emissions PC (µg/m^3)	PC/ AQAL (%)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
TE6	Min CL min N 0.499 Min CL Max N 1.705 Min CL Max S 1.563	2.42	<0.01	0.02	1.3%	2.44	137.2%
TE7a	Min CL min N 0.499 Min CL Max N 1.705 Min CL Max S 1.563	2.48	0.01	0.05	3.1%	2.52	147.3%
TE7b	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	2.49	0.01	0.01	0.8%	2.48	145.0%
TE7c	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	2.49	0.01	0.01	1.0%	2.48	145.2%
TE8a	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	1.42	<0.01	0.01	1.0%	1.43	91.3%
TE8b	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	No Data Available	0.01	0.05	<0.1%	0.05	<0.1%
TE8c	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	1.47	0.01	0.01	0.5%	1.46	30.7%

Unabated Scenario

1.5.37 The results at the identified ecological receptors for the unabated scenario are shown in **Table D-14** to **Table D-18**.

Table D-14: Predicted Process Contribution Annual Mean NO_x Concentrations – Unabated Scenario

Receptor	Proposed Development PC (µg/m³)	PC from Road Traffic Emissions (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
OE01	0.3	<0.1	1.1%	9.1	0.2	31.5%
OE02	1.1	<0.1	3.5%	12.7	0.8	46.0%
OE03	Not Sensitive					
OE04	0.3	<0.1	1.0%	7.3	0.2	25.4%
OE05	0.2	<0.1	0.5%	12.2	0.1	41.1%
OE06	0.2	<0.1	0.6%	21.0	0.1	70.5%
OE07	0.1	<0.1	0.4%	20.1	0.1	67.5%
OE08	0.3	<0.1	0.9%	10.0	0.1	34.3%
OE09	~~Not Sensitive~~0.8	<0.1	2.6%	10.0	10.8	36.1%
OE10	0.7	<0.1	2.3%	8.8	0.5	31.7%
OE11	0.4	<0.1	1.5%	9.8	0.1	34.2%
OE12	0.1	<0.1	0.4%	7.4	0.1	25.1%
OE13	0.2	<0.1	0.6%	11.5	0.1	38.9%
OE14	0.1	<0.1	0.2%	5.9	<0.1	19.9%
OE15	0.1	<0.1	0.2%	4.6	<0.1	15.7%
OE16	0.1	<0.1	0.2%	5.7	<0.1	19.1%
OE17	0.1	<0.1	0.3%	4.9	<0.1	16.6%
OE18	0.1	<0.1	0.4%	7.3	<0.1	24.7%

Receptor	Proposed Development PC (µg/m³)	PC from Road Traffic Emissions (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
OE19	0.1	<0.1	0.2%	4.7	<0.1	15.9%
OE20	0.1	<0.1	0.2%	4.7	<0.1	15.9%
OE21	0.1	<0.1	0.2%	4.5	<0.1	15.2%
OE22	Not Sensitive					
OE23	Not Sensitive					
OE24	0.1	<0.1	0.2%	5.2	<0.1	17.4%
OE25	0.1	<0.1	0.2%	4.8	<0.1	16.2%
OE26	0.1	<0.1	0.2%	5.1	<0.1	17.1%
OE27	0.1	<0.1	0.4%	7.8	0.1	26.3%
OE28	0.1	<0.1	0.4%	7.2	<0.1	24.4%
OE29	0.5	<0.1	1.7%	10.8	0.3	37.6%
OE30	0.5	<0.1	1.5%	10.0	0.1	34.8%
TE1	<0.1	<0.1	0.2%	9.61	9.8	32.5%
TE2	0.1	<0.1	0.2%	6.49	6.6	22.0%
TE3	<0.1	0.2	0.6%	7.08	7.4	24.5%
TE4	<0.1	0.1	0.5%	7.08	7.3	24.4%
TE5	<0.1	0.1	0.4%	7.45	7.7	25.5%
TE6	<0.1	0.1	0.4%	7.45	7.7	25.5%
TE7a	0.1	0.3	1.3%	8.59	9.1	30.3%

Receptor	Proposed Development PC (µg/m³)	PC from Road Traffic Emissions (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
TE7b	0.1	<0.1	0.6%	8.59	8.9	29.5%
TE7c	0.2	<0.1	1.0%	8.59	9.0	29.9%
TE8a	0.1	0.1	0.5%	9.61	9.9	32.9%
TE8b	0.1	0.4	1.7%	9.04	9.7	32.4%
TE8c	0.2	0.1	1.1%	11.99	12.5	41.6%

AQAL 30 µg/m³

Table D-15: Predicted Process Contribution 24-hour Maximum NO_x Concentrations – Unabated Scenario

Receptor	Proposed Development PC (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
OE01	2.8	3.7%	18.2	21.0	28.0%
OE02	15.8	21.0%	25.5	41.3	55.0%
OE03	Not Sensitive				
OE04	2.6	3.5%	14.6	17.2	23.0%
OE05	2.4	3.2%	24.3	26.7	35.7%
OE06	2.7	3.5%	41.9	44.6	59.5%
OE07	1.9	2.5%	40.3	42.1	56.2%
OE08	3.4	4.5%	20.0	23.4	31.1%
OE09	~~Not Sensitive~~7.2	9.7%	20.1	27.3	36.4%
OE10	16.8	22.4%	17.7	34.4	45.9%
OE11	9.4	12.6%	19.6	29.1	38.8%
OE12	3.2	4.3%	14.9	18.1	24.1%
OE13	3.8	5.1%	23.0	26.8	35.7%
OE14	2.1	2.9%	11.8	14.0	18.6%
OE15	1.8	2.4%	9.3	11.0	14.7%
OE16	1.9	2.6%	11.3	13.2	17.6%
OE17	2.3	3.0%	9.8	12.0	16.1%
OE18	3.0	3.9%	14.6	17.5	23.4%

OE19	2.2	2.9%	9.4	11.6	15.5%
OE20	2.2	3.0%	9.4	11.7	15.6%
OE21	1.8	2.5%	9.0	10.9	14.5%
OE22	Not Sensitive				
OE23	Not Sensitive				
OE24	2.1	2.8%	10.3	12.4	16.5%
OE25	1.8	2.5%	9.6	11.4	15.2%
OE26	2.1	2.8%	10.2	12.3	16.3%
OE27	4.5	6.0%	15.5	20.0	26.7%
OE28	2.6	3.5%	14.4	17.1	22.8%
OE29	12.1	16.1%	21.6	33.6	44.9%
OE30	8.6	11.4%	20.0	28.6	38.1%

~~**Table D-14**~~AQAL 75 µg/m^3

Table D-16: Predicted Process Contribution Annual Mean NH_3 Concentrations – Unabated Scenario

Receptor	Proposed Development PC (µg/m³)	PC from Road Traffic Emissions (µg/m³)	PC/AQAL (%)	Background Concentration (µg/m³)	PEC (µg/m³)	PEC/AQAL (%)
TE1	<0.01	0.01	1.2%	1.55	1.56	156.2%
TE2	<0.01	<0.01	0.3%	1.37	1.37	137.3%
TE3	<0.01	0.05	5.4%	1.71	1.76	176.4%
TE4	<0.01	0.04	3.7%	1.71	1.75	174.7%
TE5	<0.01	0.03	3.4%	1.66	1.69	169.4%
TE6	<0.01	0.03	3.5%	1.66	1.69	169.5%
TE7a	<0.01	0.08	8.4%	1.84	1.92	192.4%
TE7b	<0.01	0.01	1.6%	1.84	1.86	185.6%
TE7c	0.01	0.01	2.0%	1.84	1.86	186.0%
TE8a	<0.01	0.03	3.4%	1.55	1.58	158.4%
TE8b	<0.01	0.14	14.3%	1.73	1.87	187.3%
TE8c	0.01	0.03	3.8%	1.92	1.96	195.8%

AQAL 1 µg/m³

Table D-17: Predicted Process Contribution Nitrogen Deposition – Unabated Scenario

Receptor	Critical Load (AQAL) (kg/ha/yr)	Background Concentration (kg/ha/yr)	Predicted PC (kg/ha/yr)	PC from road traffic emissions (µg/m^3)	PC/AQAL %	PEC (kg/ha/yr)	PEC/AQAL (%)
OE01	5	15.0	0.07	<0.01	1.4%	15.04	301%
OE02	5	16.3	0.20	<0.01	3.9%	16.52	330%
OE03	Not Sensitive						
OE04	5	14.1	0.07	<0.01	1.3%	14.21	284%
OE05	10	29.2	0.06	<0.01	0.6%	29.30	293%
OE06	5	17.3	0.04	<0.01	0.8%	17.30	346%
OE07	10	16.0	0.03	<0.01	0.3%	16.01	160%
OE08	Not Sensitive						
OE09	10	16.2	0.15	<0.01	1.5%	16.36	164%
OE10	10	16.2	0.13	<0.01	1.3%	16.32	163%
OE11	10	30.6	0.21	<0.01	2.1%	30.82	308%
OE12	6	17.5	0.02	<0.01	0.4%	17.51	292%
OE13	5	18.2	0.04	<0.01	0.8%	18.25	365%
OE14	5	17.6	0.02	<0.01	0.4%	17.60	352%
OE15	5	17.0	0.01	<0.01	0.3%	17.03	341%
OE16	10	28.7	0.03	<0.01	0.3%	28.76	288%
OE17	10	28.5	0.04	<0.01	0.4%	28.54	285%

OE18	5	15.8	0.03	<0.01	0.6%	15.78	316%
OE19	10	16.7	0.02	<0.01	0.2%	16.75	167%
OE20	6	16.7	0.02	<0.01	0.3%	16.75	279%
OE21	15	28.5	0.02	<0.01	0.2%	28.53	190%
OE22	Not Sensitive						
OE23	Not Sensitive						
OE24	10	16.6	0.02	<0.01	0.2%	16.58	166%
OE25	5	16.6	0.01	<0.01	0.3%	16.62	332%
OE26	5	16.6	0.02	<0.01	0.3%	16.64	333%
OE27	6	16.1	0.03	<0.01	0.5%	16.10	268%
OE28	6	16.1	0.03	<0.01	0.4%	16.11	268%
OE29	5	16.4	0.10	<0.01	2.1%	16.54	331%
OE30	10	31.1	0.21	<0.01	2.1%	31.31	313%
TE1	10	28.23	0.04	0.09	1.3%	28.36	283.6%
TE2	10	28.67	0.04	0.01	0.5%	28.72	287.2%
TE3	10	29.52	0.04	0.43	4.7%	29.99	299.9%
TE4	10	29.52	0.04	0.30	3.4%	29.86	298.6%
TE5	10	28.91	0.03	0.28	3.1%	29.22	292.2%
TE6	10	28.91	0.03	0.28	3.2%	29.23	292.3%
TE7a	10	30.61	0.07	0.68	7.5%	31.36	313.6%
TE7b	10	30.61	0.10	0.09	1.9%	30.80	308.0%

TE7c	10	30.61	0.16	0.09	2.6%	30.87	308.7%
TE8a	5	15.99	0.03	0.17	4.1%	16.19	323.9%
TE8b	5	16.19	0.06	0.75	16.3%	17.00	340.1%
TE8c	5	16.81	0.09	0.17	5.2%	17.07	341.4%

Table D-18: Predicted Process Contribution Acid Deposition– Unabated Scenario

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	PC from road traffic emissions (µg/m^3)	PC/ AQAL (%)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
OE01	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	1.23	<0.01	<0.01	0.6%	1.23	0.6%
OE02	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	0.95	0.01	<0.01	0.7%	0.96	0.7%
OE03	Not Sensitive						
OE04	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	1.16	<0.01	<0.01	0.3%	1.16	110.5%
OE05	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	2.33	<0.01	<0.01	0.2%	2.33	0.2%
OE06	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	1.08	<0.01	<0.01	0.4%	1.08	211.8%
OE07	Not Sensitive						
OE08	Not Sensitive						
OE09	Not Sensitive						
OE10	Not Sensitive						

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	PC from road traffic emissions (µg/m^3)	PC/ AQAL (%)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
OE11	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	No Data Available	0.01	<0.01	0.5%	0.01	0.5%
OE12	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	No Data Available	<0.01	<0.01	0.1%	<0.01	0.1%
OE13	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	No Data Available	<0.01	<0.01	0.1%	<0.01	0.1%
OE14	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	2.35	<0.01	<0.01	0.2%	2.35	370.8%
OE15	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	1.37	<0.01	<0.01	0.0%	1.37	22.1%
OE16	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	2.25	<0.01	<0.01	0.1%	2.25	127.3%
OE17	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	No Data Available	<0.01	<0.01	0.1%	<0.01	0.1%

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	PC from road traffic emissions (µg/m^3)	PC/ AQAL (%)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
OE18	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	No Data Available	<0.01	<0.01	0.2%	<0.01	0.2%
OE19	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	1.35	<0.01	<0.01	<0.1%	1.35	<0.1%
OE20	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	1.35	<0.01	<0.01	<0.1%	1.35	<0.1%
OE21	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	2.23	<0.01	<0.01	<0.1%	2.23	37.3%
OE22	Not Sensitive						
OE23	Not Sensitive						
OE24	Not Sensitive						
OE25	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	1.34	<0.01	<0.01	<0.1%	1.34	22.3%
OE26	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	1.34	<0.01	<0.01	<0.1%	1.34	<0.1%

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	PC from road traffic emissions (µg/m^3)	PC/ AQAL (%)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
OE27	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	2.29	<0.01	<0.01	0.1%	2.29	0.1%
OE28	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	1.3	<0.01	<0.01	<0.1%	1.30	<0.1%
OE29	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	1.02	<0.01	<0.01	0.1%	1.03	0.1%
OE30	Min CL min N 0.499 Min CL Max N 1.332 Min CL Max S 0.44	No Data Available	0.01	<0.01	0.8%	0.02	0.8%
TE1	Min CL min N 0.499 Min CL Max N 1.782 Min CL Max S 1.425	2.37	<0.01	0.01	0.5%	2.38	133.5%
TE2	Min CL min N 0.499 Min CL Max N 1.782 Min CL Max S 1.425	2.35	<0.01	<0.01	0.2%	2.35	138.1%
TE3	Min CL min N 0.499 Min CL Max N 1.782 Min CL Max S 1.425	2.44	<0.01	0.03	1.9%	2.47	136.6%

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	PC from road traffic emissions (µg/m^3)	PC/ AQAL (%)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
TE4	Min CL min N 0.499 Min CL Max N 1.705 Min CL Max S 1.563	2.44	<0.01	0.02	1.3%	2.46	136.1%
TE5	Min CL min N 0.499 Min CL Max N 1.705 Min CL Max S 1.563	2.42	<0.01	0.02	1.3%	2.44	137.1%
TE6	Min CL min N 0.499 Min CL Max N 1.705 Min CL Max S 1.563	2.42	<0.01	0.02	1.3%	2.44	137.2%
TE7a	Min CL min N 0.499 Min CL Max N 1.705 Min CL Max S 1.563	2.48	<0.01	0.05	3.1%	2.53	147.3%
TE7b	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	2.49	0.01	0.01	0.8%	2.49	145.0%
TE7c	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	2.49	0.01	0.01	1.1%	2.50	145.3%
TE8a	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	1.42	<0.01	0.01	0.9%	1.43	91.1%

Receptor	Lower Value of Applicable Critical Load Range (AQAL)	Background Concentration (kg/ha/yr)	Predicted PC(Keq/ha/yr)	PC from road traffic emissions (µg/m^3)	PC/ AQAL (%)	PEC (Keq/ha/yr)	PEC/ AQAL (%)
TE8b	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	No Data Available	<0.01	0.05	0.0%	0.06	<0.1%
TE8c	Min CL min N 0.499 Min CL Max N 1.811 Min CL Max S 1.454	1.47	0.01	0.01	0.4%	1.48	30.6%

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