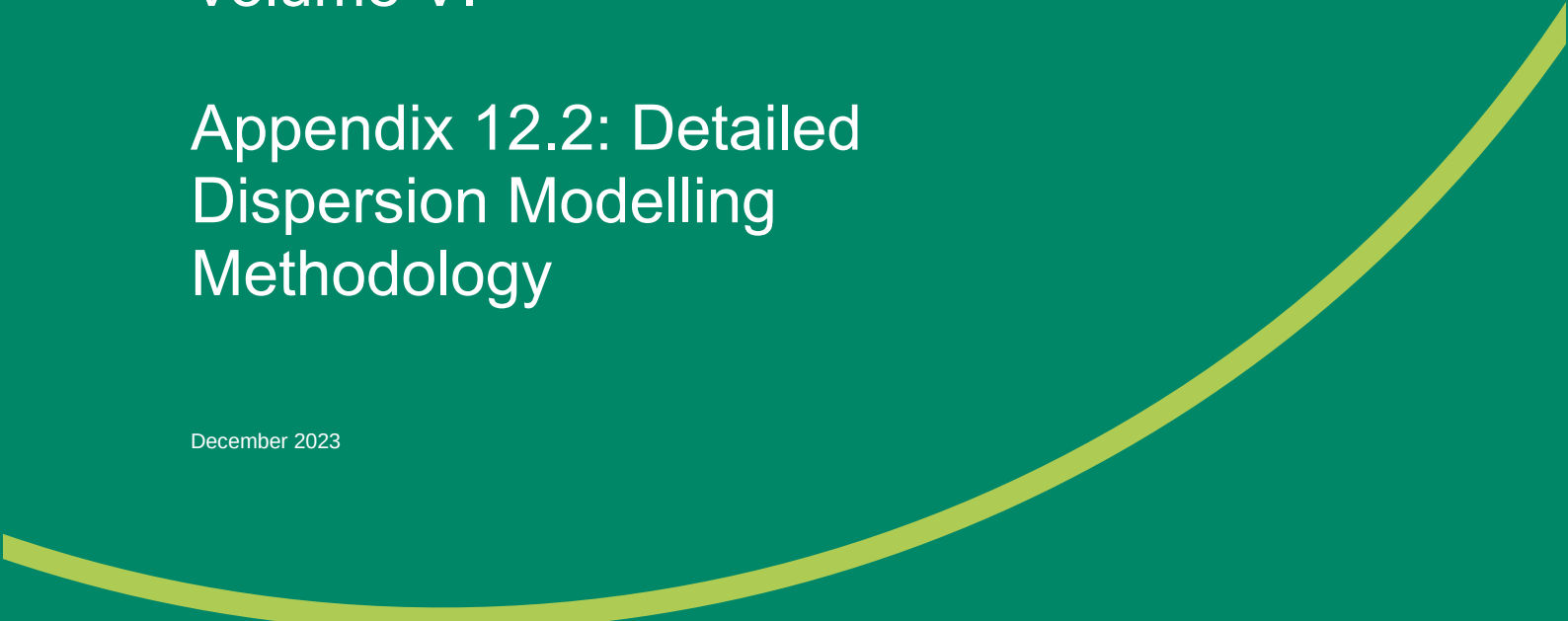


National Grid Cable Tunnel Replacement Project

Environmental Statement Volume VI

Appendix 12.2: Detailed Dispersion Modelling Methodology

December 2023



Quality information

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1. Introduction

- 1.1.1 This appendix sets out the detailed methodology behind the modelling of construction generator emissions which may be required to power the Tunnel Boring Machine and slurry treatment plant at the Tilbury site. The modelling has informed the air quality assessment reported in ES Volume III Chapter 12: Air Quality - Tilbury.
- 1.1.2 Diesel-fired generators may be required at the site to power tunnel boring equipment if connection to a high voltage mains supply cannot be implemented.
- 1.1.3 The impact of generator emissions has been quantified using the ADMS 6 (version 6.0.0.1) dispersion modelling software, published by Cambridge Environmental Research Consultants ("CERC"). The ADMS suite of modelling software is a nationally recognised tool for the assessment of air quality impacts that has undergone extensive validation by CERC and by organisations independent of CERC.
- 1.1.4 The modelling of generator emissions has considered 4 scenarios as summarised below:
- Sc1: Earth Pressure Balance (EPB) method of tunnelling and generator complying with US EPA Tier II emission standards.
 - Sc2: Slurry Tunnelling (ST) method and generator complying with US EPA Tier II emission standards.
 - Sc3: Earth Pressure Balance (EPB) method of tunnelling and generator complying with EU Stage 5 and US EPA Tier IV emission standards.
 - Sc4: Slurry Tunnelling (ST) method and generator complying with EU Stage 5 and US EPA Tier IV emission standards.

2. Emissions Data

- 2.1.1 At this stage of the Cable Tunnel Replacement Project (hereafter, the Proposed Development), before a construction contractor has been appointed, the exact type of generator to be used on site is unknown. In the absence of a known generator, representative generators have been used as a proxy.
- 2.1.2 The representative generators used to inform the assessment have been based on the power demand of the tunnel boring equipment and associated plant. The power demand of the generators is summarised in Table 1.

Table 1: Tunnel Boring Power Demand

Scenario	Method of Tunnelling	Maximum Power Demand (MW)	Emission Standard
Sc1	EPBM	4.0	US EPA Tier II
Sc2	STM	6.2	US EPA Tier II
Sc3	EPBM	4.0	EU Stage 5 (US EPA Tier IV)
Sc4	STM	6.2	EU Stage 5 (US EPA Tier IV)

2.1.3 Emissions data for the representative generators that can meet the required energy demand and have been used in the modelling are summarised in Table 2-2, along with a description of any assumptions made.

2.1.4 The emissions data associated with generators and input into the model is presented in Table 2.

Table 2: Generator Emissions Data

Parameter	Value		Unit	Notes
Emission Standards	US EPA Tier II	EU Stage 5 (US EPA Tier IV)	-	-
Stack locations	566262, 175920		x,y	First 2 generators modelled assuming EPBM tunnelling.
	566266, 175919			All 3 generators modelled assuming STM tunnelling.
	566264, 175920			
Stack height	5, 10, 15, 20, 25, 30	5, 10, 15, 20, 25, 30	m	Multiple heights modelled to demonstrate required stack height to maintain compliance.
Stack diameter	0.6*	0.56*	m	Assumed diameter to maintain a gas velocity of 35 m/s at full load.
Generator	MTU 20V4000G44F	CAT 3516C	-	2.71 kWe 3.39 MVA prime diesel-fired generator capable of US EPA Tier II emissions. 2.23 kWe 2.81 MVA prime diesel-fired generator capable of EU Stage 5 emissions (US EPA Tier IV).
Power	2712*	2250*	kWe	As provided in the published datasheets.
Gas velocity	35.4*	34.4*	m/s	Calculated using the actual volumetric gas flows published and an assumed internal diameter at the point of release. A gas velocity of 30-35 m/s is typical of a diesel-fired generator.
Actual Gas flow	10	8.48*	m3/s	As provided in the published datasheets.
Gas temp	550*	505*	°C	As provided in the published datasheets.
Emission Oxygen Content	-	11.6	%	Assumption taken from an Environment Agency AQMAU report on typical diesel generator emissions.
Emission Water Content	-	6	%	Assumption taken from an Environment Agency AQMAU report on typical diesel generator emissions.
Normalised Gas flow	4.17*	4.41*	Nm3/s	Calculated from the actual gas flow provided in generator datasheets, the actual temperature provided in the same datasheets, and the assumed oxygen content and water content taken from the Environment Agency AQMAU report.

Parameter	Value		Unit	Notes
NO _x emission rate	4.58*	0.42*	g/s	Calculated based on the power load of the generator and the NO _x emission standards
PM emission rate	0.15	0.02	g/s	Calculated based on the power load of the generator and the PM ₁₀ emission standards
NH ₃ emission rate	-	0.020*		Based on the normalised volumetric flowrate calculated and the Large Combustion plant BREF Note BAT-AEL of 3-10 mg/Nm ³ . The lower end of that range is applicable to SCR (as opposed to SNCR) and so an emission concentration of 4.5 mg/Nm ³ has been applied as the mid-point of the lower end of that range.
* At 100% load				

2.1.5 The construction program currently assumes that the tunnelling phase of the Proposed Development's construction will last for a period of up to 34 weeks. Within that period, tunnelling will be undertaken for up to 25 weeks, with 9 weeks programmed for intervention. During the interventions, the tunnel boring machine will not be active, but other related plant will be. As such, over the 34-week program, the power demand required of the tunnelling work will vary. The generators will only be required to operate at full load for around 12.5 weeks, 37% of the 34-week programme. At other times, the generators will operate at a reduce load, depending on the activities being undertaken at the time. The variable load is summarised in the Table 2-3. The emissions data has been adjusted to account for reduced loads using data published on the CAT 3516C generator.

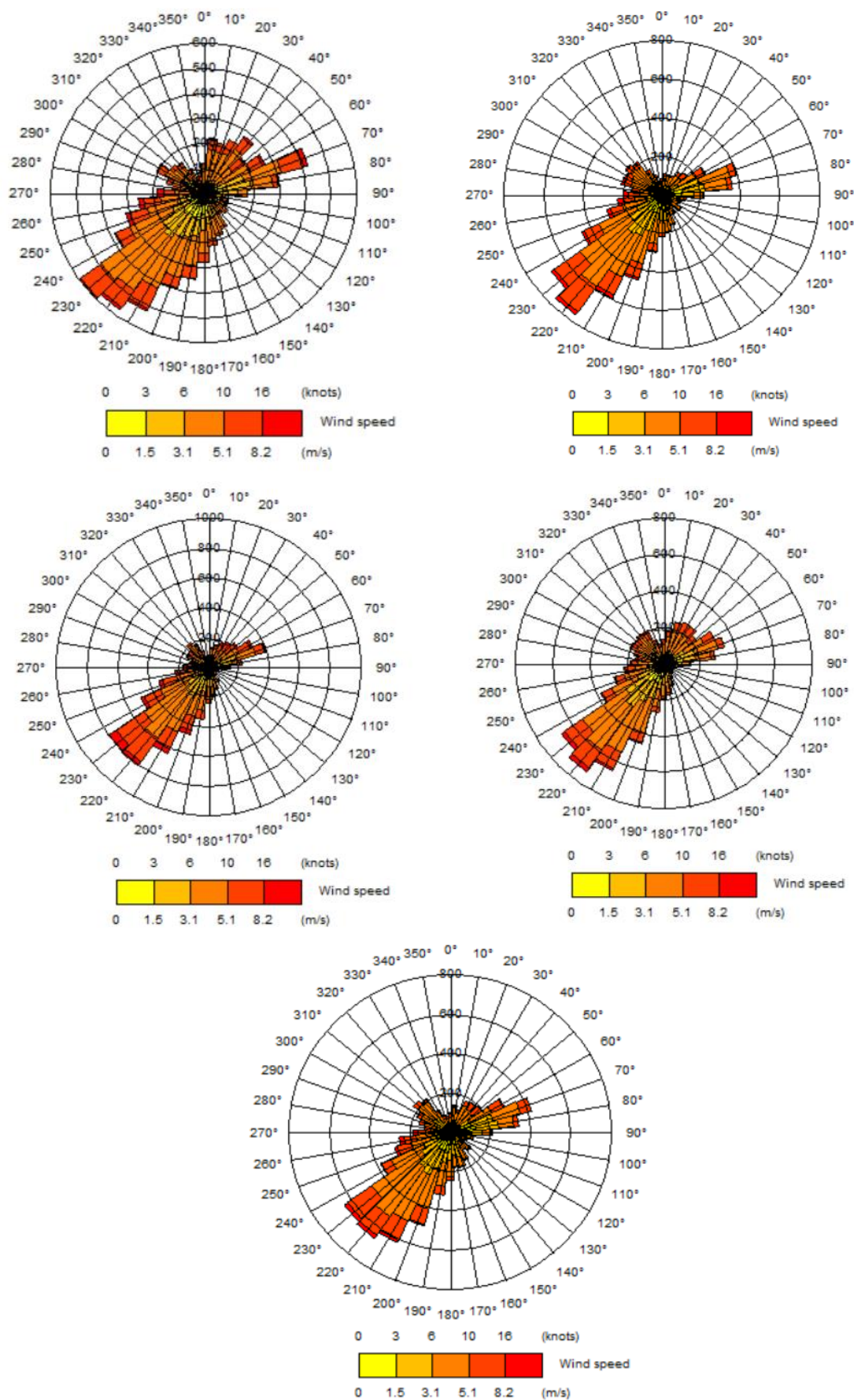
Table 3: Variable Loads

Tunnelling Method	Program	Variable Load	Duration
EPBM	25 weeks of tunnelling	4 MWe	12.5 weeks
		2.5 MWe	12.5 weeks
	9 weeks of intervention	1.5 MWe	9 weeks
STM	25 weeks of tunnelling	6.2 MWe	12.5 weeks
		4.7 MWe	12.5 weeks
	9 weeks of intervention	1.5 MWe	9 weeks

3. Meteorological Data

- 3.1.1 For the dispersion modelling of point source emissions, it is standard practice to use five years of hourly sequential meteorological data. This is to account for interannual variation with the highest impact of the five-year period at each receptor being reported in the assessment.
- 3.1.2 Wind rose plots for the five years of hourly sequential meteorological data from Gatwick Airport are provided in Plate 1. These have been used to inform the assessment, with conditions experienced at Gatwick Airport considered representative of conditions experienced in the air quality study area.
- 3.1.3 Whilst other meteorological monitoring stations are located closer to the Proposed Development site than Gatwick Airport, Gatwick data has good data capture for the 5-years considered and is not affected by coastal influences.
- 3.1.4 Plate 1 shows how consistent wind speed and direction have been over the 5 years shown, with the clear prevalence of south westerlies.

Plate 1: Wind Rose Plots - Gatwick Airport 2018 – 2022



4. Air Quality Sensitive Receptors

4.1.1 The assessment of construction generator emissions has focused on selected human health sensitive receptors located within 10 km of the generator stacks, with the intention of identifying worst-case impacts in each direction of the modelled sources. These receptors are presented in Table 4 and Figure 12-1 in ES Volume III Chapter 12: Air Quality.

Table 4: Construction Generator Human Health Sensitive Receptors

Receptor ID	X	y	Description
R01	566711	177599	Residential property on Church Road, approximately 1.5 km from the Tilbury site
R02	565263	176337	Residential property on Sandhurst Road, approximately 1 km from the Tilbury site
R03	567175	173417	Residential property on Cricket Marsh Walk, approximately 0.6 km from the Gravesend site
R04	567721	173238	Residential property on Lower Higham Road, approximately 0.7 km from the Gravesend site
R05	569391	173330	Residential property on Queen's Farm Road, approximately 1.6 km from the Gravesend site
R06	565691	174191	Residential property on Canal Road, approximately 1.7 km from the Gravesend site
R07	564353	176317	Residential property within the Tilbury AQMA
R08	564257	174788	Residential property within the Gravesend AQMA
R09	564855	174423	Residential property within the Gravesend AQMA

4.1.2 The assessment of construction generator emissions has also considered air quality impacts on sensitive nature conservation receptors within 10 km of the generator stacks, again with the intention of identifying worst-case impacts in each direction of the modelled sources. The focus is on habitats that are specifically sensitive to the effects of air pollution, specifically, airborne NO_x and nitrogen deposition. Habitats with no or very little vegetation and those that are twice daily washed out by the tide are not considered sensitive to air quality impacts. Habitats were identified through consultation with project ecologists. The nature conservation receptors of relevance to this assessment are presented in Table 5 and Figure 12-1 in ES Volume III Chapter 12: Air Quality - Tilbury.

Table 5: Construction Generator Nature Conservation Receptors

Receptor ID	x	y	Description
E01	568942	176172	Mucking Flats and Marshes SSSI and Thames Estuary and Marshes SPA - approximately 1.9km from the Tilbury site
E02	567747	173907	South Thames Estuary and Marshes SSSI – approximately 0.1 km from the Gravesend site
E03	568066	174471	South Thames Estuary and Marshes SSSI and Thames Estuary and Marshes SPA - approximately 0.6 km from the Gravesend site
E04	566385	175966	Proposed SSSI – within Tilbury site boundary
E05	566369	175686	Proposed SSSI / LWS – within Tilbury site boundary
E06	566455	175818	Proposed SSSI / LWS – within Tilbury site boundary
E07	566591	175802	Proposed SSSI / LWS – within Tilbury site boundary
E08	566290	175772	Proposed SSSI – within Tilbury site boundary
E09	566410	175439	Local Nature Reserve / LWS – approximately 0.1 km from the Tilbury site
E010	566321	176715	LWS – north of the Tilbury site
E011	565673	175926	LWS – northwest of the Tilbury site
E012	565550	175506	LWS – west of the Tilbury site

5. Modelled Results

US EPA Tier II Generator Emissions

5.1.1 Predicted air quality impacts at the air quality sensitive health receptors are provided in Table 6 for the range of stack heights modelled.

Table 6: Generator Emissions Impacts at Human Health Sensitive Receptors

Receptor ID	Process Contribution/ Impact ($\mu\text{g}/\text{m}^3$) at Stack height											
	Annual Mean NO ₂						Annual Mean PM					
	5m	10m	15m	20m	25m	30m	5m	10m	15m	20m	25m	30m
EPB Method of Tunnelling												
R01	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2
R02	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	<0.1	<0.1
R03	0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
R04	0.1	0.1	0.1	0.1	0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
R05	0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
R06	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
R07	0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
R08	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
R09	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
ST Method of Tunnelling												
R01	0.7	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3
R02	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
R03	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	<0.1	<0.1	<0.1
R04	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	<0.1	<0.1
R05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	<0.1	<0.1	<0.1
R06	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1
R07	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	<0.1	<0.1	<0.1
R08	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1
R09	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1

- 5.1.2 Results show that impacts peak at receptor R01, located to the north of the Proposed Development. At this location, a change in NO₂ concentration of 0.7 µg/m³ (ST method of tunnelling) is described as 'low' in Table 12-8 of the ES Volume III Chapter 12: Air Quality - Tilbury. Where total pollutant NO₂ concentrations are less than 75% of the air quality objective, this equates to a negligible impact, the effect of which is not significant.
- 5.1.3 The same receptor experiences the highest change in annual mean PM₁₀ and PM_{2.5}, of 0.4 µg/m³. For PM₁₀, this change is described as 'very low' and negligible where total concentrations are less than 75% of the air quality objective. For PM_{2.5}, the change is described as 'low', but again negligible where total concentrations are less than 75% of the air quality objective.
- 5.1.4 Predicted air quality impacts at the air quality sensitive nature conservation receptors are provided in Table 7 for the range of stack heights modelled.

Table 7: Generator Emissions Impacts at Nature Conservation Sensitive Receptors

Receptor ID	Process Contribution/ Impact (µg/m ³) at Stack height											
	Annual Mean NO _x						Annual Nitrogen Deposition Rate					
	5m	10m	15m	20m	25m	30m	5m	10m	15m	20m	25m	30m
EPB Method of Tunnelling												
E01	0.2	0.2	0.2	0.2	0.1	0.1	0.02	0.02	0.02	0.02	0.01	0.01
E02	0.2	0.2	0.2	0.2	0.2	0.2	0.03	0.02	0.02	0.02	0.02	0.02
E03	0.2	0.2	0.2	0.2	0.2	0.2	0.02	0.02	0.02	0.02	0.02	0.02
E04	27.4	16.6	8.7	4.1	1.8	0.7	2.75	1.67	0.88	0.41	0.18	0.08
E05	4.1	3.4	2.7	2.1	1.5	1.1	0.41	0.34	0.27	0.21	0.16	0.11
E06	5.7	4.5	3.4	2.5	1.8	1.3	0.58	0.46	0.34	0.25	0.18	0.13
E07	2.9	2.5	2.2	1.8	1.5	1.2	0.29	0.26	0.22	0.18	0.15	0.13
E08	5.6	3.7	2.3	1.3	0.8	0.4	0.56	0.37	0.23	0.13	0.08	0.04
E09	1.2	1.1	1.0	0.9	0.8	0.7	0.12	0.11	0.10	0.09	0.08	0.07
E10	3.9	2.7	1.7	1.1	0.7	0.5	0.36	0.25	0.16	0.10	0.07	0.05
E11	4.2	2.9	1.8	1.2	0.8	0.5	0.39	0.26	0.17	0.11	0.07	0.05
E12	4.5	3.1	2.0	1.2	0.8	0.5	0.41	0.28	0.18	0.11	0.07	0.05
ST Method of Tunnelling												
E01	0.3	0.3	0.3	0.3	0.2	0.2	0.03	0.03	0.03	0.03	0.02	0.02
E02	0.3	0.3	0.3	0.3	0.3	0.3	0.05	0.03	0.03	0.03	0.03	0.03
E03	0.3	0.3	0.3	0.3	0.3	0.3	0.03	0.03	0.03	0.03	0.03	0.03
E04	41.9	25.4	13.3	6.3	2.8	1.1	4.20	2.55	1.35	0.63	0.28	0.12

Receptor ID	Process Contribution/ Impact ($\mu\text{g}/\text{m}^3$) at Stack height											
	Annual Mean NO_x						Annual Nitrogen Deposition Rate					
	5m	10m	15m	20m	25m	30m	5m	10m	15m	20m	25m	30m
E05	6.3	5.2	4.1	3.2	2.3	1.7	0.63	0.52	0.41	0.32	0.24	0.17
E06	8.7	6.9	5.2	3.8	2.8	2.0	0.89	0.70	0.52	0.38	0.28	0.20
E07	4.4	3.8	3.4	2.8	2.3	1.8	0.44	0.40	0.34	0.28	0.23	0.20
E08	8.6	5.7	3.5	2.0	1.2	0.6	0.86	0.57	0.35	0.20	0.12	0.06
E09	1.8	1.7	1.5	1.4	1.2	1.1	0.18	0.17	0.15	0.14	0.12	0.11
E10	6.0	4.1	2.6	1.7	1.1	0.7	0.55	0.38	0.24	0.15	0.10	0.07
E11	6.4	4.4	2.8	1.8	1.2	0.8	0.59	0.40	0.26	0.16	0.11	0.07

5.1.5 Results show that the impact of US EPA Tier II compliant generators has impacts of over 1% of the Critical Level for NO_x and Critical Load for nitrogen deposition up to and likely well beyond the 30m stack height modelled.

EU Stage 5 (US EPA Tier IV) Generator Emissions

5.1.6 Predicted air quality impacts from EU Stage 5 compliant generator emissions at the air quality sensitive health receptors are provided in Table 8. Predicted concentrations are provided for the heights where pollutant concentrations fall below 1% of the relevant Critical Level and Critical Load at the worst affected nature conservation receptors.

Table 8: Generator Emissions Impacts at Human Health Sensitive Receptors

Receptor ID	Process Contribution/ Impact ($\mu\text{g}/\text{m}^3$)			Background Contribution ($\mu\text{g}/\text{m}^3$)			Total Concentration / Predicted Environmental Concentration ($\mu\text{g}/\text{m}^3$)		
	Annual Mean NO_2	Annual Mean PM_{10}	Annual Mean $\text{PM}_{2.5}$	Annual Mean NO_2	Annual Mean PM_{10}	Annual Mean $\text{PM}_{2.5}$	Annual Mean NO_2	Annual Mean PM_{10}	Annual Mean $\text{PM}_{2.5}$
EPB Method of Tunnelling – stack height of 23m									
R01	<0.1	<0.1	<0.1	21.5	13.9	9.4	21.5	13.9	9.4
R02	<0.1	<0.1	<0.1	21.5	13.9	9.4	21.5	13.9	9.4
R03	<0.1	<0.1	<0.1	21.5	13.9	9.4	21.5	13.9	9.4
R04	<0.1	<0.1	<0.1	21.5	13.9	9.4	21.5	13.9	9.4
R05	<0.1	<0.1	<0.1	21.5	13.9	9.4	21.5	13.9	9.4
R06	<0.1	<0.1	<0.1	21.5	13.9	9.4	21.5	13.9	9.4
R07	<0.1	<0.1	<0.1	21.5	13.9	9.4	21.5	13.9	9.4

Receptor ID	Process Contribution/ Impact ($\mu\text{g}/\text{m}^3$)			Background Contribution ($\mu\text{g}/\text{m}^3$)			Total Concentration / Predicted Environmental Concentration ($\mu\text{g}/\text{m}^3$)		
	Annual Mean NO_2	Annual Mean PM_{10}	Annual Mean $\text{PM}_{2.5}$	Annual Mean NO_2	Annual Mean PM_{10}	Annual Mean $\text{PM}_{2.5}$	Annual Mean NO_2	Annual Mean PM_{10}	Annual Mean $\text{PM}_{2.5}$
R08	<0.1	<0.1	<0.1	21.5	13.9	9.4	21.5	13.9	9.4
R09	<0.1	<0.1	<0.1	21.5	13.9	9.4	21.5	13.9	9.4
ST Method of Tunnelling – stack height of 25m									
R01	0.1	<0.1	<0.1	21.5	13.9	9.4	21.6	13.9	9.4
R02	<0.1	<0.1	<0.1	21.5	13.9	9.4	21.5	13.9	9.4
R03	<0.1	<0.1	<0.1	21.5	13.9	9.4	21.5	13.9	9.4
R04	<0.1	<0.1	<0.1	21.5	13.9	9.4	21.5	13.9	9.4
R05	<0.1	<0.1	<0.1	21.5	13.9	9.4	21.5	13.9	9.4
R06	<0.1	<0.1	<0.1	21.5	13.9	9.4	21.5	13.9	9.4
R07	<0.1	<0.1	<0.1	21.5	13.9	9.4	21.5	13.9	9.4
R08	<0.1	<0.1	<0.1	21.5	13.9	9.4	21.5	13.9	9.4
R09	<0.1	<0.1	<0.1	21.5	13.9	9.4	21.5	13.9	9.4

5.1.7 Results show that with the more stringent emission standards, pollutant concentrations have reduced imperceptible levels at all receptors considered.

5.1.8 Predicted air quality impacts from EU Stage 5 compliant generator emissions at the air quality sensitive nature conservation receptors are provided in Table 9.

Table 9: Generator Emissions Impacts at Nature Conservation Sensitive Receptors

Receptor ID	Process Contribution/ Impact			Background Contribution			Total Concentration / Predicted Environmental Concentration		
	Annual Mean NO_x ($\mu\text{g}/\text{m}^3$)	Annual Mean NH_3 ($\mu\text{g}/\text{m}^3$)	Annual N-dep Rate (kgN/ha/yr)	Annual Mean NO_x ($\mu\text{g}/\text{m}^3$)	Annual Mean NH_3 ($\mu\text{g}/\text{m}^3$)	Annual N-dep Rate (kgN/ha/yr)	Annual Mean NO_x ($\mu\text{g}/\text{m}^3$)	Annual Mean NH_3 ($\mu\text{g}/\text{m}^3$)	Annual N-dep Rate (kgN/ha/yr)
EPB Method of Tunnelling – stack height of 23m									
E01	0.01	0.00	0.00	32.7	13.9	1.3	32.71	13.90	1.30
E02	0.02	0.00	0.01	32.7	13.9	1.3	32.72	13.91	1.30
E03	0.02	0.00	0.01	32.7	13.9	1.3	32.72	13.91	1.30
E04	0.25	0.01	0.10	32.7	13.9	1.3	32.95	14.00	1.31

Receptor ID	Process Contribution/ Impact			Background Contribution			Total Concentration / Predicted Environmental Concentration		
	Annual Mean NO _x (µg/m ³)	Annual Mean NH ₃ (µg/m ³)	Annual N-dep Rate (kgN/ha/yr)	Annual Mean NO _x (µg/m ³)	Annual Mean NH ₃ (µg/m ³)	Annual N-dep Rate (kgN/ha/yr)	Annual Mean NO _x (µg/m ³)	Annual Mean NH ₃ (µg/m ³)	Annual N-dep Rate (kgN/ha/yr)
E05	0.18	0.01	0.07	32.7	13.9	1.3	32.88	13.97	1.31
E06	0.23	0.01	0.09	32.7	13.9	1.3	32.93	13.99	1.31
E07	0.18	0.01	0.07	32.7	13.9	1.3	32.88	13.97	1.31
E08	0.13	0.01	0.05	32.7	13.9	1.3	32.83	13.95	1.31
E09	0.09	0.00	0.03	32.7	13.9	1.3	32.79	13.93	1.30
E010	0.08	0.00	0.03	32.7	13.9	1.3	32.78	13.93	1.30
E011	0.06	0.00	0.02	32.7	13.9	1.3	32.76	13.92	1.30
E012	0.09	0.01	0.04	32.7	13.9	1.3	32.79	13.94	1.31
ST Method of Tunnelling – stack height of 25m									
R01	0.02	0.00	0.01	32.7	13.9	1.3	32.72	13.91	1.30
R02	0.02	0.00	0.01	32.7	13.9	1.3	32.72	13.91	1.30
R03	0.03	0.00	0.01	32.7	13.9	1.3	32.73	13.91	1.30
R04	0.28	0.02	0.11	32.7	13.9	1.3	32.98	14.01	1.32
R05	0.24	0.01	0.09	32.7	13.9	1.3	32.94	13.99	1.31
R06	0.30	0.02	0.12	32.7	13.9	1.3	33.00	14.02	1.32
R07	0.25	0.01	0.10	32.7	13.9	1.3	32.95	14.00	1.31
R08	0.16	0.01	0.06	32.7	13.9	1.3	32.86	13.96	1.31
R09	0.13	0.01	0.05	32.7	13.9	1.3	32.83	13.95	1.31
E010	0.12	0.01	0.05	32.7	13.9	1.3	32.82	13.95	1.31
E011	0.08	0.00	0.03	32.7	13.9	1.3	32.78	13.93	1.30
E012	0.14	0.01	0.05	32.7	13.9	1.3	32.84	13.95	1.31

5.1.9 At the stack heights modelled, the impact (or Process Contribution) at the worst affected nature conservation receptors is less than 1% of the Critical Load for NO_x and the Critical Level for nitrogen deposition. Stacks can be lowered 3 metres further with impacts remaining less than 1.5% of the Critical Level and Critical Load, when impacts are rounded to the nearest whole number.

