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IRON MOUNTAIN LON-3 DATA CENTRE AIR QUALITY ASSESSMENT

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IRON MOUNTAIN LON-3 DATA CENTRE
AIR QUALITY ASSESSMENT

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EXECUTIVE SUMMARY

This air quality assessment has been prepared by Ramboll UK Ltd. ('Ramboll') on behalf of I3 Solutions in support of an Environmental Permit application for the Lon-3 data centre at 111 Buckingham Avenue, Slough, Berkshire, SL1 4PF, UK ('the Site').

An assessment of the impacts of emissions from the emergency generators has been undertaken assuming that the site suffers a loss of power and all of the emergency generators are operational. The emergency generators can operate up to 62 hours per year with a 1% probability of exceeding the short term NO_2 objective or up to 72 hours per year with a 5% probability of exceeding the short term NO_2 objective. Predicted impacts at relevant receptor locations are not significant for these operating hours which are considered very unlikely to occur in reality. Annual mean impacts have been factored to 72 hours operation as requested by the Environment Agency in the pre-app basic advice for EPR/YP3722SR/P001.

An assessment of impacts during testing has been undertake assuming that one generator of Lon-3 will be operating in isolation or in combination with one generator of the adjacent data centre (Lon-2 – EPR/PP3309MK/A001). Annual impacts have been factored by the worst-case maximum commissioning and testing hours of 636 hours per year for the main generators and 57 hours per year for the admin generator (this assumes that commissioning and routine testing of each phase occur in a single year). These hours include a worst-case allowance for commissioning of the generators in their first year of operation. Once commissioned, the annual testing hours reduce to 352 and 21 respectively. Predicted impacts at relevant receptor locations are not significant for these testing/commissioning hours.

1. INTRODUCTION

1.1 Development

This air quality assessment has been prepared by Ramboll UK Ltd. ('Ramboll') on behalf of I3 Solutions in support of an Environmental Permit application for the Lon-3 data centre at 111 Buckingham Avenue, Slough, Berkshire, SL1 4PF, UK ("Lon-3" or the "site"), within the Slough Trading Estate.

When in use in an emergency the impacts are higher than those when individual or groups of generators are being routinely tested. The impacts during an emergency have been assessed as well as the impacts during routine testing with an allowance for commissioning of the generators in their first year of operation.

This report sets out the method and results of the dispersion modelling used to assess the impact of the diesel generator array on local air quality.

1.2 Operation

The generators will be used to provide back-up power in the event of a loss of power to the data centre, i.e. an emergency scenario. For the purposes of the modelling it is assumed that all of the generators would operate simultaneously at maximum load in an emergency. The likelihood of this occurring is very low given the grid reliability and redundancy in power supplies to the data centre; in addition, it is not predictable when an emergency scenario would occur. For the emergency scenario the operating hours for a 1% and 5% probability of exceeding the hourly mean NO_2 objective have been calculated. Annual mean impacts have been calculated on the basis of 72 continuous emergency operating hours.

Regular testing of the generators at the site is also required to ensure that the generators are operational and capable of providing back-up power. Each of the generators at the site will be subject to a regular testing regime. The testing regime will involve periods of operation at different loads on a monthly basis, but as worst-case basis full load operation was used in the modelling.

The generators will be commissioned in two phases, 10 of the main power stream generators and the admin generator in Phase 1 and the remaining 6 power stream generators in Phase 2. For modelling purposes, the commissioning hours and annual testing hours are assumed to be additional and occur in a single year. This is a worst-case assumption as it would not be possible to commission all of the generators and undertake the full annual routine testing scenario in a single year. The anticipated commission hours and testing regime are shown in Table 1.1 and Table 1.2 respectively. Each generator is commissioned and tested individually unless otherwise stated.

Table 1.1: Commissioning Schedule

Generator	Number	Commissioning Hours per generator	Total
Phase 1			
Main/House Power Stream (4000kVA)	9	42	378
	1	38	38

Generator	Number	Commissioning Hours per generator	Total
Admin (500kVA)	1	36	36
Phase 2			
Main/House Power Stream (4000kVA)	3	8 (Phase 1 generators)	24
	6	42 (Phase 2 generators)	252

During Phase 1 commissioning the 'main' generators are tested for a total of 416 hours and the admin generator 36 hours. During Phase 2 commissioning the main generators are tested for a total of 276 hours. The overall commissioning hours are therefore 728.

Table 1.2: Testing Schedule

Generator	Frequency	Number	Load	Annual hours	Total
Main Power Stream (4000kVA)	0.5 hours every 2 weeks	16	45%	13	208
Admin (500kVA)		1	45%	13	13
Main Power Stream (4000kVA)	1 hour every 3 months	16	45%	2	32
Admin (500kVA)		1	45%	2	2
Main Power Stream (4000kVA)	1.5 hours every 6 months	16	100%	3	48
Admin (500kVA)		1	100%	3	3
Main Power Stream (4000kVA)	4 hours per year simultaneously	12	99%	4	48
Main Power Stream (4000kVA)		2	51%	4	8
Main Power Stream (4000kVA)		2	25%	4	8
Admin (500kVA)	1.5 hours every 6 months	1	100%	3	3

Based on the commissioning and testing scenarios, and assuming that Phase 1 commissioning and testing occurs in one year and Phase 2 commissioning and all generators tested in a second year, the maximum annual operating hours for a single generator are 636 hours for the main generator and 57 hours for the admin generator. These are worst-case values; once commissioned the total testing hours for the generators will reduce to 352 and 21 hours per year respectively.

As shown in Table 1.2 the testing will not all be undertaken at full load. Based on the testing schedule the average loading of the main generators will be approximately 60%, and the admin generator approximately 61%.

The impacts of all of the generators operating for 4 hours simultaneously have not been separately modelled as this scenario will be a subset of the emergency scenario which is assumed

to last up to 72 hours. The impacts of simultaneous testing for 4 hours will be less than those demonstrated for the full emergency scenario that has been modelled.

1.3 Emissions

The assessment of the impact of emissions from the diesel generators has been based on data sheet values (Appendix B) for raw emissions and calculated emission rates. The proposed engines for the main generators are mtu 20V4000 DS4000. The proposed engine for the admin generator is 12V1600G10F. 16 main generators will be installed as well as an admin generator. The SO_2 emission rate is based on the fuel flow of the engine assuming a maximum sulphur content in the diesel fuel of 10 ppm (note the data sheet emission rates are based on different sulphur contents in the fuel). Whilst the data sheets are based on using diesel fuel, there is the potential to use HVO and it is assumed that the same emissions rates would apply if this were the case.

The calculated emission concentration data is shown in Table 1.3 for each engine, with the flowrate data in Table 1.4.

Table 1.3: Engine Emission Rates 100% ESP

Pollutant	**g/s**	**mg/Nm³ (5% O_2)**
Main Power Stream Generator (4000kVA)		
NO_x	6.06	2,362
CO	0.29	115
PM	0.018	7.16
SO_2	0.0039	1.53
Admin generator (500kVA)		
NO_x	0.71	2,006
CO	0.07	203
PM	0.006	15.8
SO_2	0.0005	1.44

Table 1.4: Engine Release data ESP

Pollutant	**Value**	**Unit**
Main Power Stream Generator (4000kVA)		
Actual flowrate	11.26	Am^3/s
Temperature	474.5	°C
Water Vapour	10	%
Oxygen	9.9	%
Normalised flowrate	2.57	Nm^3/s (5% O_2)
Admin generator (500kVA)		
Actual flowrate	1.73	Am^3/s
Temperature	511	°C

Pollutant	Value	Unit
Water Vapour	15	%
Oxygen	9.9	%
Normalised flowrate	1.73	Nm^3/s (5% O_2)

1.4 Environmental Assessment Levels

The relevant Environmental Assessment Levels (EALs) for human health and ecological receptors are detailed in Table 1.5 below. Nitrogen and acid deposition at ecological receptors are dealt with in Section 3.

Table 1.5: EALs

Pollutant	Concentration ($\mu g/m^3$)	Averaging Period	Exceedances Allowed per annum	Percentiles
Human Health Receptors				
NO_2	200	One hour mean	18	99.79
	40	Annual mean	-	-
CO	30,000	One hour mean	-	-
	10,000	8 hour running mean	-	-
PM_{10}	50	Daily mean	35	90.41
	40	Annual mean	-	-
$PM_{2.5}$	20	Annual mean	-	-
SO_2	266	15 minute mean	35	99.9
	350	One hour mean	24	99.73
	125	Daily mean	3	99.18
Ecological Receptors				
NO_x	75*	Daily mean	-	-
	30	Annual mean	-	-
SO_2	10	Annual mean	-	-
NH_3	1**	Annual mean	-	-
Ozone***	A0T40 of 6,000	Between May and July	-	-

* where ozone AOT40 above critical level,
** assumes lichens and bryophytes present,
*** only to assess which daily mean NO_x critical level applies.

1.4.1 Nitrogen deposition

The Air Pollution Information System (APIS)[1] provides critical loads for nitrogen deposition (leading to eutrophication) and nitrogen acid deposition (leading to acidification) for different habitat types and specific site relevant critical loads for SACs, SPAs and Sites of Special Scientific Interest (SSSI).

For locally designated sites where such information is not readily available, then the lowest critical load published on APIS can be used as a screening criteria. For grassland habitats, the lowest critical load is 5kgN/ha/yr and for woodland habitats it is 10kgN/ha/yr.

1.5 Screening for Modelling

1.5.1 Dispersion Factors

Pollutant emissions have been screened using the Environment Agency PC dispersion factor[2] to ascertain those pollutants that require detailed dispersion modelling. For the main generators, the flue heights are 1.88m above the maximum building height of 20.81m meaning the effective stack height is 3.11m. The effective stack height for the admin generator was assumed to be 0m.

For the main generators, the PC dispersion factors for annual mean and hourly mean concentrations are therefore 112 and 2850 µg/m^2/(g/s) respectively. For the admin generator, the PC dispersion factors for annual mean and hourly mean concentrations are 148 and 3900 µg/m^2/(g/s) respectively.

The hourly mean concentrations have been factored to the short-term averaging periods in accordance with EA guidance as follows:

- 8 hour averaging period using a conversion factor of 0.7;
- 15-minute averaging period using a conversion factor of 1.34;
- 24 hour averaging period using a conversion factor of 0.59.

The resulting concentrations are compared against the EALs for the pollutant to ascertain whether modelling is required.

1.5.2 Emergency Operation

For annual mean impacts the annual operating hours in an emergency have been assumed to be 72 for the purposes of screening. The predicted concentrations based on the emissions from the 16 main generators are provided in Table 1.6. The predicted concentrations based on the emissions from the admin generator are provided in Table 1.7, with the sum of the two provided in Table 1.8 for those impacts that screen out of modelling.

Table 1.6: Main Generators Emergency Operation Screening Maximum Ground Level Concentrations (µg/m^3)

Pollutant	g/s	PC (µg/m^3)	EAL (µg/m^3)	PC % EAL
SO_2 - Annual	0.062	0.06	10	0.58
PM_{10} - Annual	0.29	0.25	40	0.63

[1] http://www.apis.ac.uk accessed August 2020

[2] https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit

Table 1.7: Admin Generator Emergency Operation Screening Maximum Ground Level Concentrations (µg/m³)

Pollutant	g/s	PC (µg/m³)	EAL (µg/m³)	PC % EAL
SO_2 - Annual	0.0005	0.0006	10	0.006
PM_{10} - Annual	0.006	0.007	40	0.02
$PM_{2.5}$ - Annual		0.007	20	0.03

Table 1.8: Emergency Operation Screening Maximum Ground Level Concentrations (µg/m³)

Pollutant	PC (µg/m³)	EAL (µg/m³)	PC % EAL
SO_2 - Annual	0.06	10	0.58
PM_{10} - Annual	0.26	40	0.65
$PM_{2.5}$ - Annual	0.26	20	1.30

The annual mean SO_2 concentration is only relevant for impacts on ecological receptors and screens out of modelling. The PC of the annual average PM_{10} is below the screening criteria of 1% and can therefore be screened out of the assessment.

For annual average $PM_{2.5}$, the background concentration for the grid square containing the site is 10.7µg/m³ and therefore the PEC is 11.0µg/m³ and therefore less than 70% of the EAL. Annual mean $PM_{2.5}$ concentrations screen out of modelling.

1.5.3 Generator Testing

For the assessment of impacts during testing it is assumed that one generator will be operating and therefore the emission rate for the main generators will be 16 times smaller than for the emergency scenario (the 4 hour simultaneous testing of the generators is covered by the emergency scenario modelling). Annual impacts have been factored by the maximum testing hours of 57 hours per year for the admin generator and 636[3] hours per year for the main generators. As the testing is undertaken separately the impacts are assumed not to be additive from each type of generator.

The individual screening concentrations from each type of generator are shown in Table 1.9 and 1.10 respectively.

Impacts of CO, SO_2, and annual mean particulate matter (PM_{10} and $PM_{2.5}$) screen out from modelling.

Table 1.9: Main Generator Testing Screening Maximum Ground Level Concentrations (µg/m³)

Pollutant	g/s	PC (µg/m³)	EAL (µg/m³)	PC % EAL
CO – 1 hour	0.29	838	30,000	2.8
CO – 8 hour		586	10,000	5.9

[3] The 636 hours corresponds to commissioning Phase 1 generators and undertaking the full testing schedule of the generators (including 4 hours for the simultaneous test) in a single calendar year. Phase 2 testing and commissioning hours amount to 628 and therefore Phase 1 is worst case.

Pollutant	g/s	PC (µg/m³)	EAL (µg/m³)	PC % EAL
SO_2 – 15 minutes	0.004	15.0	266	5.7
SO_2 - 1 hour		11.2	350	3.2
SO_2 – Daily		6.62	125	5.3
SO_2 - Annual		0.03	10	0.28
PM_{10} – annual	0.018	0.15	40	0.37
$PM_{2.5}$ – annual		0.15	20	0.75

Table 1.10: Admin Generator Testing Screening Maximum Ground Level Concentrations (µg/m³)

Pollutant	g/s	PC (µg/m³)	EAL (µg/m³)	PC % EAL
CO – 1 hour	0.07	281	30,000	0.94
CO – 8 hour		197	10,000	2.0
SO_2 – 15 minutes	0.0005	2.68	266	1.0
SO_2 - 1 hour		2.00	350	0.57
SO_2 – Daily		1.18	125	0.94
SO_2 - Annual		0.0005	10	0.005
PM_{10} – annual	0.006	0.005	40	0.01
$PM_{2.5}$ – annual		0.005	20	0.03

2. SITE DESCRIPTION

2.1 Site Location

The Site is located within the Slough Trading Estate at Buckingham Avenue, Slough, UK. The surrounding area is predominately commercial (offices) and light industrial (manufacturing) use. The nearest residential properties are located approximately 400m to the north-east on Peel Court. The Site location is shown in Figure 2-1.

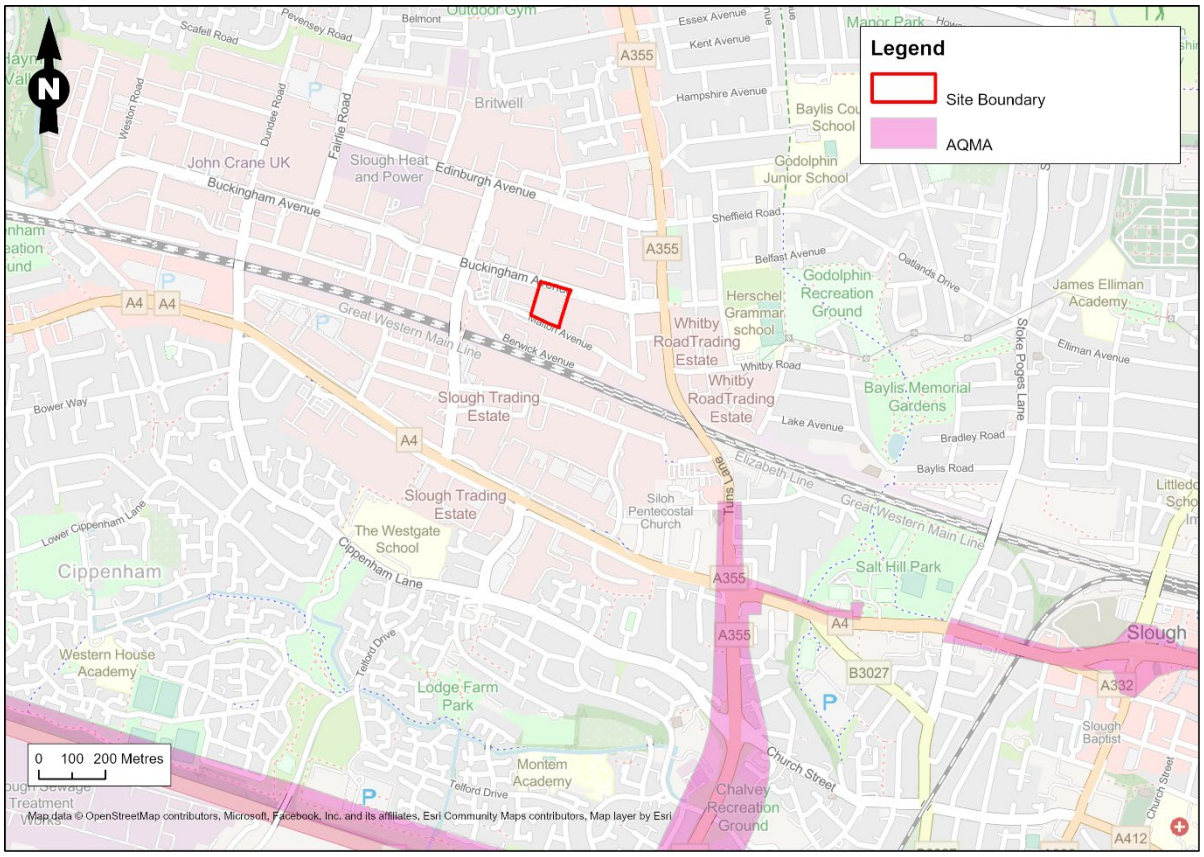


Figure 2-1: Site Location

2.2 Site Air Quality Designations

Five Air Quality Management Area (AQMA) have been declared in Slough Borough Council (SBC) for exceedances of the annual mean NO_2 national air quality objectives (AQOs).

The Site is located approximately 700m northwest of Slough AQMA No. 3 extension. In addition, parts of Slough AQMA No. 1 and No. 4 are within 2km of the Site and have also been considered within this assessment.

In accordance with Environment Agency guidance, a screening distance of 2km has been used for Local Designated Sites and SSSIs, and 10km for SPAs and SACs.

Haymill Valley Local Nature Reserve (LNR) and Local Wildlife Site (LWS) lies approximately 1.5km to the west of the Site; Cocksherd Wood LNR and LWS lies approximately 2km to the northwest of the Site; Railway Triangle LWS lies approximately 1.km to the east of the Site; Burnham Beeches SAC lies approximately 3.3km to the north of the Site; Windsor Forest and Great Park SAC lies approximately 7km to the southeast of the Site and South West London Waterbodies SPA lies

approximately 3.3km to the north of the Site. Whilst the emergency generator will not operate for extended periods of time, the impacts of emergency operations on these designated sites has been assessed.

3. ASSESSMENT CRITERIA

3.1 Air Emissions Risk Assessment

Guidance on air emissions risk assessments[4] was produced by the Environment Agency (EA) for developments which require a bespoke environmental permit under the *Environmental Permitting Regulations 2016 (as amended) (EPR)*. This guidance can be used to support an assessment of the overall impact of the emissions resulting from the installation to confirm that the emissions are acceptable (i.e. do not cause significant environmental pollution). In addition, the assessment has taken account of EA guidance on specified generators: *EA Emissions from specified generators* guidance[5] and *Data Centre FAQ Headline Approach*[6] guidance issued by the EA to assist with permit applications for data centres.

During the permit determination for the recent CyrusOne Stirling Road permit application (EA/EPR/EP3608PM/A001) the EA specifically requested information to be provided on the 100th percentile of one hour mean NO_2 concentrations for consideration against Daily Air Quality Index (DAQI) and Acute Exposure Guideline Levels (AEGLs). However, to date, no guidance has been provided by the EA on the acceptability criteria for these impacts.

3.2 Assessment Criteria

3.2.1 Human Health Receptors

The long term and short-term EALs that are applicable to this assessment are detailed below in Table 1.5 in relation to human health.

3.2.2 Acute Exposure Guideline Levels

AEGLs describe the human health effects from once-in-a-lifetime, or rare, exposure to airborne chemicals. Used by emergency responders when dealing with chemical spills or other catastrophic exposures, AEGLs are set through a collaborative effort of the public and private sectors worldwide. AEGLs are calculated for five relatively short exposure periods – 10 minutes, 30 minutes, 1 hour, 4 hours, and 8 hours – as differentiated from air standards based on longer or repeated exposures. AEGL "levels" are dictated by the severity of the toxic effects caused by the exposure, with Level 1 being the least and Level 3 being the most severe.

All levels are above which it is predicted that the general population could experience, including susceptible individuals:

Level 1

- Notable discomfort, irritation, or certain asymptomatic non-sensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.

Level 2

[4] https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit sourced February 2021
[5] https://consult.environment-agency.gov.uk/psc/mcp-and-sg-regulations/supporting_documents/Specified%20Generators%20Modelling%20GuidanceINTERIM%20FINAL.pdf sourced November 2018
[6] Data Centre FAQ Headline Approach, DRAFT version 10.0 H.Tee 01/06/18 – Release to Industry

- Irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.

Level 3

- Life-threatening health effects or death.

Below AEGL Level 1

Airborne concentrations below the AEGL-1 represent exposure levels that could produce mild and progressively increasing but transient and non-disabling odour, taste, and sensory irritation or certain asymptomatic, non-sensory effects. With increasing airborne concentrations above each AEGL, there is a progressive increase in the likelihood of occurrence and the severity of effects described for each corresponding AEGL.

AEGL values represent threshold levels for the general public, including susceptible subpopulations, such as infants, children, the elderly, persons with asthma, and those with other illnesses. However, it is recognized that individuals, subject to unique or idiosyncratic responses, could experience the effects described at concentrations below the corresponding AEGL. The nitrogen dioxide AEGLs are shown below.

Nitrogen dioxide Result - AEGL Program

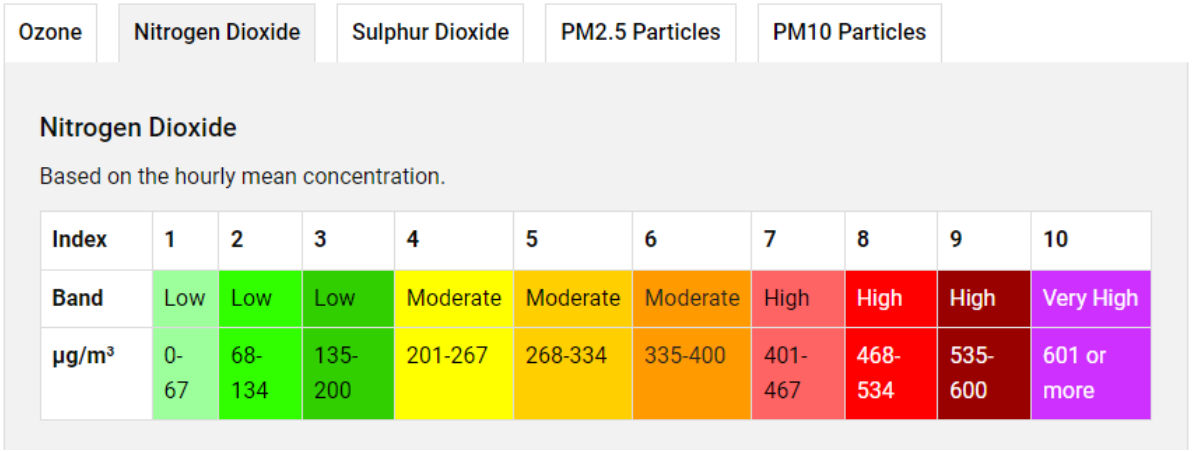
Nitrogen dioxide 10102-44-0 (Final)

	10 min	30 min	60 min	4 hr	8 hr
ppm					
AEGL 1	0.50	0.50	0.50	0.50	0.50
AEGL 2	20	15	12	8.2	6.7
AEGL 3	34	25	20	14	11

As the levels are provided in ppm, they have been converted to μg/m^3 assuming 1ppm = 1,912.5 μg/m^3. AEGL-1 is the most stringent, and has the same value of 956 μg/m^3 for all averaging periods between 10 minutes and 8 hours.

3.2.3 Daily Air Quality Index

Defra's Daily Air Quality Index (DAQI) is a means of providing information regarding poor air quality, with a range of values between 1 and 10. The range of values for NO_2 are shown below.



3.2.4 Nature Conservation Receptors

3.2.4.1 NO_x concentrations

In addition to the NAQO for human health, there is a critical level for the protection of vegetation and ecosystems of 30µg/m^3 as an annual average. In addition, in terms of the assessment of the impacts of NO_x emissions for an Environmental Permit, the assessment is required to consider the daily mean concentration against a critical level of 75 µg/m^3 where ozone is above the AOT40 critical level and SO_2 concentrations are above the lower critical load of 10 µg/m^3.

Background Automatic Air Quality Monitoring Stations (AAQMS) and background data maps accessed from the Department for Environment, Food and Rural Affairs (Defra) data archive were reviewed to determine whether any exceedances of the O_3 or SO_2 Critical Levels may be exceeded within the study area.

Two background AAQMS closest to the project boundary were identified using the Defra interactive monitoring network map[7], these sites are London Hillingdon and Reading New Town. Hourly O_3 monitoring data from 2018 – 2022 and SO_2 monitoring data from 2003 – 2007 were downloaded for both sites. The O_3 background monitoring results for Hillingdon and Reading New Town are shown in Table 3.1 and Table 3.2 respectively. The SO_2 background monitoring results for London Hillingdon and Reading New Town are shown in Table 3.3 and Table 3.4 respectively.

Table 3.1: Ozone AOT40 monitoring results for London Hillingdon

Year	Vegetation Protection Ozone AOT40
2018	5779
2019	515
2020	3010
2021	878
2022	453
Five-year Average	**2127**
Critical Level	Target value of 6,000 µg/m^3 averaged over five years

[7] DEFRAs, Interactive Monitoring networks Map, https://uk-air.defra.gov.uk/interactive-map, [Accessed 05/01/2024]

Table 3.2: Ozone AOT40 monitoring results for Reading New Town

Year	Vegetation Protection Ozone AOT40
2018	11501
2019	329
2020	4860
2021	2090
2022	4038
Five-year Average	**5564**
Critical Level	Target value of 6,000 µg/m^3 averaged over five years

Table 3.3: Annual mean SO_2 monitored concentrations for London Hillingdon

Year	Annual Sulphur Dioxide Concentrations (µg/m^3)
2003	7.7
2004	2.9
2005	2.9
2006	2.9
2007	2.4
Five-year Average	**3.8**
Critical Level	10

Table 3.4: Annual mean SO_2 monitored concentrations for Reading New Town

Year	Annual Sulphur Dioxide Concentrations (µg/m^3)
2003	7.5
2004	7.3
2005	5.5
2006	5.4
2007	4.8
Five-year Average	**6.1**
Critical Level	10

The results presented in tables Table 3.1 and Table 3.2 show that the concentrations of ozone are below the Critical Level of 6,000 µg/m^3 for vegetation protection, with the highest concentrations recorded in 2018 at both monitoring sites. As such, the daily mean NO_x concentration has been evaluated against the critical level of 200 µg/m^3.

3.2.4.2 Nitrogen deposition

APIS[8] provides critical loads for nitrogen deposition (leading to eutrophication) and nitrogen acid deposition (leading to acidification) for different habitat types and specific site relevant critical loads for SACs, SPAs and SSSIs.

For Southwest London Waterbodies, Windsor Forest and Greta Park, and Burnham Beeches APIS provides critical loads for woodland and grassland type habitats. The lowest critical loads for each habitat type are 10-20 kgN/ha/yr and 5-10 kgN/ha/yr respectively.

For non-designated sites, such as Haymill Valley, Cocksherd Wood and Railway Triangle, where such information is not readily available, then the lowest critical load published on APIS can be used as a screening criteria. For woodland habitats, the lowest critical load is 10 kgN/ha/yr.

[8] http://www.apis.ac.uk [accessed September 2023]

4. METHODOLOGY

4.1 Baseline

In order to establish baseline air quality in the vicinity of the Site, relevant monitoring data was reviewed and assessed. Data was obtained from the following sources:

- diffusion tubes operated by SBC and associated Annual Progress Report[9]; and
- Defra background maps[10].

No additional site-specific air quality monitoring was carried out.

4.2 Emergency Generator Impacts

4.2.1 Model Set Up

4.2.1.1 Emission Rates and Operating Hours for Emergency Operation

Air quality impacts were modelled using the Atmospheric Dispersion Modelling System (ADMS 6)[11] air quality dispersion model, originally developed for regulatory authorities in the UK. The model uses representative meteorological data for the local area and plant emissions data to predict ambient concentrations of pollutants in the vicinity of the Site.

For dispersion modelling purposes in an emergency it is assumed that all of the generators will be operational all year round and the annual average impacts can be factored by the calculated allowable operating hours for emergency operation. The allowable operating hours for emergency operation are primarily estimated from a statistical analysis of the likelihood of breaching the 1-hour objective for NO_2 concentrations. However, in this assessment a value of 72 hours has been used for annual mean impacts in accordance with EA guidance; the design basis is for 48 continuous operation.

The statistical approach allows for the fact that operation will only occur for a limited number of hours per year, and therefore operation is unlikely to occur during the meteorological conditions giving rise to the highest hourly average concentrations.

For the purpose of this assessment, the following emergency scenarios have been assessed:

- Lon-3 operating in isolation; and
- Lon-3 operating combined with Lon-2 operating.

Flue heights and diameters for Lon-3 data centre were taken from the CAD layout drawings which indicated a flue height of 23.36m (2.55m above the building) and flue diameter of 0.6m for the 16 main generators, and a flue height of 4.5m and flue diameter of 0.3m for the admin generator.

Flue heights and diameters for Lon-2 data centre were taken from the 2021 Environmental Permit Application Air Quality Assessment[12] which indicated a flue height of 22.69m and flue diameter of 0.35m for the two house generators, and 0.6m for the remaining 18 generators. Whilst the impacts of 18 main generators for Lon-2 have been modelled as per the permit application, only 17 generators are currently intended to be installed and therefore the predicted impacts are conservative. The modelled flue parameters are shown in Table 4.1.

[9] Slough Borough Council, 2022. Air Quality Annual Status Report 2023.
[10] https://uk-air.defra.gov.uk/data/laqm-background-home
[11] https://www.cerc.co.uk/environmental-software/ADMS-model.html
[12] SLR on behalf of Amazon Data Services UK Ltd, 2021. LON-2 Data Centre Slough Air Emission Risk Assessment.

In order to undertake the assessment, each generator was allocated its own flue, with a total of 20 generators for Lon-2 and 17 generators for Lon-3. The locations of the flues used in the modelling are shown in Figure 4-1 and the grid references are contained in Appendix C.

The design of Lon-3 generators is based on block redundancy which means that not all of the main generators are required to operate at full load in an emergency. Anticipated emergency loading for the main generators is 12 x 99%, 2 x 25% and 2 x 51%, or an average of 83.75% loading. As shown in Appendix B, this equates to an average NO_x emission rate per generator of approximately 81.6% of the full load emission rate. Modelling of the Lon-3 generators at 100% load will therefore overestimate the impacts of emergency operation on NO_x and NO_2 concentrations.

Table 4.1: Full Load Emission Data used in the Modelling

Data Centre	Flue Height (m)	Flow rate (Am^3/s)	Temp (^oC)	Velocity (m/s)	Diameter (m)
Lon-3 Main Generators	23.36	11.26	474.5	39.82	0.6
Lon-3 Admin Generator	4.5	1.73	511	24.5	0.3
Lon-2 – House Generators	22.69	3.12	494.3	32.46	0.35
Lon-2	22.69	10.59	460.0	37.46	0.6

4.2.1.2 Emission Rates and Operating Hours for Generator Testing

Air quality impacts of the testing regime were also modelled using ADMS 6[11]. The model uses representative meteorological data for the local area and plant emissions data to predict ambient concentrations of pollutants in the vicinity of the Site.

For dispersion modelling purposes, it is assumed that each data centre will only test one generator at any given time between 8am and 6pm any day. The following testing scenarios have been modelled:

- Lon-3 North Generator tested in isolation;
- Lon-3 South Generator tested in isolation;
- Lon-3 North Generator tested at the same time as Lon-2 North Generator;
- Lon-3 South Generator tested at the same time as Lon-2 South Generator; and
- Lon-3 Admin Generator tested at the same time as Lon-2 North Generator.

4.2.1.3 Buildings

The following figure illustrates the building layouts, with the flues shown in red. The buildings parameters are described in Appendix C. The Lon-3 data centre building was modelled at 20.813m, the Lon-2 data centre building was modelled at 21.65m high.

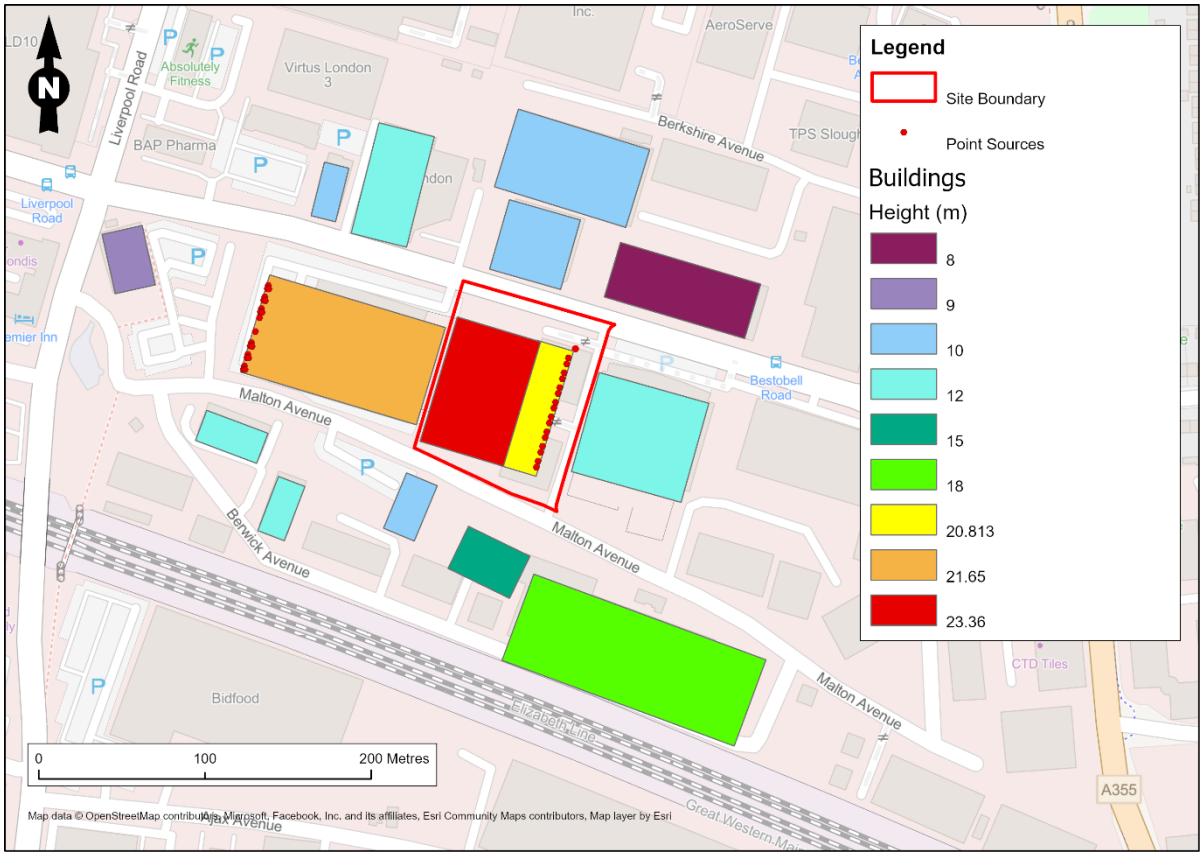


Figure 4-1: Buildings

4.2.1.4 Meteorological Data

The modelling has used 5 years' worth of meteorological data for 2018-2022 from the Heathrow Airport meteorological station which is located approximately 10km to the southeast of the Site. The results from the year that gave the highest predicted concentrations have been reported in the assessment.

Heathrow Airport was chosen for the assessment as the meteorological data is representative of the conditions to the west of London.

4.2.1.5 Human Health Receptors

Relevant sensitive locations are places where members of the public might be expected to be regularly present over the averaging period of the objectives. Several locations have been identified as receptors for the assessment, both at industrial/commercial and recreation ground locations, (where the 1-hour mean AQO applies) and at residential receptors, hospital and school locations (where both the annual mean and 1-hour mean AQOs apply).

The locations of existing receptors were chosen to represent locations where impacts from the generators are likely to be the greatest. These locations are described in Table 4.2 and shown in Figure 4-2. Receptors were modelled at varying heights depending on the estimated height of the buildings in which they are located. An average of 3m per floor has been used to estimate building and receptor heights.

In addition to individual receptor points, a grid of receptors was used to illustrate the spatial variation in dispersion in order to visually demonstrate the pattern of dispersion. The grid was modelled at 0m height.

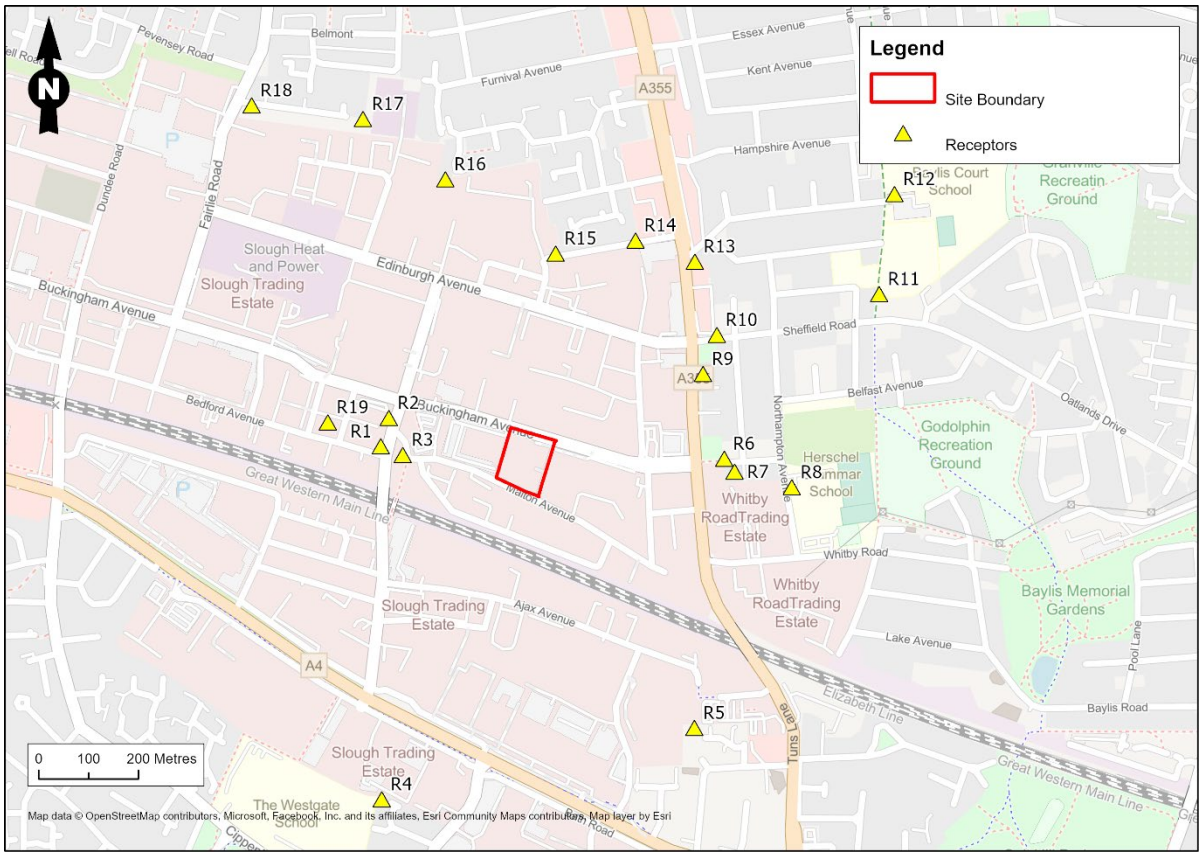


Figure 4-2: Human Health Receptor Locations

Table 4.2: Receptor Locations

Receptor	Location	Type	x	y	Height (m)
R1	Premier Inn	Hotel	495548	181085	1.5, 3.5, 6.5
R2	Costa Coffee	Café	495564	181142	1.5
R3	Park	Recreation Ground	495592	181068	1.5
R4	Hayling Cl	Residential	495549	180377	1.5

Receptor	Location	Type	x	y	Height (m)
R5	Hadlow Ct	Residential	496177	180520	1.5
R6	Buckingham Ave	Residential	496237	181060	1.5
R7	Slough Centre Nursery	Nursery	496258	181034	1.5
R8	Hershel Grammar School	School	496373	181003	1.5
R9	Farnham Road	Residential	496195	181230	1.5
R10	Sheffield Road	Residential	496223	181309	1.5
R11	Godolphin Junior Academy	School	496549	181391	1.5
R12	Baylis Court School	School	496579	181591	1.5
R13	Gloucester Ave	Residential	496178	181456	1.5
R14	Montrose Ave 38	Residential	496059	181498	1.5
R15	Montrose Ave 5	Residential	495899	181472	1.5
R16	Rowan Way	Residential	495677	181621	1.5
R17	Bodmin Ave East	Residential	495512	181742	1.5
R18	Bodmin Ave West	Residential	495288	181770	1.5
R19	Cherry Trees Nursery	Nursery	495441	181133	1.5

Additional receptor locations where relevant exposure to the 10-minute average is possible, such as recreation grounds/ footpaths/ car parks/ bus stop locations in the vicinity of Lon-2 and Lon-3 have been selected as per the SLR response to the Schedule 5 notice for the Lon-2 permit application[13]. Receptors were modelled at 1.5m height and are shown in Figure 4-3 and described in Table 4.3, labelled as additional receptors (AR).

[13] SLR Reference 410.11808.00001. AWS Slough Data Centre Environmental Permit Application (EPR/PP3309MK/A001- Schedule 5 Response. 28/09/22

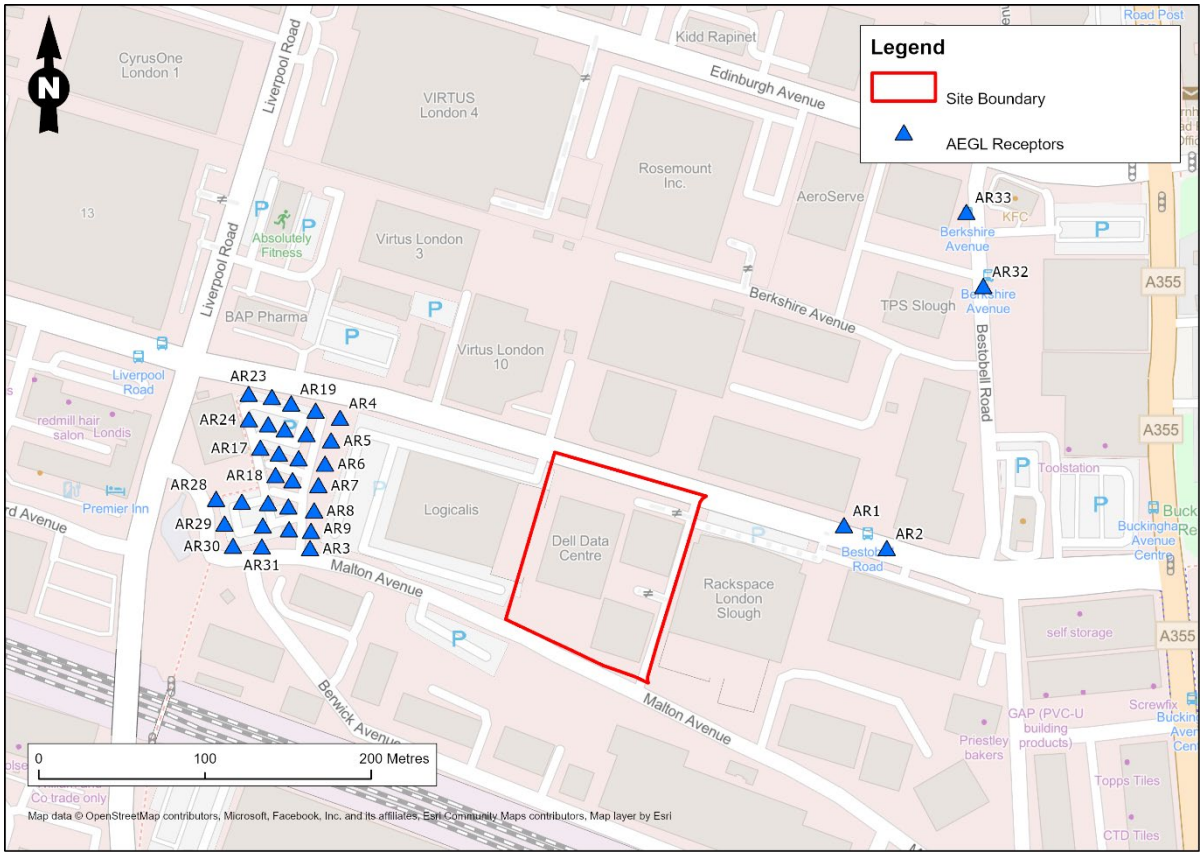


Figure 4-3: Short Term Human Health Receptor Locations

Table 4.3: Short-Term Receptor Locations

Receptor	X	Y
AR1	495983	181077
AR2	496009	181063
AR3	495662	181063
AR4	495680	181142
AR5	495674	181128
AR6	495671	181114
AR7	495667	181101
AR8	495664	181086
AR9	495662	181074
AR10	495665	181146
AR11	495660	181132
AR12	495655	181117

Receptor	X	Y
AR13	495651	181104
AR14	495649	181088
AR15	495649	181075
AR16	495643	181120
AR17	495632	181124
AR18	495641	181107
AR19	495650	181150
AR20	495647	181135
AR21	495639	181154
AR22	495637	181138
AR23	495625	181156
AR24	495625	181141
AR25	495637	181091
AR26	495633	181077
AR27	495621	181091
AR28	495605	181093
AR29	495610	181078
AR30	495615	181065
AR31	495633	181064
AR32	496067	181221

4.2.2 Environment Agency Criteria

4.2.2.1 Specified Generator Guidance

The assessment has principally been carried out following the *EA Emissions from specified generators [Version 1] guidance*[14] and the referenced guidance therein, including the *EA Guidance* for detailed air quality assessments as set out on the *UK Government website*[15].

For dispersion modelling purposes it is assumed that the generators will be operational all year round. The allowable hours for emergency operation are estimated from a statistical analysis of

[14] https://consult.environment-agency.gov.uk/psc/mcp-and-sg-regulations/supporting_documents/Specified%20Generators%20Modelling%20GuidanceINTERIM%20FINAL.pdf sourced June 2021.
[15] https://www.gov.uk/guidance/environmental-permitting-air-dispersion-modelling-reports sourced June 2021.

the likelihood of breaching the hourly mean NO_2 AQO (taking into account baseline pollutant concentrations).

Guidance provided by the Environment Agency provides a methodology to assess the probability of exceedances of the hourly mean AQO. The hypergeometric probability distribution test provides an estimate of the probability of breaching the AQO given random use of the generators for a total number of operating hours per year. Table 4-3 shows how the calculated probabilities are judged by the Environment Agency.

The 1% probability is normally used as the benchmark to calculate the allowable operating hours during emergency operation; if the generators had a life of less than 20 years then it may be possible to use the 5% probability level although this does not increase the allowable operating hours significantly.

Table 4.4: Probability Significance for hourly mean AQO

Probability	Significance
1%	Indicates exceedance is highly unlikely
5%	Indicates that exceedance is unlikely provided generator lifetime is less than 20 years
>5%	Indicates potential for exceedance

The annual mean pollutant concentrations are calculated on the assumption that all of the generators will operate in an emergency for the number of hours allowed during emergency operation determined by the probability of exceedance.

4.2.3 Ecological Receptors

Environment Agency screening criteria has been used to select specific ecological receptors for the assessment:

- SACs, SPAs and Ramsar sites within 10km; and
- SSSIs and local nature sites (ancient woods, local wildlife sites and national and local nature reserves) within 2km.

The location of the sites that meet the above criteria is shown in Figure 4-4 and Figure 4-5 and described below:

- Haymill Valley LNR and LWS;
- Cocksherd Wood LNR and LWS;
- Railway Triangle LWS;
- Burnham Beeches SAC;
- Windsor Forest and Great Park SAC; and
- South West London Waterbodies SAC.

The designated sites receptor points were placed on the closest points in the habitats to the Site.

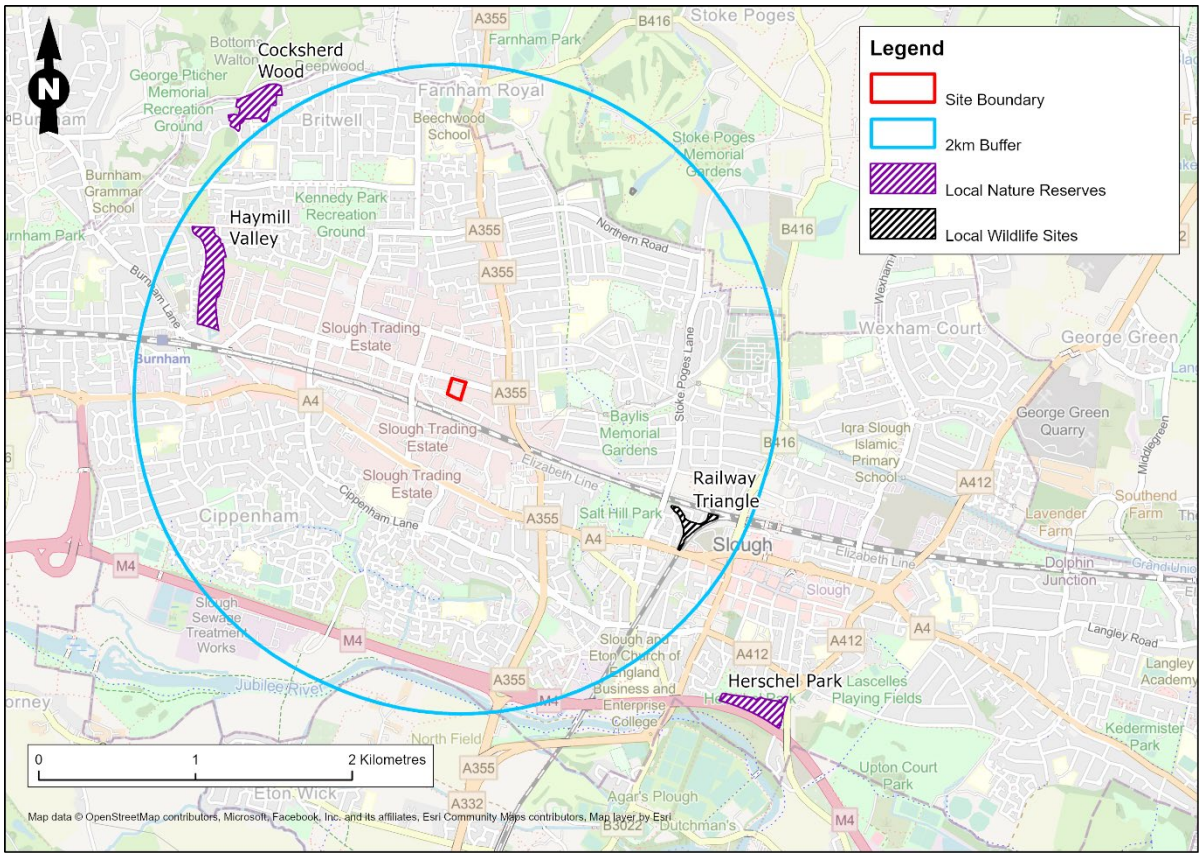


Figure 4-4: Ecological Receptors within 2km of the Site

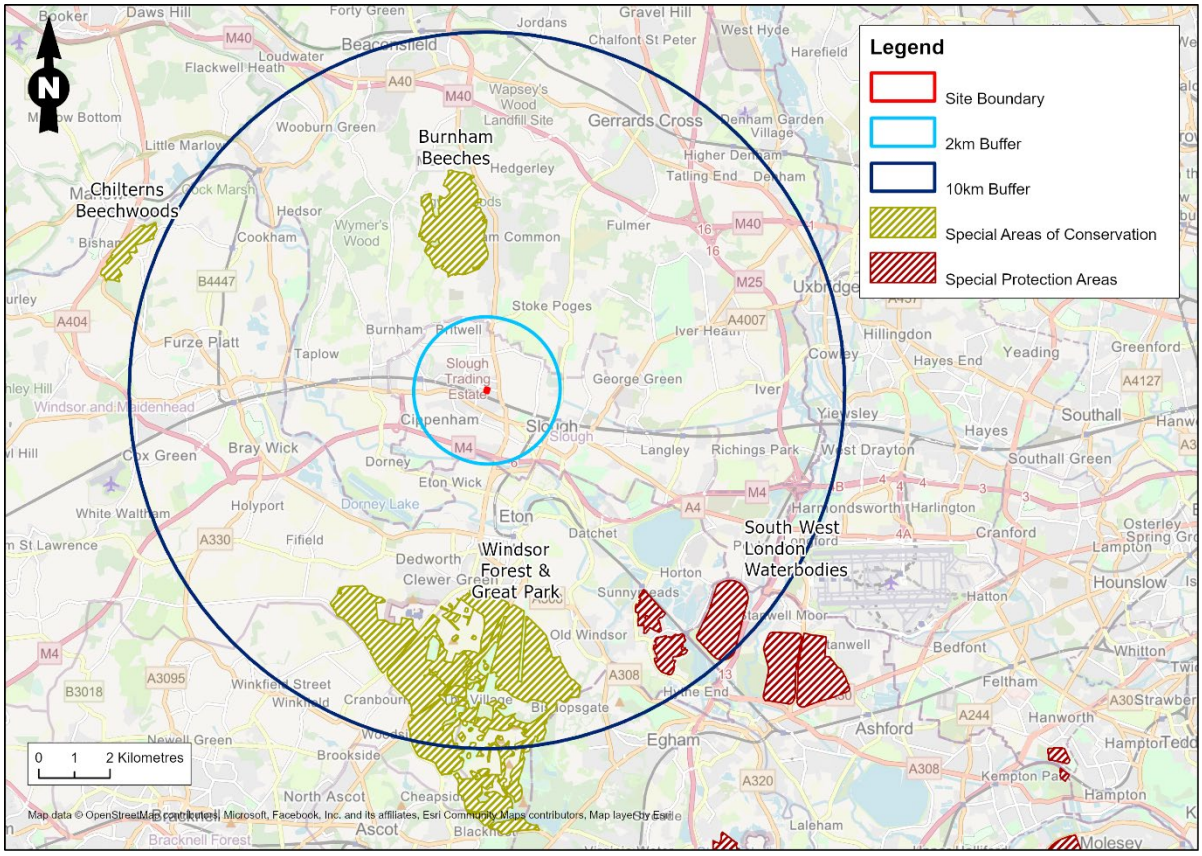


Figure 4-5: Ecological Receptors within 10km of the Site

5. BASELINE ASSESSMENT

5.1 Local Air Quality Management

SBC has investigated air quality within its area as part of its responsibilities under the LAQM regime. Five AQMAs have been declared in SBC for exceedances of the annual mean NO_2 national air quality objectives AQOs. The Site is not located in an AQMA. The closest AQMA is Slough AQMA No. 3 extension, located approximately 700m southeast of the Site.

5.2 Nitrogen Dioxide Monitoring

SBC operated both continuous automatic monitoring and passive diffusion tube monitoring at several locations within the borough. The closest and most representative monitoring locations are shown in Figure 5-1 and described in Table 5-1.

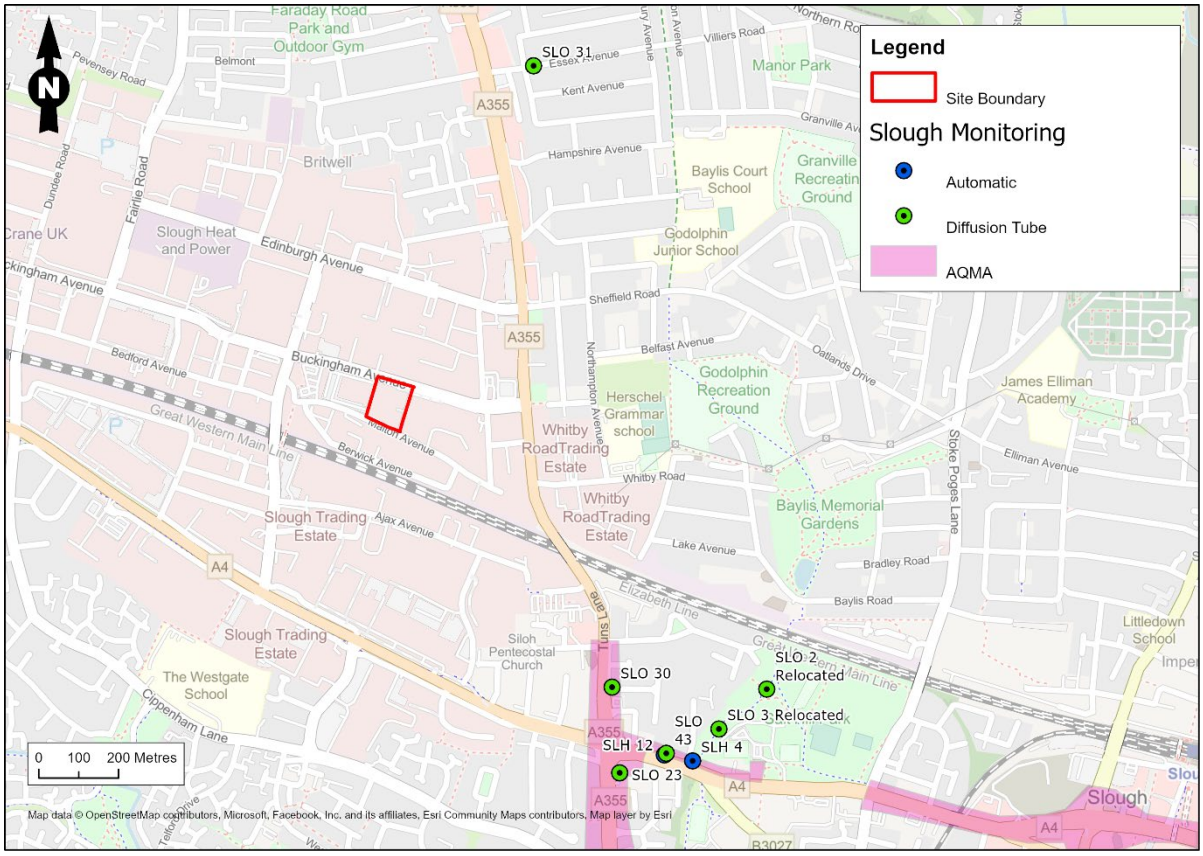


Figure 5-1: Monitoring Locations in the vicinity of the site

Table 5.1: Measured NO_2 Concentrations

Site ID	Site Type	Within AQMA	Annual Mean (µg/m³)				
			2018	2019	2020*	2021	2022
Automatic Sites							
SLH4	UB	No	31.0	26.4	-	-	-
SLH12	R	Yes	**42.0**	39.2	26.9	28.9	28.7
Diffusion Tubes							
SLO2	UB	No	-	-	15.4	14.5	15.5
SLO3	UB	No	-	-	17.6	18.0	16.5
SLO23	UB	Yes	29.5	30.8	22.0	21.9	22.2
SLO30	R	Yes	29.0	32.0	23.2	23.9	23.4
SLO31	SU	No	27.0	27.0	21.9	20.9	-
SLO43	R	Yes	34.0	33.1	25.0	25.0	25.6
Objective		**40**					

Exceedances of the objective highlighted in bold.
UB = Urban Background
R = Roadside
SU = Suburban
*2020 monitoring data measured during Covid-19 pandemic scenario with restriction to travel imposed and therefore pollutant concentrations are likely to be lower than previous years and are unlikely to be representative of standard conditions.

Measured roadside NO_2 concentrations at all monitoring locations have been in compliance with the annual mean objective from 2018-2022, with the exception of automatic monitoring location SLH12 in 2018. It should be noted that monitored NO_2 concentrations during 2020 and 2021 will have been impacted by reductions in vehicle movements during the Covid-19 pandemic.

NO_2 concentrations within the site are most likely to be represented by those measured at the suburban monitoring location SLO31, where annual mean NO_2 concentrations are below the AQOs.

Diffusion tubes only monitor long term exposure and therefore results from this monitoring cannot be used for direct comparison with the short term 1-hour objective for NO_2. However, studies conducted into the relationship between long term monitored concentrations and short-term concentrations have indicated that where annual mean concentrations of more than 60 µg/m^3 are recorded an exceedance of the hourly NO_2 objective is likely. On this basis, no exceedances of the short term one-hour objective have occurred at diffusion tube monitoring locations within the vicinity of the site between 2018 and 2022.

5.3 Background Concentrations

In addition to measured concentrations, estimated background concentrations have been obtained from the national maps provided by Defra[16] (shown in Table 5.2).

Table 5.2: Estimated Annual Mean Background Concentrations

Year	Location	Annual Mean (µg/m³)			
		NO_x	NO_2	PM_{10}	$PM_{2.5}$
2023	495500 181500	30.4	20.5	15.7	10.7
	495500 180500	27.0	18.8	15.7	10.9
	496500 180500	28.1	19.4	16.1	10.9
	496500 181500	23.4	16.6	16.0	11.2
	497500 181500	21.8	15.6	15.7	10.9
	494500 181500	25.7	18.0	15.4	10.6
	494500 182500	19.3	14.1	15.1	10.6
	500500 175500	18.6	13.6	14.5	9.6
	495500 175500	15.4	11.6	13.9	9.7
	494500 184500	15.4	11.5	13.4	9.2
	494500 181500	25.7	18.0	15.4	10.6
	494500 182500	19.3	14.1	15.1	10.6
	497500 180500	29.3	20.0	16.4	11.3
Objectives		**30***	**40**	**40**	**20**
*Relevant for ecological receptors					

5.4 Baseline Concentrations used in the assessment

5.4.1 Human Health Receptors

The closest receptor locations to the Site where short-term objectives apply are the Premier Inn hotel, Costa Coffee café, and Cherry Trees nursery in Slough Trading Estate on Bedford Avenue and Liverpool Road to the west. The closest receptors where the long-term objectives apply are residential properties along Buckingham Avenue East, Sheffield Road, Gloucester Avenue and Montrose Avenue. These locations are not immediately adjacent to busy roads and are typical of urban background locations.

The concentration of 20.9 µg/m³ has been used to represent the annual mean baseline NO_2 concentration for the assessment. This will be conservative for elevated receptor locations where the concentration will reduce to background levels, and also conservative regarding the future concentrations which will be lower.

For pollutants which have a short-term air quality objective (assumed to 24 hours or less), and in accordance with Environment Agency guidance, a value of twice the annual mean.

In order to assess the number of operating hours equal to a 1% chance of exceeding the 1 hour mean objective, the modelling has used a NO_2 predicted environmental concentration of 200µg/m³. With a baseline of 41.8 µg/m³, the allowable NO_2 process contribution (PC) (i.e. from the development) is 158.2 µg/m³.

[16] https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018 [Accessed September 2023]

5.4.2 Ecological Receptors

For the ecological receptors, the background date in Table 5.2 has been used for NO_x concentrations. For nitrogen and acid deposition, the results tables contain the relevant baseline deposition rates from APIS for the ecological receptors.

6. ASSESSMENT OF LON-3 IMPACTS

6.1 Emergency Operation

Section 6.1 contains the results of the emergency operation where all of the generators from Lon-3 are assumed to be operating simultaneously at their maximum load.

6.1.1 Human Health Receptors

6.1.1.1 Hourly Mean NO_2

The modelling has been undertaken to determine the allowable operating hours of Lon-3 with a 1% probability of exceeding the short term NO_2 objective.

Table 6-1 shows the results of the modelling for the highest impacted receptor for any of the assessed residential, commercial and industrial receptor locations in the vicinity of the development. The results for all of the assessed receptors are contained in Appendix E.

Table 6.1: Probability of exceeding 1 hour mean NO_2 objective

Operating hours	1% probability	5% probability
	62	72

The allowable operating hours for a 1% probability of exceeding the objective would be 62 hours. If the Lon-3 generators were to operate for 72 hours the probability of exceedance would be 5% indicating that exceedances are unlikely provided the lifetime of the generators is less than 20 years. A contour plot of the probability of exceeding the objective illustrating the pattern of dispersion for the worst-case year is shown in Figure 6-1 for 72 operating hours.

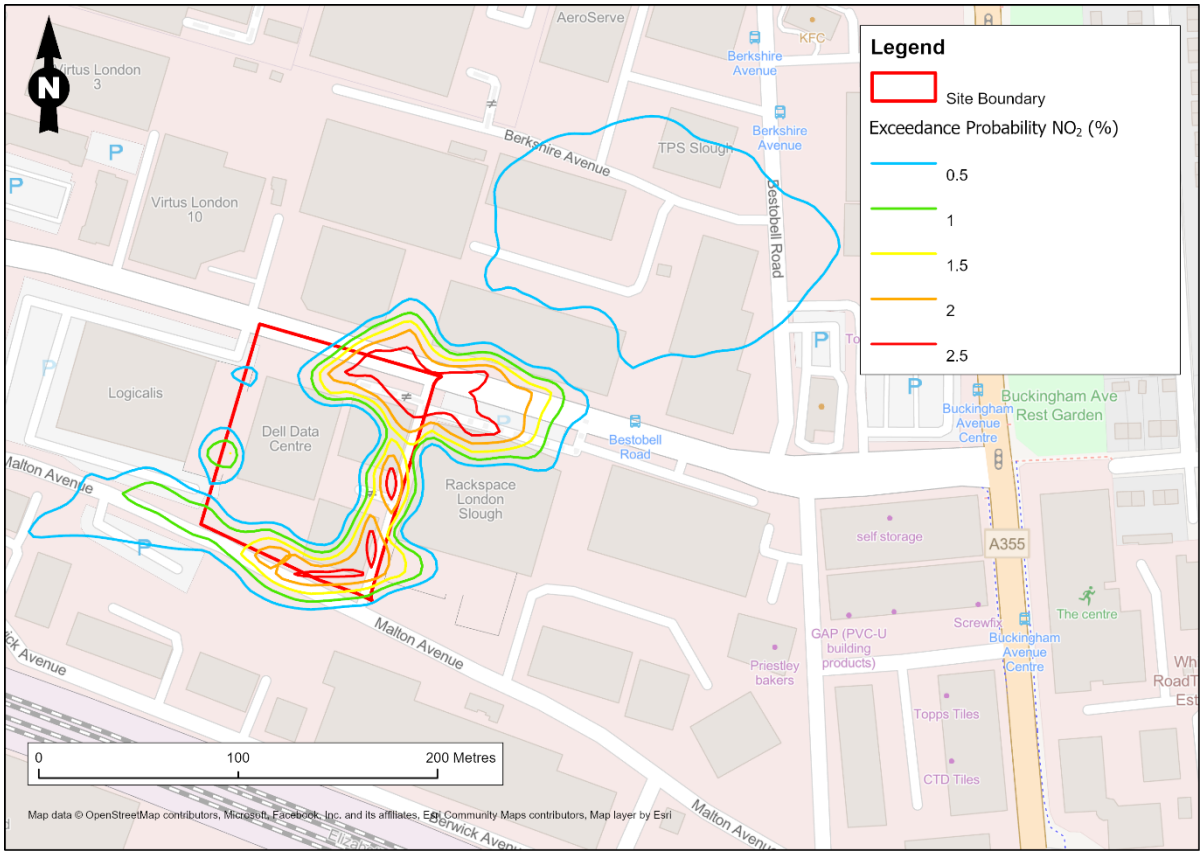


Figure 6-1: Probability of exceeding the 1 hour mean NO_2 objective.

The maximum probability occurs to the north of the Site (likely associated with the emissions from the admin generator). The areas of greater than 1% probability are small and not coincidental with receptor locations.

6.1.1.2 Annual Mean NO_2

The maximum PC for receptors relevant to the annual mean averaging period is shown in Table 6.2. The annual mean impacts have been factored to 72 hours operation.

Table 6.2: Maximum Annual Mean NO_2 Concentrations (µg/m³)

Receptor	Height (m)	PC (µg/m³)	% Change relative to AQO	Background (µg/m³)	PEC (µg/m³)	PEC as % of EAL
R9	1.5	0.8	2.0	20.9	21.7	54.3
Grid Max (495870, 181050)*	0	7.0	17.6	20.9	27.9	69.9
Objective		**40**				-

*located on-site next to generator Lon-3-6

Figure 6-2 shows the maximum annual mean NO_2 concentrations during an emergency for 72 hours operation. The contours are the maximum PC from any of the five years of meteorological data modelled and are therefore do not represent the impacts from any one single year. The maximum PCs at locations of relevant exposure (i.e. the school and residential areas) are less than 0.7 µg/m^3.

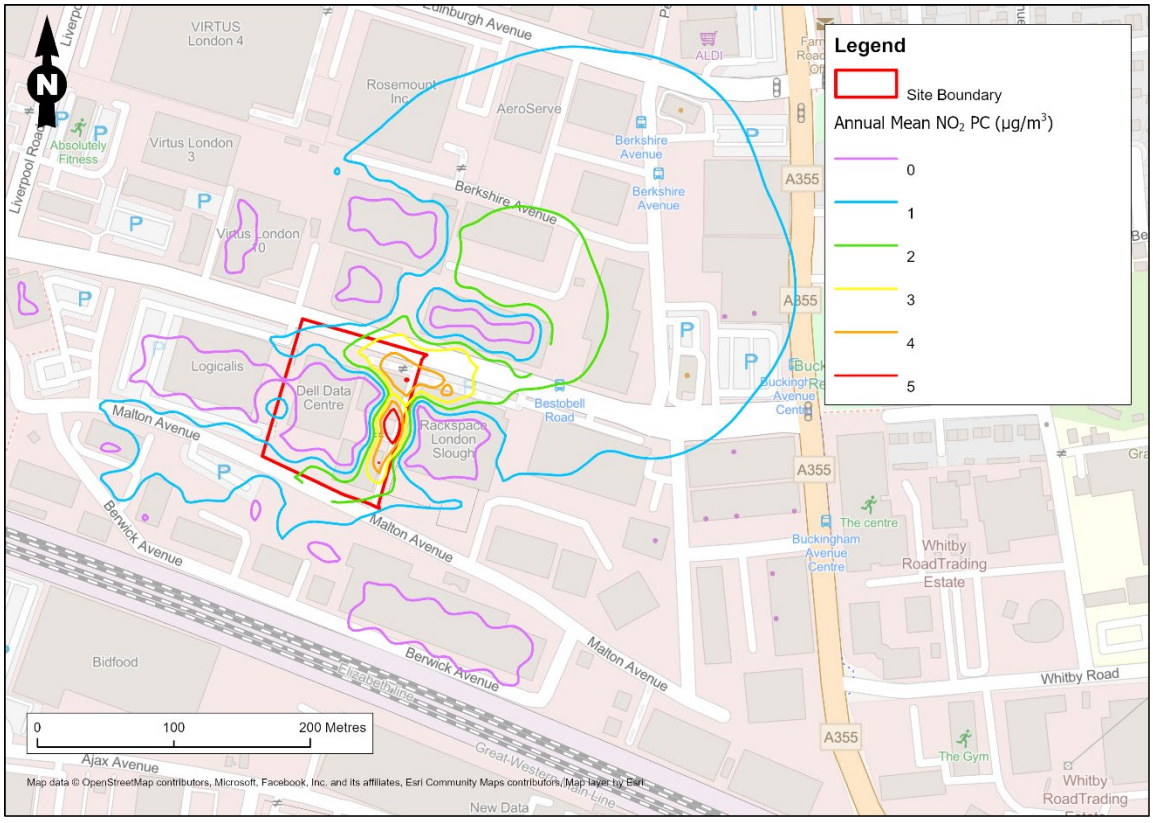


Figure 6-2: Annual Mean NO_2 Process Contribution for 72 hour operation

The maximum predicted PEC at receptor locations will be less than 54% of the EAL.

6.1.1.3 100%ile Hourly Mean NO_2

Table 6.3 shows the maximum 100%ile 10 minute and hourly mean NO_2 PC concentrations during the emergency scenario in relation to the AEGL. Full results shown in Appendix E.

Table 6.3: Maximum 100%ile NO_2 Concentrations (µg/m^3)

Receptor	10 minute average		1 hour average	
	µg/m^3	AEGL	µg/m^3	AEGL
R11	527	Below AEGL-1	-	-
AR2	-	-	487	Below AEGL-1
Grid Max (495870, 181080)*	1,494	Below AEGL-2	1,443	Below AEGL-2

*located on-site next to the Admin Generator

The maximum predicted concentration at an offsite receptor corresponds to level 8 in the DAQI, less than the maximum value of 10. The maximum on-site concentration is less than twice the AEGL-1 value and is limited to a small area in the vicinity of the admin generator.

Figure 6-3 show the predicted 100%ile hourly mean NO_2 concentration during the emergency scenario. The contours are the maximum results from any of the five years of meteorological data modelled and are therefore do not represent the impacts from any one single year.

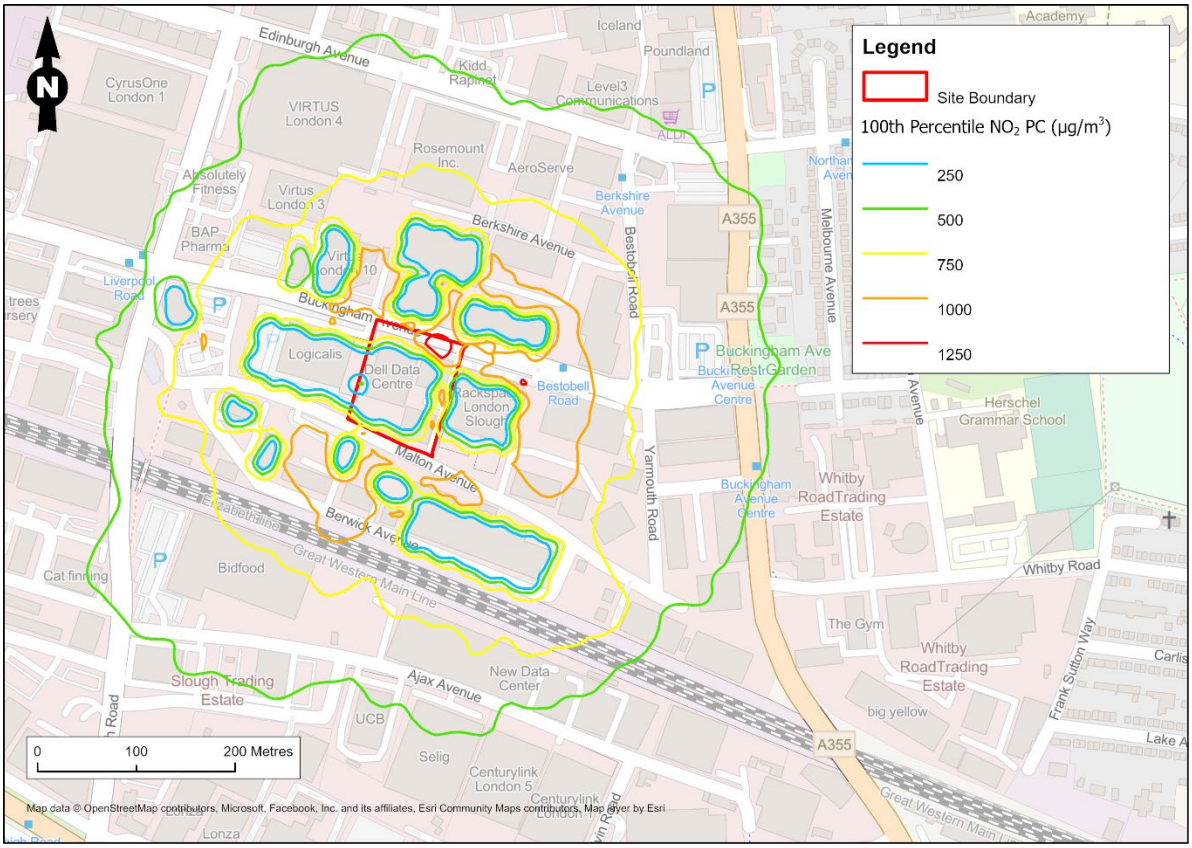


Figure 6-3: 100%ile NO_2 PC concentrations for Emergency scenario

6.1.1.4 PM_{10} Daily Mean

The highest maximum daily mean 90.41%ile PC at modelled receptors for any of the 5 years of meteorological data is presented in Table 6.4 for emergency operation. Full results at all of the modelled receptors are contained in Appendix E.

Table 6.4: Maximum Daily Mean 90.41%ile PM_{10} Concentrations

Receptor	EAL µg/m³	Background Concentration µg/m³	PC µg/m³	PC as % of the EAL	PEC	PEC as % of Objective
AR1	50	31.4	3.6	7.3	-	-
Grid Max (495870, 181050)*	50	31.4	8.4	16.8	71.2	142.4

*located on-site next to Lon-3-6

The maximum daily mean PM_{10} PC is less than 10% of the EAL for all assessed receptor locations and no further consideration of the PEC is required. The maximum daily mean PM_{10} PC within the receptor grid is 16.6% of the EAL and the maximum predicted PEC is less than 70% of the EAL.

6.1.1.5 SO_2 15-minute Mean

The maximum 15-minute mean 99.90%ile process contribution at modelled receptors for any of the 5 years of meteorological data is presented in Table 6.5 for the emergency operation. Full results shown in Appendix E.

Table 6.5: Maximum 15-minute mean 99.90%ile SO_2 Concentrations

Receptor	EAL µg/m³	PC µg/m³	PC as % of the EAL
AR2	266	2.07	0.78
Grid Max (495870, 181080)*	266	2.83	1.06

*located on-site next to the Admin Generator

The maximum 15-minute mean 99.90%ile PC is less than 10% of the EAL, no further consideration of the PEC is required.

6.1.1.6 SO_2 Hourly Mean

The maximum hourly mean 99.73%ile PC at modelled receptors for any of the 5 years of meteorological data is presented in Table 6.6 for the emergency operation. Full results shown in Appendix E.

Table 6.6: Maximum hourly mean 99.73%ile SO_2 Concentrations

Receptor	EAL µg/m³	PC µg/m³	PC as % of the EAL
AR2	350	1.93	0.01
Grid Max (495870, 181080)*	350	2.57	0.01

*located on-site next to the Admin Generator

The maximum hourly mean PC is less than 10% of the EAL, no further consideration of the PEC is required.

6.1.1.7 SO_2 Daily Mean

The maximum daily mean 99.18%ile PC at modelled receptors for any of the 5 years of meteorological data is presented in Table 6.7 for the emergency operation. Full results shown in Appendix E.

Table 6.7: Maximum Daily Mean 99.18%ile SO_2 Concentrations

Receptor	EAL µg/m³	PC µg/m³	PC as % of the EAL
AR1	125	1.43	1.15
Grid Max (495970,181130)*	125	1.66	1.32

*located off-site adjacent to the northern part of the site

The maximum PC daily mean PC is less than 10% of the EAL, no further consideration of the PEC is required.

6.1.1.8 CO 8-hour Mean

The maximum 8-hour running mean PC at modelled receptors for any of the 5 years of meteorological data is presented in Table 6.8 for the emergency operation. Full results shown in Appendix E.

Table 6.8: Maximum 8-hour running mean CO Concentrations

Receptor	EAL µg/m³	PC µg/m³	PC as % of the EAL
AR2	10,000	131	1.31
Grid Max (495870, 181080)*	10,000	294	2.94

*located on-site next to the Admin Generator

The maximum 8-hour running mean PC is less than 10% of the EAL, no further consideration of the PEC is required.

6.1.1.9 CO Hourly Mean

The maximum daily mean mean PC at modelled receptors for any of the 5 years of meteorological data are presented in Table 6.9 for the emergency operation. Full results shown in Appendix E.

Table 6.9: Maximum Hourly Mean CO Concentrations

Receptor	EAL µg/m³	PC µg/m³	PC as % of the EAL
AR25	30,000	165	0.55
Grid Max (495870, 181080)*	30,000	384	1.28

*located on-site next to the Admin Generator

The maximum hourly mean PC is less than 10% of the EAL, no further consideration of the PEC is required.

6.1.2 Ecological Receptors

6.1.2.1 Annual Mean NO_x

Predicted annual mean NO_x concentrations at the ecological receptors are shown in Table 6.10. The predicted concentrations assume that all the emergency generators operate for a period of 72 hours.

Table 6.10: Ecological Receptors Predicted Annual Mean NO_x Concentrations (µg/m³)

Receptor	Critical Level (µg/m³)	PC (µg/m³)	PC % of Critical Level
Southwest London Waterbodies SPA/Ramsar	30	0.01	0.0%
Windsor Forest and Great Park SAC	30	0.02	0.1%

Receptor	Critical Level (µg/m³)	PC (µg/m³)	PC % of Critical Level
Burnham Beeches SAC	30	0.03	0.1%
Haymill Valley LNR/LWS	30	0.05	0.2%
Cocksherd Wood LNR/LWS	30	0.04	0.1%
Railway Triangle LWS	30	0.10	0.3%

The maximum predicted NO_x PCs at all the assessed ecological sites is below 1% or 100% of the critical level for designated/non-designated sites.

6.1.2.2 Daily Mean NO_x

Predicted daily mean NO_x concentrations at the ecological receptors are shown in Table 6.11.

Table 6.11: Predicted Daily Mean NO_x Concentrations (µg/m³)

Receptor	Critical Level (µg/m³)	PC (µg/m³)	PC % of Critical Level	PEC (µg/m³)	PEC % of Critical Level
Southwest London Waterbodies SPA/Ramsar	200	20.5	10.2%	35.9	17.9%
Windsor Forest and Great Park SAC	200	37.3	18.7%	55.9	28.0%
Burnham Beeches SAC	200	48.9	24.4%	64.2	32.1%
Haymill Valley LNR/LWS	200	91.0	45.5%	-	-
Cocksherd Wood LNR/LWS	200	82.1	41.1%	-	-
Railway Triangle LWS	200	159	79.5%	-	-

The maximum predicted NO_x PCs at the designated ecological sites exceeds 10% of the critical level, therefore the PEC was considered which is less than 70% of the critical level. The maximum predicted PC is less than 100% of the critical level at the non-designated sites.

6.1.2.3 Nitrogen Deposition

Predicted nitrogen deposition for the assessed ecological sites shown in

Table 6.12.

Table 6.12: Predicted Nitrogen Deposition for Habitats during the Emergency Scenario

Site	Nitrogen Depositon (kgN/ha/ yr)		PC % of Critical Load
	Critical Load	PC	
Southwest London Waterbodies SPA/Ramsar	5	0.002	0.02%
Windsor Forest and Great Park SAC	10	0.004	0.04%
Burnham Beeches SAC	10	0.006	0.06%
Haymill Valley LNR/LWS	10	0.005	0.10%
Cocksherd Wood LNR/LWS	10	0.009	0.09%
Railway Triangle LWS	10	0.020	0.20%

The maximum contribution to nitrogen deposition does not exceed 1% of the critical load for any of the assessed ecological sites and is therefore not significant.

6.1.2.4 Acid Deposition

Predicted acid deposition for the assessed ecological sites is shown in Table 6.13.

Table 6.13: Predicted Acid Deposition for Habitats during the Emergency Scenario

Site	Acidity Critical Load (keq/ha/yr)		Acid Deposition PC (keq/ha/yr)	PC (% Critical Load)
	N	S		
Southwest London Waterbodies SPA/Ramsar	0.95	0.18	0.0002	0.01%
Windsor Forest and Great Park SAC	1.65	0.18	0.0003	0.01%
Burnham Beeches SAC	1.76	0.21	0.0004	0.02%
Haymill Valley LNR/LWS	1.74	0.22	0.0003	0.01%
Cocksherd Wood LNR/LWS	1.76	0.23	0.0006	0.06%
Railway Triangle LWS	1.72	0.21	0.0014	0.07%

The maximum predicted nitrogen acid deposition is below 1% of the critical load function at all assessed habitats and therefore not significant.

6.2 Testing

This section contains the results of the modelled testing scenario. The impacts of the testing of the admin generator are contained in Section 7, combined with the simultaneous testing of a generator on Lon-2.

6.2.1 Human Health Receptors

6.2.1.1 Annual Mean NO_2

The maximum PC for receptors relevant to the annual mean averaging period is shown for each testing scenario in Table 6.14.

Table 6.14: Maximum Annual Mean NO_2 Concentration (µg/m³)

Scenario	Receptor	PC (µg/m³)	% Change relative to AQO	Background NO_2 (µg/m³)	PEC (µg/m³)	PEC as % of EAL
Lon-3 North	R9	0.24	0.59	20.9	21.1	52.8
	Max Grid (495870, 181050)*	1.45	3.6	20.9	22.3	55.9
Lon-3 South	R9	0.23	0.57	20.9	21.1	52.8
	Max Grid (495860, 181020)*	1.84	4.6	20.9	22.7	56.9
Objective		**40 µg/m³**				-

*located on-site next to Lon3-6

6.2.1.2 Hourly Mean NO_2

Table 6.15 shows the predicted 100%ile hourly mean NO_2 concentrations during testing in relation to the EAL of 200µg/m³ and the probability of exceeding for 636 testing hours. Full results are shown in Appendix E.

Table 6.15: Predicted 100th percentile NO_2 Concentrations for Testing Operation (µg/m³)

Scenario	Receptor	1 hour average				
		PC µg/m³	PC % EAL	PC % Exceeding	PEC µg/m³	PEC % EAL
Lon-3 North	AR3, AR8, AR9, AR15	53.8	26.9	0.0%	95.6	47.8
	Max Grid (495930, 181100)*	208	104	0.0%	249.8	124.9
Lon-3 South	AR1	31.3	15.7	0.0%	73.1	36.6
	Max Grid (495850, 180940)**	359	180	0.0%	400.8	200.4

*located off-site to the northeast of Lon-3

**located off-site to the south of Lon-3

The maximum predicted PC at any offsite receptor corresponds to a DAQI value of 1. The maximum predicted PC within the output grid corresponds to a DAQI value of between 4 and 6. Based on a total testing hours of 636, there is a zero percent probability of exceeding the hourly mean objective.

6.2.1.3 PM_{10} Daily Mean

The highest daily mean 90.41%ile PC at modelled receptors during testing are presented in Table 6.16. Full results shown in Appendix E.

Table 6.16: Maximum Daily Mean 90.41%ile PM_{10} Concentrations

Scenario	Receptor	Background Concentration µg/m³	PC µg/m³	PC as % of the EAL
Lon-3 North	AR1	15.7	0.14	0.27
	Max Grid (495960, 181130)*	15.7	0.19	0.38
Lon-3 South	AR2	16.0	0.13	0.26
	Max Grid (495870, 180990)*	15.7	0.16	0.32
Objective		**50 µg/m³**		

*located off-site adjacent to the northern part of the site

The maximum daily mean PM_{10} PC is less than 10% of the EAL and no further consideration of the PEC is required.

6.2.2 Ecological Receptors

6.2.2.1 Annual Mean NO_x

Predicted NO_x concentrations within the ecological receptors are shown in Table 6.17.

Table 6.17: Testing Ecological Receptors Predicted Annual Mean NO_x Concentrations (µg/m³)

Scenario	Receptor	Critical Level (µg/m³)	PC (µg/m³)	PC % of Critical Level
Lon-3 North	Southwest London Waterbodies SPA/Ramsar	30	0.002	0.01%
	Windsor Forest and Great Park SAC	30	0.003	0.01%
	Burnham Beeches SAC	30	0.005	0.02%
	Haymill Valley LNR/LWS	30	0.013	0.04%
	Cocksherd Wood LNR/LWS	30	0.010	0.03%

Scenario	Receptor	Critical Level (µg/m³)	PC (µg/m³)	PC % of Critical Level
	Railway Triangle LWS	30	0.021	0.07%
Lon-3 South	Southwest London Waterbodies SPA/Ramsar	30	0.002	0.01%
	Windsor Forest and Great Park SAC	30	0.003	0.01%
	Burnham Beeches SAC	30	0.005	0.02%
	Haymill Valley LNR/LWS	30	0.012	0.04%
	Cocksherd Wood LNR/LWS	30	0.010	0.03%
	Railway Triangle LWS	30	0.022	0.07%

The maximum predicted NO_x PCs are below 1% and 100% for designated and non-designated sites respectively. There is essentially no difference in impacts between a generator being tested in the north of the site or the south of the site.

6.2.2.2 Daily Mean NO_x

Predicted daily mean NO_x concentrations at the ecological receptors are shown in Table 6.18.

Table 6.18: Testing Ecological Receptors Predicted Daily NO_x Concentrations (µg/m³)

Scenario	Receptor	Critical Level (µg/m³)	PC (µg/m³)	PC % of Critical Level
Lon-3 North	Southwest London Waterbodies SPA/Ramsar	200	0.80	0.4%
	Windsor Forest and Great Park SAC	200	1.05	0.5%
	Burnham Beeches SAC	200	1.55	0.8%
	Haymill Valley LNR/LWS	200	3.43	1.7%
	Cocksherd Wood LNR/LWS	200	2.99	1.5%
	Railway Triangle LWS	200	4.25	2.1%
Lon-3 South	Southwest London Waterbodies SPA/Ramsar	200	0.81	0.4%
	Windsor Forest and Great Park SAC	200	1.06	0.5%
	Burnham Beeches SAC	200	1.60	0.8%
	Haymill Valley LNR/LWS	200	3.71	1.9%
	Cocksherd Wood LNR/LWS	200	2.70	1.4%
	Railway Triangle LWS	200	5.12	2.6%

The maximum predicted NO_x PC does not exceed 10% of the critical level at any of the ecological sites, no further consideration of the PEC is required.

6.2.2.3 Nitrogen Deposition

Predicted nitrogen deposition for the assessed ecological receptors is shown in Table 6.19.

Table 6.19: Predicted Nitrogen Deposition during the Testing Scenario

Scenario	Site	Nitrogen Depositon (kgN/ha/ yr)		PC % of Critical Load
		Critical Load	PC	
Lon3 North	Southwest London Waterbodies SPA/Ramsar	5	0.0002	0.00%
	Windsor Forest and Great Park SAC	10	0.0005	0.00%
	Burnham Beeches SAC	10	0.0010	0.01%
	Haymill Valley LNR/LWS	10	0.0023	0.02%
	Cocksherd Wood LNR/LWS	10	0.0018	0.02%
	Railway Triangle LWS	10	0.0037	0.04%
Lon3 South	Southwest London Waterbodies SPA/Ramsar	5	0.0002	0.00%
	Windsor Forest and Great Park SAC	10	0.0005	0.00%
	Burnham Beeches SAC	10	0.0011	0.01%
	Haymill Valley LNR/LWS	10	0.0024	0.02%
	Cocksherd Wood LNR/LWS	10	0.0020	0.02%
	Railway Triangle LWS	10	0.0044	0.04%

The maximum contribution to nitrogen deposition does not exceed 1% of the critical load for any of the assessed ecological sites and is therefore not significant.

6.2.2.4 Acid Deposition

Predicted acid deposition for the assessed ecological receptors is shown in Table 6.20.

Table 6.20: Predicted Acid Deposition during the Testing Scenario

Scenario	Site	Acidity Critical Load (keq/ha/yr)		Acid Deposition PC (keq/ha/yr)	PC (% Critical Load)
		N	S		
Lon-3 North	Southwest London Waterbodies SPA/Ramsar	0.95	0.18	0.00002	0.000%
	Windsor Forest and Great Park SAC	1.65	0.18	0.00003	0.003%
	Burnham Beeches SAC	1.76	0.21	0.00007	0.003%
	Haymill Valley LNR/LWS	1.74	0.22	0.00016	0.006%
	Cocksherd Wood LNR/LWS	1.76	0.23	0.00013	0.006%
	Railway Triangle LWS	1.72	0.21	0.00026	0.015%
Lon-3 South	Southwest London Waterbodies SPA/Ramsar	0.95	0.18	0.00002	0.000%
	Windsor Forest and Great Park SAC	1.65	0.18	0.00004	0.004%
	Burnham Beeches SAC	1.76	0.21	0.00008	0.004%
	Haymill Valley LNR/LWS	1.74	0.22	0.00017	0.006%
	Cocksherd Wood LNR/LWS	1.76	0.23	0.00014	0.007%
	Railway Triangle LWS	1.72	0.21	0.00032	0.018%

The maximum predicted acid deposition is below 1% of the critical load function at all assessed habitats, and therefore no further consideration needs to be given.

7. ASSESSMENT OF LON-3 AND LON-2 IMPACTS

7.1 Emergency Operation

Section 7.1 contains the results of the emergency operation where all of the generators from Lon-3 and Lon-2 are assumed to be operating simultaneously at their maximum load. As the two sites are adjacent to each other it is considered a reasonable worst-case assumption that an emergency event could affect both sites.

7.1.1 Human Health Receptors

7.1.1.1 Hourly Mean NO_2

The modelling has been undertaken to determine the emergency operation of Lon-3 in combination with Lon-2 with a 1% probability of exceeding the objective.

Table 7.1 shows the results of the modelling for the highest impacted receptor for any of the assessed residential, commercial and industrial receptor locations in the vicinity of the development. The results for assessed the receptors are presented in Appendix E.

Table 7.1: Probability of exceeding 1 hour mean NO_2 objective

	1% probability	5% probability
Operating hours	57	65

The allowable operating hours for a 1% probability of exceeding the objective would be 57 hours. If the Lon-3 and Lon-2 generators were to operate for 65 hours the probability of exceedance would be 5% indicating that exceedances are unlikely provided the lifetime of the generators is less than 20 years.

A contour plot of the probability of exceeding the objective illustrating the pattern of dispersion for the worst-case year is shown in Figure 7-1. The maximum probability occurs to the north and southeast of the Site. The areas of 1% probability are small with much lower probabilities outside of the areas of maxima.

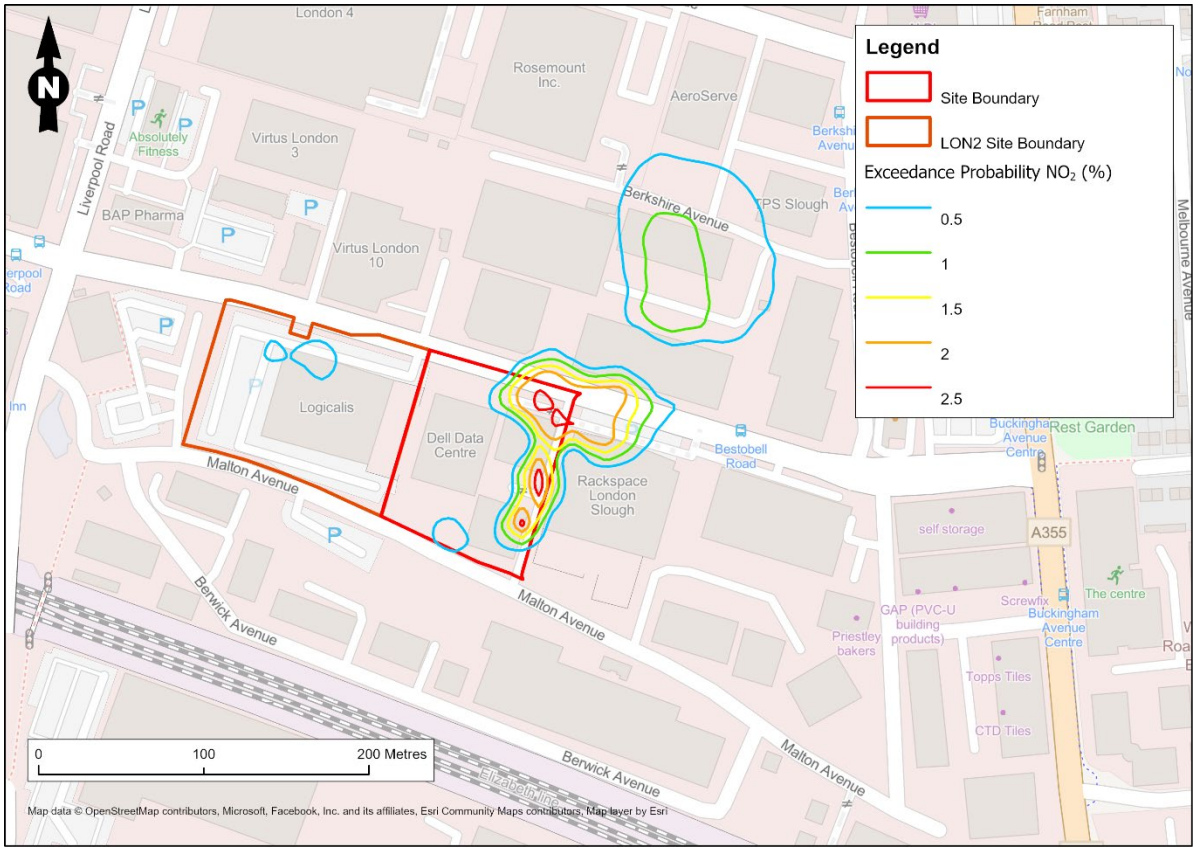


Figure 7-1: NO_2 probability of exceeding the 1 hour mean NO_2 objective for 72 hours of Operation

7.1.1.2 Annual Mean NO_2

The maximum PC for receptors relevant to the annual mean averaging period is shown in Table 7.2. The impacts have been factored to assume the emergency generators will run for 72 hours.

Table 7.2: Maximum Predicted Annual Mean NO_2 Concentrations (µg/m³)

Receptor	Height (m)	PC (µg/m³)	% Change relative to AQO	Background (µg/m³)	PEC (µg/m³)	PEC as % of EAL
R9	1.5	1.2	2.9	20.9	22.1	55.2
Grid Max (495870, 181050)*	0	7.4	18.5	20.9	28.3	70.8
Objective		**40**				-

*located on-site next to Lon-3-6

Figure 7-2 shows the maximum annual mean NO_2 concentrations during an emergency for 72 hours operation. The contours are the maximum PC from any of the five years of meteorological data modelled and are therefore do not represent the impacts from any one single year.

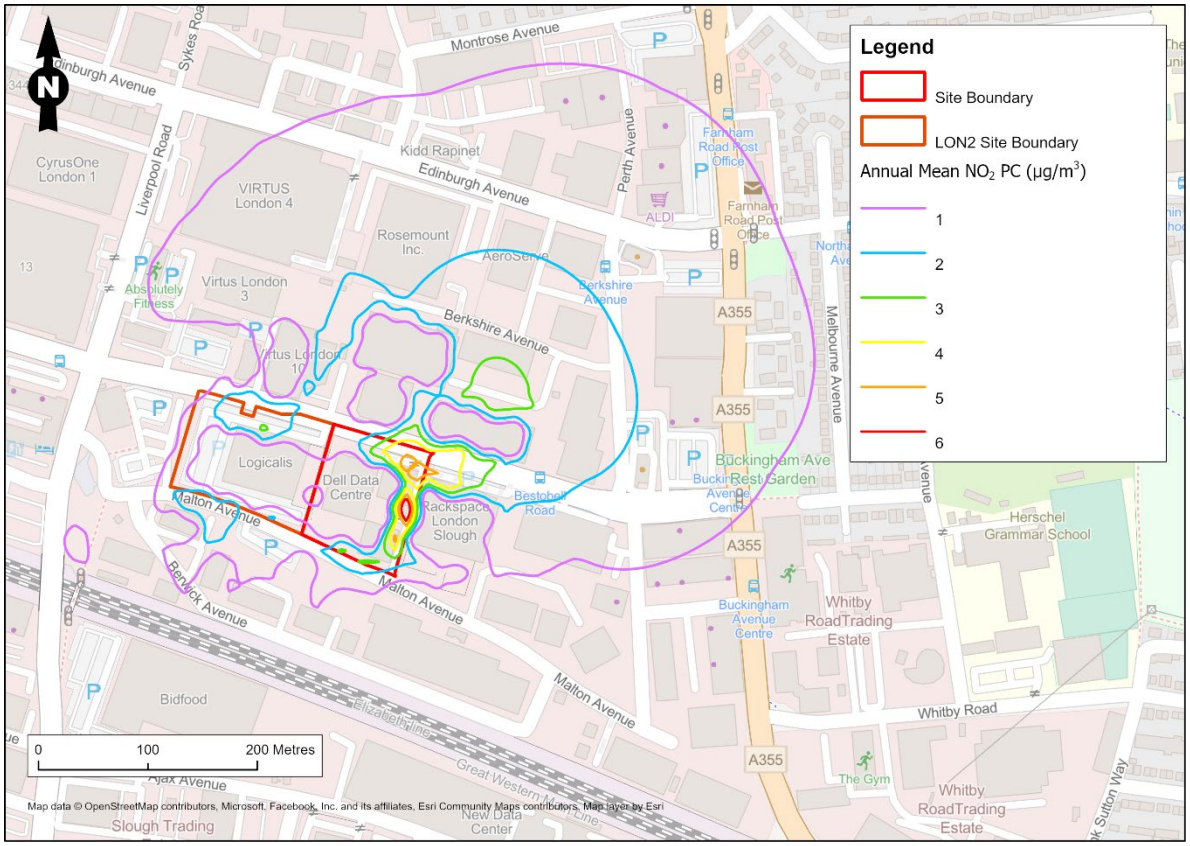


Figure 7-2: Annual Mean NO_2 Process Contribution for 72 hour operation

7.1.1.3 100%ile Hourly Mean NO_2

Table 7.3 shows the largest predicted 100%ile hourly mean NO_2 PC concentrations during the emergency scenario in relation to the AEGL. Full results shown in Appendix E.

Table 7.3: Maximum Predicted 100%ile NO_2 Concentrations for Emergency Operation (µg/m³)

Receptor	10 minute average		1 hour average	
	µg/m³	AEGL	µg/m³	AEGL
R5	640	Below AEGL-1	-	-
AR2	-	-	571	Below AEGL-1
Grid Max (496010, 181020)*	1,774	Below AEGL-2	1,718	Below AEGL-2

*located off-site adjacent to the northern part of the site

The maximum predicted concentration at an offsite receptor is just above the DAQI index 10 value for a 10-minute average and a value of 9 for an hourly average. The grid maximum is below twice the AEGL-1 value.

Figure 7-3 shows the predicted 100%ile hourly mean NO_2 concentration during emergency scenario. The contours are the maximum results from any of the five years of meteorological data modelled and are therefore do not represent the impacts from any one single year.

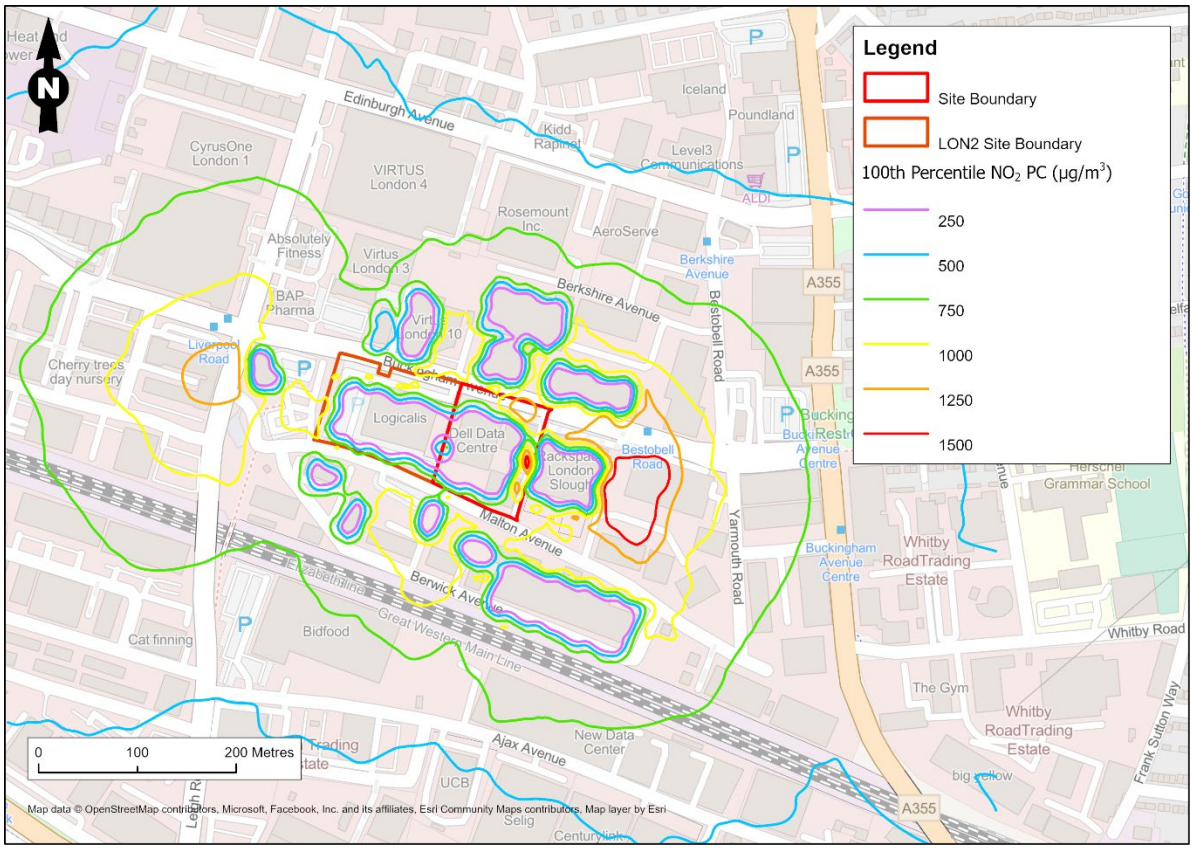


Figure 7-3: 100th Percentile NO_2 PC concentrations for Emergency scenario

The maximum predicted concentration occur immediately east of the Lon-3 building as well as east of the Rackspace London Sough building. The assessed receptor locations all have concentrations less than AEGL-1.

7.1.1.4 PM_{10} Daily Mean

The maximum daily mean 90.41%ile PC at modelled receptor locations where the PC is greater than 10% for any of the 5 years of meteorological data are presented in Table 7.4 for the emergency operation. Full results shown in Appendix E.

Table 7.4: Worst Case Daily 90.41st percentile PM_{10} Concentrations

Receptor	EAL µg/m³	Background Concentration µg/m³	PC µg/m³	PC as % of the EAL	PEC	PEC as % of Objective
AR1	50	31.4	5.37	10.7	68.2	136.3
AR2	50	31.4	5.08	10.2	67.9	135.8
Grid Max (495870, 181050)*	50	31.4	9.03	18.9	72.3	144.5

*located on-site next to Lon-3-6

The maximum predicted daily mean PM_{10} PC is more than 10% of the EAL at two receptor locations. The maximum predicted PEC at receptor locations is less than 74% of the EAL and is dominated by the assumed background concentration.

7.1.1.5 SO_2 15-minute Mean

The maximum 15-minute mean 99.90%ile PC at modelled receptors for any of the 5 years of meteorological data are presented in Table 7.5 for the emergency operation. Full results shown in Appendix E.

Table 7.5: Maximum 15-minute 99.90%ile SO_2 Concentrations

Receptor	EAL µg/m³	PC µg/m³	PC as % of the EAL
R2	266	2.41	0.90
Grid Max (496010, 181020)*	266	2.95	1.11

*located off-site adjacent to the northern part of the site

The maximum 15-minute PC is less than 10% of the EAL, no further consideration of the PEC is required.

7.1.1.6 SO_2 Hourly Mean

The maximum hourly mean 99.73%ile PC at modelled receptors for any of the 5 years of meteorological data are presented in Table 7.6 for the emergency operation. Full results shown in Appendix E.

Table 7.6: Maximum Hourly Mean 99.73%ile SO_2 Concentrations

Receptor	EAL µg/m³	PC µg/m³	PC as % of the EAL
AR2	350	2.29	0.01
Grid Max (496000, 181000)*	350	2.73	0.01

*located off-site adjacent to the northern part of the site

The maximum hourly mean SO_2 PC is less than 10% of the EAL, no further consideration of the PEC is required.

7.1.1.7 SO_2 Daily Mean

The maximum daily mean 99.18%ile PC at modelled receptors for any of the 5 years of meteorological data are presented in **Error! Reference source not found.** 7.7 for the emergency operation. Full results shown in Appendix E.

Table 7.7: Maximum Daily Mean 99.18%ile SO_2 Concentrations

Receptor	EAL µg/m³	PC µg/m³	PC as % of the EAL
AR2	125	1.69	1.35

Receptor	EAL µg/m³	PC µg/m³	PC as % of the EAL
Grid Max (496010, 181050)*	125	1.88	1.50

*located off-site adjacent to the northern part of the site

The maximum daily mean SO_2 PC is less than 10% of the EAL, no further consideration of the PEC is required.

7.1.1.8 CO 8-hour Mean

The maximum 8-hour running mean PC at modelled receptors from any of the 5 years of meteorological data are presented in Table 7.8 for the emergency operation. Full results shown in Appendix E.

Table 7.8: Maximum 8-hour 100th percentile CO Concentrations

Receptor	EAL µg/m³	PC µg/m³	PC as % of the EAL
R2	10,000	186	1.86
Grid Max (495870, 181080)*	10,000	294	2.94

*located on-site next to Admin Generator

The maximum 8-hour running mean CO mean is less than 10% of the EAL, no further consideration of the PEC is required.

7.1.1.9 CO Hourly Mean

The maximum daily mean PC at modelled receptors from any of the 5 years of meteorological data are presented in Table 7.9 for the emergency operation. Full results shown in Appendix E.

Table 7.9: Worst Case Hourly 100th percentile CO Concentrations

Receptor	EAL µg/m³	PC µg/m³	PC as % of the EAL
R2	30,000	208	0.69
Grid Max (495870, 181080)*	30,000	388	1.29

*located on-site next to Admin Generator

The maximum hourly mean PC is less than 10% of the EAL, no further consideration of the PEC is required.

7.1.2 Ecological Receptors

7.1.2.1 Annual Mean NO_x

Predicted NO_x concentrations within the ecological receptors are shown in Table 7.10. The predicted concentrations assume that all the emergency generators operate for a period of 72 hours.

Table 7.10: Predicted Annual Mean NO_x Concentrations (µg/m³)

Receptor	Critical Level (µg/m³)	PC (µg/m³)	PC % of Critical Level
Southwest London Waterbodies SPA/Ramsar	30	0.02	0.1%
Windsor Forest and Great Park SAC	30	0.03	0.1%
Burnham Beeches SAC	30	0.05	0.2%
Haymill Valley LNR/LWS	30	0.09	0.3%
Cocksherd Wood LNR/LWS	30	0.08	0.3%
Railway Triangle LWS	30	0.15	0.5%

The maximum predicted NO_x PCs at all the assessed ecological sites is below 1% or 100% of the critical level for designated/non-designated sites.

7.1.2.2 Daily Mean NO_x

Predicted daily mean NO_x concentrations at the ecological receptors are shown in Table 7.11.

Table 7.11: Predicted Daily Mean NO_x Concentrations (µg/m³)

Receptor	Critical Level (µg/m³)	PC (µg/m³)	PC % of Critical Level	PEC (µg/m³)	PEC % of Critical Level
Southwest London Waterbodies SPA/Ramsar	200	37.1	18.5%	74.2	37%
Windsor Forest and Great Park SAC	200	65.4	32.7%	96.3	48%
Burnham Beeches SAC	200	83.6	41.8%	114.3	57%
Haymill Valley LNR/LWS	200	169.7	84.9%	-	-
Cocksherd Wood LNR/LWS	200	131.1	65.5%	-	-
Railway Triangle LWS	200	207.9	103.9%	266.4	133%

The maximum predicted NO_x PCs at all the designated ecological sites exceeds 10% of the critical level, therefore the PEC was considered. The PEC at designated sites is less than 70% of critical level.

The maximum predicted PC is predicted to exceed 100% at the Railway Triangle LWS. The modelling assumes that the emergency scenario occurs all year round to predict the daily mean concentration. This concentration is unlikely to occur in reality as operation would be for less than 72 hours in a year.

7.1.2.3 Nitrogen Deposition

Predicted nitrogen deposition for the assessed ecological sites is shown in Table 7.12.

Table 7.12: Predicted Nitrogen Deposition for Habitats during the Emergency Scenario

Site	Nitrogen Depositon (kgN/ha/ yr)		PC % of Critical Load
	Critical Load	PC	
Southwest London Waterbodies SPA/Ramsar	5	0.005	0.05%
Windsor Forest and Great Park SAC	10	0.007	0.07%
Burnham Beeches SAC	10	0.011	0.11%
Haymill Valley LNR/LWS	10	0.009	0.18%
Cocksherd Wood LNR/LWS	10	0.016	0.16%
Railway Triangle LWS	10	0.030	0.30%

The maximum contribution to nitrogen deposition does not exceed 1% of the critical load for any of the assessed ecological sites and is therefore not significant.

7.1.2.4 Acid Deposition

Predicted acid deposition for the assessed ecological receptors is shown in Table 7.13.

Table 7.13: Predicted Acid Deposition for Habitats during the Emergency Scenario

Site	Acidity Critical Load (keq/ha/yr)		Acid Deposition PC (keq/ha/yr)	PC (% Critical Load)
	N	S		
Southwest London Waterbodies SPA/Ramsar	0.95	0.18	0.0003	0.02%
Windsor Forest and Great Park SAC	1.65	0.18	0.0005	0.02%
Burnham Beeches SAC	1.76	0.21	0.0008	0.05%
Haymill Valley LNR/LWS	1.74	0.22	0.0006	0.01%
Cocksherd Wood LNR/LWS	1.76	0.23	0.0011	0.11%
Railway Triangle LWS	1.72	0.21	0.0022	0.11%

The maximum predicted acid deposition is below 1% of the critical load function at all assessed habitats, and therefore no further consideration needs to be given.

7.2 Testing

This section contains the results of the modelled testing scenario. The impacts of the testing of the Lon-3 admin generator are contained in this section, combined with those of Lon-2. The impacts of testing the Lon-3 admin generator alone will be lower than presented in this section.

7.2.1 Human Health Receptors

7.2.1.1 Annual Mean NO_2

The maximum PC for receptors relevant to the annual mean averaging period is shown for each testing scenario in Table 7.14.

Table 7.14: Predicted Annual Mean NO_2 Concentrations (µg/m³)

Scenario	Receptor	PC (µg/m³)	% Change relative to AQO	Background (µg/m³)	PEC (µg/m³)	PEC as % of EAL
Lon-2 and Lon-3 North	R3	0.42	1.0	20.9	21.3	53.3
	Max Grid (495870, 181050)*	1.66	4.1	20.9	22.6	56.4
Lon-2 and Lon-3 South	R1_3	0.39	0.98	20.9	21.3	53.2
	Max Grid (495860, 181020)*	2.03	5.1	20.9	22.9	57.3
Lon-2 North and Lon-3 admin	R1_3	0.03	0.07	20.9	20.9	52.3
	Max Grid (495870, 181080)*	0.66	1.7	20.9	21.6	53.9
Objective		**40 µg/m³**				-

*located on-site next to Lon-3-6

Table 7.14 shows that the maximum annual mean PECs are less than 70% of the EAL at any of the human health receptors.

7.2.1.2 100th Percentile Hourly Mean NO_2

Table 7.15 shows the predicted 100%ile hourly mean NO_2 concentrations during testing in relation to the EAL of 200µg/m³ and the probability of exceeding for 636 testing hours for the main generators and 57 hours for the admin generator. Full results are shown in Appendix E.

Table 7.15: Predicted 100th percentile NO_2 Concentrations (µg/m³)

Scenario	Receptor	1 hour average				
		PC µg/m³	PC % EAL	PC % exceeding	PEC µg/m³	PEC % EAL
Lon-2 and Lon-3 North	AR3	53.8	26.9	0.0%	95.6	47.8
	Max Grid (495900, 181140)*	208	104	0.0%	249.8	124.9
Lon-2 and Lon-3 South	R3	43.6	21.8	0.0%	85.4	42.7
	Max Grid (495850, 180940)**	359	180	0.0%	408.8	200.4
Lon-2 North and Lon-3 admin	AR8, AR9	158	79	0.0%	200	100
	Max Grid (495870, 181080)***	1,291	646	0.0%	1,333	667

*located off-site to the northeast of Lon-3

**located off-site to the south of Lon-3

***located on-site north of the admin generator

The maximum predicted PCs during testing occur from the combination of the Lon-3 admin generator and Lon-2; but are related to the emissions from the Lon-3 admin generator given the location of the point of maxima on the Lon-3 site.

The maximum PC at any receptor is a DAQI index value of between 1 and 3. The maximum grid PC is on-site and less than twice the AEGL-1 value. Based on a total testing hours of 636 for the main generators on Lon-3 or 57 hours for the admin generator there is a zero percent probability of exceeding the hourly mean objective.

7.2.1.3 PM_{10} Daily Mean

The maximum daily mean 90.41%ile PC at modelled receptors from any of the 5 years of meteorological data are presented in Table 7.16 for the testing scenarios. Full results shown in Appendix E.

Table 7.16: Maximum Daily Mean 90.41%ile PM_{10} Concentrations

Scenario	Receptor	Background Concentration µg/m³	PC µg/m³	PC as % of the EAL
Lon-2 and Lon-3 North	AR1	15.7	0.22	0.43
	Max Grid (495790, 181170)*	15.7	0.27	0.53
	AR3	15.7	0.25	0.50

Scenario	Receptor	Background Concentration µg/m³	PC µg/m³	PC as % of the EAL
Lon-2 and Lon-3 South	Max Grid (495700, 181050)*	15.7	0.26	0.51
Lon-2 North and Lon-3 admin	AR3	15.7	0.36	0.71
	Max Grid (495870, 181080)*	15.7	2.82	5.65
Objective		**50 µg/m³**		

*located off-site adjacent to the northern part of the site

The maximum daily mean PM_{10} PC is less than 10% of the EAL, no further consideration of the PEC is required.

The impact on annual mean NO_2 concentration is described as not significant at all relevant receptors.

7.2.2 Ecological Receptors

7.2.2.1 Annual Mean NO_x

Predicted NO_x concentrations within the ecological receptors are shown in Table 7.17. The modelling assumes that each generator will be tested for 2-hours per month over the course of a year.

Table 7.17: Testing Ecological Receptors Predicted Annual Mean NO_x Concentrations (µg/m³)

Scenario	Receptor	Critical Level (µg/m³)	PC (µg/m³)	PC % of Critical Level
Lon-2 and Lon-3 North	Southwest London Waterbodies SPA/Ramsar	30	0.005	0.02%
	Windsor Forest and Great Park SAC	30	0.005	0.02%
	Burnham Beeches SAC	30	0.011	0.04%
	Haymill Valley LNR/LWS	30	0.027	0.09%
	Cocksherd Wood LNR/LWS	30	0.020	0.07%
	Railway Triangle LWS	30	0.038	0.12%
Lon-2 and Lon-3 South	Southwest London Waterbodies SPA/Ramsar	30	0.005	0.02%
	Windsor Forest and Great Park SAC	30	0.005	0.02%

Scenario	Receptor	Critical Level (µg/m³)	PC (µg/m³)	PC % of Critical Level
	Burnham Beeches SAC	30	0.010	0.03%
	Haymill Valley LNR/LWS	30	0.023	0.08%
	Cocksherd Wood LNR/LWS	30	0.017	0.06%
	Railway Triangle LWS	30	0.035	0.12%
Lon-2 North and Lon-3 admin	Southwest London Waterbodies SPA/Ramsar	30	0.000	0.00%
	Windsor Forest and Great Park SAC	30	0.000	0.00%
	Burnham Beeches SAC	30	0.001	0.00%
	Haymill Valley LNR/LWS	30	0.001	0.00%
	Cocksherd Wood LNR/LWS	30	0.001	0.00%
	Railway Triangle LWS	30	0.002	0.01%

The maximum predicted NO_x PCs are all less than 1% of the critical level.

7.2.2.2 Daily Mean NO_x

Predicted daily mean NO_x concentrations at the ecological receptors are shown in Table 7.18.

Table 7.18: Predicted Daily Mean NO_x Concentrations (µg/m³)

Scenario	Receptor	Critical Level (µg/m³)	PC (µg/m³)	PC % of Critical Level
Lon-2 and Lon-3 North	Southwest London Waterbodies SPA/Ramsar	200	1.55	0.8%
	Windsor Forest and Great Park SAC	200	1.99	1.0%
	Burnham Beeches SAC	200	3.13	1.6%
	Haymill Valley LNR/LWS	200	7.26	3.6%
	Cocksherd Wood LNR/LWS	200	5.64	2.8%
	Railway Triangle LWS	200	8.11	4.1%
Lon-2 and Lon-3 South	Southwest London Waterbodies SPA/Ramsar	200	1.57	0.8%
	Windsor Forest and Great Park SAC	200	2.01	1.0%

Scenario	Receptor	Critical Level (µg/m³)	PC (µg/m³)	PC % of Critical Level
	Burnham Beeches SAC	200	3.12	1.6%
	Haymill Valley LNR/LWS	200	7.66	3.8%
	Cocksherd Wood LNR/LWS	200	5.00	2.5%
	Railway Triangle LWS	200	8.44	4.2%
Lon-2 North and Lon-3 admin	Southwest London Waterbodies SPA/Ramsar	200	0.86	0.4%
	Windsor Forest and Great Park SAC	200	1.13	0.6%
	Burnham Beeches SAC	200	1.77	0.9%
	Haymill Valley LNR/LWS	200	4.37	2.2%
	Cocksherd Wood LNR/LWS	200	3.09	1.5%
	Railway Triangle LWS	200	5.08	2.5%

The maximum predicted NO_x PCs do not exceed 10% of the critical level at any of the ecological sites, no further consideration of the PEC is required.

7.2.2.3 Nitrogen Deposition

Predicted nitrogen deposition for the assessed ecological receptors is shown in Table 7.19.

Table 7.19: Predicted Nitrogen Deposition for Habitats during the Testing Scenario

Scenario	Site	Nitrogen Depositon (kgN/ha/ yr)		PC % of Critical Load
		Critical Load	PC	
Lon-2 and Lon-3 North	Southwest London Waterbodies SPA/Ramsar	5	0.0005	0.01%
	Windsor Forest and Great Park SAC	10	0.0010	0.01%
	Burnham Beeches SAC	10	0.0022	0.02%
	Haymill Valley LNR/LWS	10	0.0054	0.05%
	Cocksherd Wood LNR/LWS	10	0.0041	0.04%
	Railway Triangle LWS	10	0.0077	0.08%

Scenario	Site	Nitrogen Depositon (kgN/ha/ yr)		PC % of Critical Load
		Critical Load	PC	
Lon-2 and Lon-3 South	Southwest London Waterbodies SPA/Ramsar	5	0.0005	0.01%
	Windsor Forest and Great Park SAC	10	0.0010	0.01%
	Burnham Beeches SAC	10	0.0023	0.02%
	Haymill Valley LNR/LWS	10	0.0051	0.05%
	Cocksherd Wood LNR/LWS	10	0.0039	0.04%
	Railway Triangle LWS	10	0.0078	0.08%
Lon-2 North and Lon-3 admin	Southwest London Waterbodies SPA/Ramsar	5	0.0000	0.0%
	Windsor Forest and Great Park SAC	10	0.0001	0.0%
	Burnham Beeches SAC	10	0.0001	0.0%
	Haymill Valley LNR/LWS	10	0.0003	0.0%
	Cocksherd Wood LNR/LWS	10	0.0002	0.0%
	Railway Triangle LWS	10	0.0004	0.0%

The maximum contribution to nitrogen deposition does not exceed 1% of the critical load for any of the assessed ecological sites and is therefore not significant.

7.2.2.4 Acid Deposition

Predicted acid deposition for the assessed ecological receptors is shown in Table 7.20.

Table 7.20: Predicted Acid Deposition for Habitats during the Testing Scenario

Scenario	Site	Acidity Critical Load (keq/ha/yr)		PC (keq/ha/yr)	PC (% Critical Load)
		N	S	NO_2	
Lon-2 and Lon-3 North	Southwest London Waterbodies SPA/Ramsar	0.95	0.18	0.00003	0.00%
	Windsor Forest and Great Park SAC	1.65	0.18	0.00007	0.01%
	Burnham Beeches SAC	1.76	0.21	0.00016	0.01%

Scenario	Site	Acidity Critical Load (keq/ha/yr)		PC (keq/ha/yr)	PC (% Critical Load)
		N	S	NO_2	
	Haymill Valley LNR/LWS	1.74	0.22	0.00038	0.01%
	Cocksherd Wood LNR/LWS	1.76	0.23	0.00029	0.01%
	Railway Triangle LWS	1.72	0.21	0.00055	0.03%
Lon-2 and Lon-3 South	Southwest London Waterbodies SPA/Ramsar	0.95	0.18	0.00003	0.001%
	Windsor Forest and Great Park SAC	1.65	0.18	0.00007	0.007%
	Burnham Beeches SAC	1.76	0.21	0.00016	0.008%
	Haymill Valley LNR/LWS	1.74	0.22	0.00037	0.014%
	Cocksherd Wood LNR/LWS	1.76	0.23	0.00028	0.014%
	Railway Triangle LWS	1.72	0.21	0.00056	0.033%
Lon-2 North and Lon-3 admin	Southwest London Waterbodies SPA/Ramsar	0.95	0.18	0.00000	0.000%
	Windsor Forest and Great Park SAC	1.65	0.18	0.00000	0.000%
	Burnham Beeches SAC	1.76	0.21	0.00001	0.000%
	Haymill Valley LNR/LWS	1.74	0.22	0.00002	0.001%
	Cocksherd Wood LNR/LWS	1.76	0.23	0.00002	0.001%
	Railway Triangle LWS	1.72	0.21	0.00003	0.002%

The maximum predicted acid deposition is below 1% of the critical load function at all assessed habitats, and therefore no further consideration needs to be given.

8. CONCLUSIONS

An assessment of the impacts of the emissions from the emergency generators at Lon-3 has been undertaken. The assessment has considered the operation of Lon-3 alone and in combination with the adjacent data centre, Lon-2.

In an emergency scenario the emergency Lon-3 generators can operate up to 62 hours per year in isolation or up to 57 hours per year in combination with Lon-2, with a 1% probability of exceeding the short term NO_2 objective, or for 72 hours per year in isolation with a 5% probability of exceeding the short term NO_2 objective. Predicted impacts for these operating hours are not significant.

Impacts during testing are lower than in an emergency scenario and are also not significant.

APPENDIX A
GLOSSARY

Abbreviations	Meaning
AAQMS	Automatic Air Quality Monitoring Stations
ADMS	Air Dispersion Modelling System
AEGL	Acute Exposure Guideline Levels
APIS	Air Pollution Information System
AQMA	Air Quality Management Area
CO	Carbon monoxide
DAQI	Daily Air Quality Index
Defra	Department for Environment, Food and Rural Affairs
Diffusion Tube	A passive sampler used for collecting NO_2 in the air
EA	Environmental Agency
EAL	Environmental Assessment Level
IAQM	Institute of Air Quality Management
LAQM	Local Air Quality Management
LNR	Local Nature Reserve
LWS	Local Wildlife Site
AQO	National Air Quality Objective as set out in the Air Quality Strategy and the Air Quality Regulations
NH_3	Ammonia
NO_2	Nitrogen Dioxide
NO_x	Nitrogen oxides, generally considered to be nitric oxide and NO_2
PC	Process Contribution
PEC	Predicted Environmental Concentration
$PM_{10}/PM_{2.5}$	Small airborne particles less than 10/2.5 microns in aerodynamic diameter
Receptor	A location where the effects of pollution may occur
SBC	Slough Borough Council
SSSI	Site of Special Scientific Interest
SO_2	Sulphur dioxide
SPA/SAC	Special Protection Areas (SPAs) and Special Areas of Conservation (SAC)

APPENDIX B
GENERATOR TECHNICAL DATA

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Contents

	Genset	Marine	O & G	Rail	C & I
Application	X				
Engine model	20V4000G94LF				
Rated power [kW]	3308				
Rated speed [rpm]	1500				
Application Group	3D				
Legislative body	NEA Singapore for ORDE				
Test cycle	D2				
Data Set No.	XZ54954100068				
Data Set Basis	NEA Singapore for ORDE				
Fuel sulphur content [ppm]	7				

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Cycle information for NEA Singapore for ORDE 7

PDF	Name	Project no. 0	Size A4
Configurator	Lenhof, Torsten (TATP)	Order no. 0	
Approver1	Kneffel, Alexander (TSLE)	EDS-ID	
Approver2	Breuer, Joerg (TVA)	841-01.11.2021	
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Approver4			
User	FN200042812		

Engine model: 20V4000G94LF

Title: Emission data sheet

Description of Revision	Frequency
Data generated by EDS Creator version 1.0 and unipot. Ref.-dataset: 420122_364_NEA_G94LF_D2.nc for 295 in EDS platform.	

Emissionstage: NEA Singapore for ORDE

Sheet: 1 of 7

Configuration-ID	Documentation
295	AVK - Project request

Emissionstage basis: NEA Singapore for ORDE

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General Disclaimers (valid for Measured and NTE values)

Please note that these data are physical and/or technical values only referring to and representing a normative defined operating condition. Any change in operating time and conditions will have impact on physical values and engine behavior, which must be considered and assessed within the complete propulsion system especially in regard to emission compliance and product safety.

Measurements listed in this EDS are representative of the listed engine rating at the time of testing. These measurements and results can change according to instrumentation, boundary condition, and engine to engine variability. In addition - changes to the engine family hard or software may occur which could result in changes to some of the listed values.

Emissions data measurement procedures are conducted according to applicable rules and standards as per "Emission Stage/Optimization". Potential deviations from these procedures are documented internally.

The listed emission values relate to the corresponding certification data. Seller doesn't take any responsibility or liability neither out or in connection with the contract nor on any other basis
- beyond these specified operating conditions of the engine
- and for any installation/modification of the entire propulsion system by the customer itself or any third party
and the customer will indemnify MTU on first demand for any third party claim out or in connection with this.

Seller reserves the right to amend specifications and information without notice and without obligation or liability. No liability for any errors, facts or opinions is accepted. Customers must satisfy themselves as to the suitability of this product for their application. No responsibility for any loss as a result of any person placing reliance on any material contained in this data sheet will be accepted.

Seller reserves all rights in the information contained in this data sheet. It shall not be reproduced, made available to a third party or otherwise used in any way whatsoever.

When applicable, emission values are measured after combined exhaust streams.

Measured Emissions data is based on single operating points and thus cannot be used to compare to regulations which use values based on a weighted cycle.

Field emission test data are not guaranteed to these levels. Actual field test results may vary due to test site conditions, installation, fuel specification, test procedures, and instrumentation. Over time deterioration may occur which may have an impact on emission levels.

The SO2 emission rates comprehend exclusively the SO2 content as found in the fuel source, oil consumption effects are not included. Variation of sulfur content in the fuel changes only the stated SO2 emissions, cross sensitivity to other emissions (e.g. particulates) is not possible.

All values based on metric units, inaccuracies for non metric values can occur, values are not binding.

Specific to gas engines: The listed emission values are based on gas composition at the time of certification measurement. Gas composition is as displayed in the EDS-document. Carbon dioxide and methane concentrations have direct influence on the corresponding displayed carbon dioxide and methane emissions.

EAT Specific Disclaimers (valid for EDS values)

NH3 emissions levels measured with AVL SESAM i60/ 4 FT Multi Component Exhaust Measurement System (FTIR) including EPA 40 CFR 1065 legislation compliant automated checks for linearity.
Generators or engines with exhaust after-treatment systems require a stabilization period of approximately 1 hour to ensure stable temperatures across SCR prior to performing an emissions test. Performing emissions measurements before a stable temperature has been achieved can result in inconsistent emission values. NOx Values only applicable if temperatures across SCR reached for DEF Dosing.

NTE Disclaimers (valid for NTE calculated values)

Calculated not to exceed values (NTE) are not proven by tests and therefore the accuracy is not guaranteed.

All emission data shown in chapters Emission Data Sheet, Not to Exceed Values, and Type Approval were gathered from a corresponding certification engine under test conditions shown above and complying to corresponding TEN data.

		PDF	Name	Project no. 0	Size A4
		Configurator	Lenhof, Torsten (TATP)	Order no. 0	
		Approver1	Kneifel, Alexander (TSLE)	EDS-ID	
		Approver2	Breuer, Joerg (TVA)	841-01.11.2021	
		Approver3			
		Approver4			
Description of Revision	Frequency	User	FN2000042812		
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		Emissionstage NEA Singapore for ORDE			Sheet 2
Configuration-ID 295	Documentation AVK - Project request	Emissionstage basis NEA Singapore for ORDE			of 7

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Engine data

	Genset	Marine	O & G	Rail	C & I
Application	X				
Engine model	20V4000G94LF				
Application Group	3D				
Legislative body	NEA Singapore for ORDE				
Test cycle	D2				
Fuel sulphur content [ppm]	7				
mg/mN³ values base on residual oxygen value of [%]	5				

Engine raw emissions*

Cycle point	[-]	n1	n2	n3	n4	n5
Power	kW	3307	2480	1653	827	331
Power relative	[-]	1	0.75	0.5	0.25	0.1
Engine speed	1/min	1500	1499	1499	1500	1499
Engine speed relative	[-]	1	1	1	1	1
Filter smoke number	Bosch	0.2	0.23	0.62	0.97	0.07
Exhaust temperature after ETC	grdC	474.5	420.2	420.8	386.2	264
Exhaust back pressure after ETC (static)	mbar	39	23	9	6	2
Exhaust back pressure after ETC (total)	mbar	52	32	14	5	0
Exhaust mass flow wet	kg/h	19195.7	15929.6	12082.7	7484.8	5323.4
NOX-Emissions specific	g/kWh	6.6	5.94	4.79	4.41	9.06
SO2-Emissions specific	g/kWh	0.003	0.003	0.003	0.003	0.004
CO-Emissions specific	g/kWh	0.32	0.39	1.02	1.45	2.79
HC1-Emissions specific	g/kWh	0.05	0.07	0.09	0.16	0.72
NMHC-Emissions specific	g/kWh	0.05	0.06	0.08	0.16	0.71

PDF	Name	Project no. 0	Size A4
Configurator	Lenhof, Torsten (TATP)	Order no. 0	
Approver1	Kneffel, Alexander (TSLE)	EDS-ID	
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Approver4			
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Engine model: 20V4000G94LF

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Emissionstage: NEA Singapore for ORDE

Sheet: 3 of 7

Configuration-ID	Documentation	Emissionstage basis
295	AVK - Project request	NEA Singapore for ORDE

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NOX+HC1-Emissions specific	g/kWh	6.65	6.01	4.88	4.57	9.78
NOX+NMHC-Emissions specific	g/kWh	6.65	6.01	4.88	4.57	9.76
CO2-Emissions specific	g/kWh	645.7	632.1	669.3	721.6	844.5
PM-Emissions specific (Meas.)	g/kWh	0.02	0.029	0.098	0.178	0.052
NOX-Emissions (based on 5% O2)	mg/m3N	2362	2172	1639	1375	2411
NOX+HC1-Emissions (based on 5% O2)	mg/m3N	2381	2195	1668	1426	2598
NOX+NMHC-Emissions (based on 5% O2)	mg/m3N	2381	2195	1667	1425	2594
CO2-Emissions (based on 5% O2)	mg/m3N	223605	223062	222523	222036	219217
CO-Emissions (based on 5% O2)	mg/m3N	111.4	138.5	339.2	444.6	723
HC1-Emissions (based on 5% O2)	mg/m3N	18.5	23.1	28.8	50.4	186.9
SO2-Emissions (based on 5% O2)	mg/m3N	1	1	1	1	1
PM-Emissions (calculated) (based on 5% O2)	mg/m3N	16.9	20	34.2	52.1	31.8
PM-Emissions (based on 5% O2)	mg/m3N	6.9	10.3	32.7	54.6	13.5
Oxygen (O2)	%	9.9	11.2	11.9	13.1	15.8

PDF	Name	Project no. 0	Size A4
Configurator	Lenhof, Torsten (TATP)	Order no. 0	
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User	FN2000402812		

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Title: Emission data sheet

Description of Revision	Frequency
Data generated by EDS Creator version 1.0 and uniplot. Ref.-dataset: 420122_364_NEA_G94LF_D2.nc for 295 in EDS platform.	

Emissionstage: NEA Singapore for ORDE

Sheet: 4 of 7

Configuration-ID	Documentation	Emissionstage basis
295	AVK - Project request	NEA Singapore for ORDE

A Rolls-Royce solution

Engine data

	Genset	Marine	O & G	Rail	C & I
Application	X				
Engine model	20V4000G94LF				
Application Group	3D				
Legislative body	NEA Singapore for ORDE				
Test cycle	D2				
Fuel sulphur content [ppm]	7				
mg/mN³ values base on residual oxygen value of [%]	5				

Not to exceed emission values*

Cycle point	[-]	n1	n2	n3	n4	n5
Power	kW	3307	2480	1653	827	331
Power relative	[-]	1	0.75	0.5	0.25	0.1
Engine speed	1/min	1500	1499	1499	1500	1499
Engine speed relative	[-]	1	1	1	1	1
NOX-Emissions specific	g/kWh	8.58	7.72	6.23	6.61	17.21
CO-Emissions specific	g/kWh	0.55	0.67	1.94	2.89	5.57
HC1-Emissions specific	g/kWh	0.09	0.11	0.16	0.33	2.09
NMHC-Emissions specific	g/kWh	0.09	0.11	0.16	0.32	
NOX+HC1-Emissions specific	g/kWh	8.67	7.84	6.39	6.94	19.3
NOX+NMHC-Emissions specific	g/kWh	8.67	7.83	6.39	6.93	
PM-Emissions specific (Meas.)	g/kWh	0.03	0.046	0.147	0.266	0.192
NOX-Emissions (based on 5% O2)	mg/m3N	3071	2824	2130	2063	4581
NOX+HC1-Emissions (based on 5% O2)	mg/m3N	3103	2863	2185	2164	5123
NOX+NMHC-Emissions (based on 5% O2)	mg/m3N	3102	2862	2184	2162	

PDF	Name	Project no. 0	Size A4
Configurator	Lenhof, Torsten (TATP)	Order no. 0	
Approver1	Kreißl, Alexander (TSLE)	EDS-ID	
Approver2	Breuer, Joerg (TVA)	841-01.11.2021	
Approver3			
Approver4			
User	FN2000042812		

Engine model: 20V4000G94LF

Title: Emission data sheet

Description of Revision	Frequency
Data generated by EDS Creator version 1.0 and uniplot. Ref.-dataset: 420122_364_NEA_G94LF_D2.nc for 295 in EDS platform.	

Emissionstage: NEA Singapore for ORDE

Sheet: 5 of 7

Configuration-ID	Documentation	Emissionstage basis
295	AVK - Project request	NEA Singapore for ORDE

CO-Emissions (based on 5% O2)	mg/m3N	189.4	235.5	644.5	889.1	1446
HC1-Emissions (based on 5% O2)	mg/m3N	31.5	39.2	54.7	100.8	542
PM-Emissions (based on 5% O2)	mg/m3N	10.4	16.4	49	81.9	49.8

PDF	Name	Project no. 0	Size A4
Configurator	Lenhof, Torsten (TATP)	Order no. 0	
Approver1	Knäfel, Alexander (TSLE)	EDS-ID 841-01.11.2021	
Approver2	Breuer, Joerg (TVA)		
Approver3			
Approver4			
User	FN2000403812		

Description of Revision	Frequency
Data generated by EDS Creator version 1.0 and uniplot. Ref.-dataset: 420122_364_NEA_G94LF_D2.nc for 295 in EDS platform.	

Engine model: 20V4000G94LF

Title: Emission data sheet

Emissionstage: NEA Singapore for ORDE

Sheet: 6 of 7

Configuration-ID	Documentation	Emissionstage basis
295	AVK - Project request	NEA Singapore for ORDE

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Cycle information for NEA Singapore for ORDE

	Genset	Marine	O & G	Rail	C & I
Application	X				

Engine model	20V4000G94LF
Serial-number	V122
Application Group	3D
Legislative body	NEA Singapore for ORDE
Test cycle	D2
Data Set No.	XZ54954100068
Test-Report-Number	841-01.11.2021
Test location	P126
Date of test	29.03.2017
Tester	MTU a Rolls-Royce Solution
Date of EDS	01.11.2021

Engine cycle emissions*

Emission	Unit	Cycle value	NEA Singapore for ORDE-Limit
CO cycle value	g/kWh	0.802	3.5
NOX+NMHC cycle value	g/kWh	5.567	6.4
Particulate (measurement) cycle value	g/kWh	0.074	0.2

PDF	Name	Project no. 0	Size A4
Configurator	Lenhof, Torsten (TATP)	Order no. 0	
Approver1	Kneffel, Alexander (TSLE)	EDS-ID	
Approver2	Breuer, Joerg (TVA)	841-01.11.2021	
Approver3			
Approver4			
User	FN200042812		

Engine model: 20V4000G94LF

Title: Emission data sheet

Description of Revision	Frequency
Data generated by EDS Creator version 1.0 and uniplot. Ref.-dataset: 420122_364_NEA_G94LF_D2.nc for 295 in EDS platfrom.	

Emissionstage: NEA Singapore for ORDE

Sheet: 7 of 7

Configuration-ID	Documentation	Emissionstage basis
295	AVK - Project request	NEA Singapore for ORDE

Lon-3 Main Generators Engine Emission Rates 100%, 50% and 25% ESP

Pollutant	**100% ESP**		**50% ESP**		**25% ESP**	
	g/s	**mg/Nm³ (5% O_2)**	**g/s**	**mg/Nm³ (5% O_2)**	**g/s**	**mg/Nm³ (5% O_2)**
NO_x	6.06	2,362	2.20	1,639	1.01	1,375
CO	0.29	115	0.47	339	0.33	445
PM	0.018	7.16	0.045	32.7	0.041	54.6
SO_2 (based on 10ppm S)	0.0039	1.53	0.0020	1.43	0.0010	1.31

Lon-3 Main Generators Emergency Weighted Emission Rates

Generators and Loading	**Pollutant (g/s)**			
	NO_x	**CO**	**PM**	**SO_2**
12 x 100%	72.8	3.53	0.22	0.047
2 x 50%	4.4	0.94	0.09	0.004
2 x 25%	2.0	0.67	0.08	0.002
Average Weighted	4.9	0.32	0.025	0.0033

Lon-2 Main Generators Engine Emission Rates 100%ESP

Pollutant	**100% ESP**	
	g/s	**mg/Nm³ (5% O_2)**
NO_x	5.6	2,364
CO	0.32	51
PM	0.03	4
SO_2 (based on 10ppm S)	0.0034	1.45

Lon-2 House Generators Engine Emission Rates 100% ESP

Pollutant	**g/s**	**mg/Nm³ (5% O_2)**
NO_x	1.31	1,787
CO	0.15	76.2

Pollutant	**g/s**	**mg/Nm^3 (5% O_2)**
PM	0.02	9.41
SO_2 (based on 10ppm S)	0.001	1.35

APPENDIX C
MODEL INPUTS AND RESULTS PROCESSING TOOLS

Table D.1: ADMS 6 Model inputs and data processing

Meteorological Data	2018 - 2022 Hourly meteorological data from London Heathrow has been used in the model. The wind rose is shown overleaf.
ADMS	ADMS 6, version 6.0.0.1
Latitude	51.52º
Surface Roughness	A value of 0.5 for Parkland/ Open Suburbia was used for the modelled area and 0.3 for agricultural areas was used for the meteorological station site.
Minimum Monin-Obukhov length	A value of 30 for Mixed Urban/Industrial was used to represent the modelled area and 100 for Large Conurbations was used for the meteorological station site
NO_x to NO_2 Conversion	0.7 for annual mean 0.35 for hourly mean at receptors more than 500m from the site boundary 0.15 for hourly mean at receptors less than 500m from the site boundary for a more representative short-term conversion factor (as recommended in EA Schedule 5 notice for Lon-2)[17]
Background Maps	2018 reference year background maps

Buildings

Table D.3: ADMS 6 buildings set up*

Name	X (m)	Y (m)	Height (m)	Length (m) / Diameter (m)	Width (m)	Angle (Degrees)
Gantry	495853	181085	20.813	23.1	78.52	106.65
Lon-2	495693	181124	21.65	110.5	61.02	106.68
Lon-3	495806	181099	23.36	52.41	78.16	106.68
Building003	495891	181065	12	68.56	61.89	105.66
Building004	495852	180944	18	148.94	55.26	110.25
Building005	495698	181003	12	17.07	34.9	110.87
Building006	495655	181042	12	39.36	19.35	110.56
Building007	495592	181148	9	24.8	36.56	77.51
Building008	495726	181192	10	15.19	33.23	104.02

[17] SLR, 2022. AWS Slough Data Centre Environmental Permit Application (EPR/PP3309MK/A001) – Schedule 5 Response. Ref: 410.11808.00001.

Name	X (m)	Y (m)	Height (m)	Length (m) / Diameter (m)	Width (m)	Angle (Degrees)
Building009	495758	181215	12	34.38	68.52	104.13
Building010	495812	180973	15	41.16	28.16	115.92
Building011	495775	181005	10	20.06	36.05	112.64
Building012	495837	181169	10	44.44	43.47	105.95
Building013	495904	181143	8	88.14	34.2	106.52
Building014	495907	181152	10	82.73	48.92	287.17

* Building layout shown in Figure 4-1.

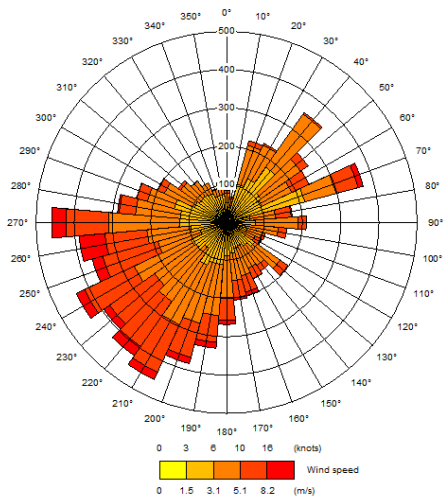
Name	X (m)	Y (m)
A13 PS1-2-1	495691.73	181117.59
A1 PS1-0-1	495691.15	181115.69
A7 PS1-1-1	495692.09	181115.47
A14 PS2-2-2	495689.62	181110.67
A2 PS2-0-1	495688.95	181108.7
A8 PS2-1-1	495689.98	181108.43
A20 GEN-20	495687.61	181103.68
A3 PSC1-0-1	495686.99	181101.75
A9 PSC2-1-1	495687.94	181101.42
A18 HP1-2	495686.49	181098.19
A19 HP2-2	495683.94	181089.9
A15 PS3-2-1	495681.56	181083.18
A4 PS3-0-1	495680.85	181081.25
A10 PS3-1-1	495681.97	181080.98
A16 PS4-2-1	495679.41	181076.18
A5 PS4-0-1	495678.87	181074.21
A11 PS4-1-1	495679.86	181073.99
A17 PS5-2-1	495677.35	181069.19
A6 PS5-0-1	495676.77	181067.22
A12 PS5-1-1	495677.75	181066.95
Lon3-1	495872.45	181073.93
Lon3-2	495871.39	181070.35
Lon3-3	495869.84	181065.09
Lon3-4	495868.78	181061.47
Lon3-5	495867.23	181056.2
Lon3-6	495866.22	181052.63
Lon3-7	495864.62	181047.36
Lon3-8	495863.61	181043.79
Lon3-9	495862.06	181038.52
Lon3-10	495860.95	181034.85

Lon3-11	495859.4	181029.58
Lon3-12	495858.39	181026.06
Lon3-13	495856.84	181020.84
Lon3-14	495855.73	181017.22
Lon3-15	495854.14	181011.9
Lon3-16	495853.17	181008.28
Office Generator	495876.66	181079.38

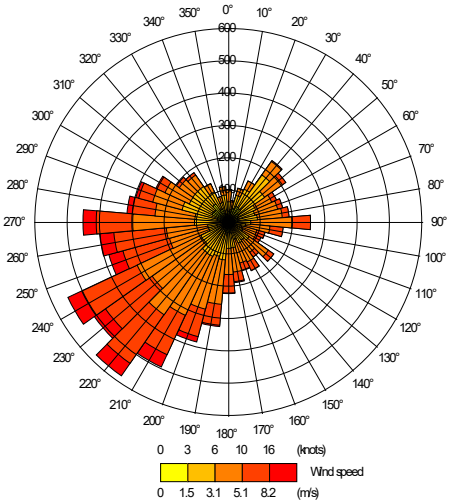
Figure C.2: ADMS Stack Locations

Heathrow Wind roses

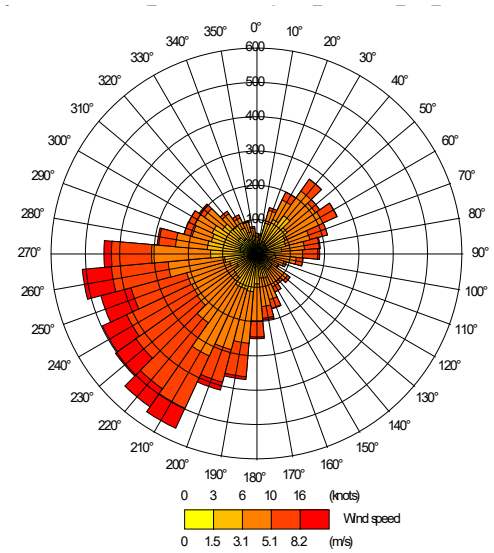
2018



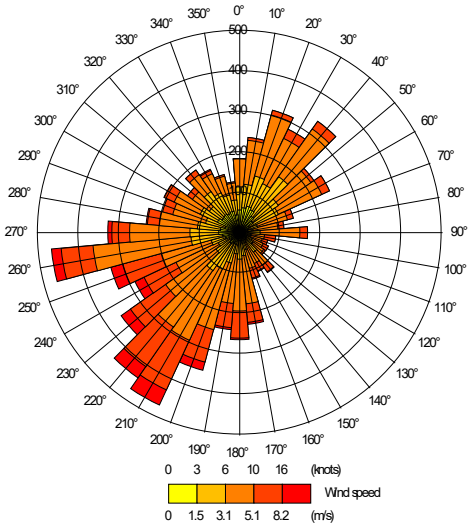
2019



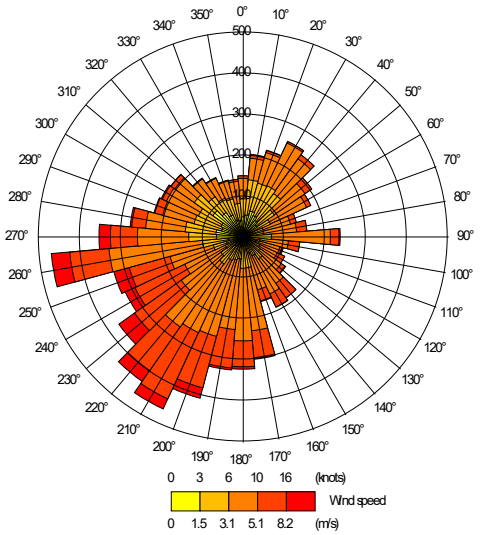
2020



2021



2022



APPENDIX D
HYPERGEOMETRIC DISTRIBUTION FUNCTION

Specified generators: air dispersion modelling example short term statistical analysis

The following text is taken from Environment Agency guidance as an illustration of the short term statistical analysis calculation:

The applicant applies for an environmental permit to operate:

- *an aggregated diesel specified generator site with a capacity of 40 MWth*
- *any time of the year for up to a maximum of 400 hours per year*

Operations are expected to last up to 4 hours when needed.

Therefore, the operating envelope is all 8760 hours in the year. There are 400 operational hours within the operating envelope.

Dispersion modelling over the full year shows that the Predicted Environmental Concentration (PEC) exceeds the hourly mean limit value of 200mg/m^3 for 300 hours at a sensitive receptor over the worst modelled meteorological year.

This gives:

- *400 operational hours - the sample size denoted by 'N'*
- *an 8760 hour operating envelope - the population size denoted by 'M'*
- *300 exceedance hours - or the number of failures in the population denoted by 'e'*
- *8460 non-exceedance hours - the number of successes in the population denoted by 'K', where K = M - e = 8760 - 300 = 8460*

The probability of randomly selecting 19 or more exceedance hours (failures) in 400 sample trials, is the same as selecting at most 'N' minus 19 non-exceedance hours (successes) in 400 sample trials (N - 19 = 400 - 19 = 381). So you can calculate the probability of an exceedance, 'P' by using the cumulative hypergeometric distribution.

$$P = \sum_{i=0}^{N-19} \frac{\binom{K}{i}\binom{M-K}{N-i}}{\binom{M}{N}}$$

Based on these data the cumulative hypergeometric distribution is 9.3%. As the continuous operations can be up to 4 hours, you multiply this probability by 2.5, giving a probability of exceedance of 23.25%. This indicates there is potential for an exceedance of the hourly standard.

The cumulative hypergeometric distribution calculates the probability to be less than 1.8% when there are 330 operational hours. Again multiplying this by the 2.5 factor gives a probability of 4.6%, indicating short term exceedances are unlikely.

Therefore we would propose to permit the generator and restrict the operational hours to 330 hours per year.

APPENDIX E
RECEPTOR RESULTS

Lon 3 Emergency Scenario Results

The results of the dispersion modelling for Lon-3 operating in isolation at existing receptors are shown in Table G.1. The results are the highest from the five years' worth of modelling.

Annual Mean NO_2 Results for 72 hours operation

Table G.1: Predicted Annual Mean NO_2 Concentrations for Emergency Operation (µg/m³)

Receptor	Height (m)	Annual Mean NO_2 PC (µg/m³)	Background NO_2	PEC NO_2 (µg/m³)	PEC % EAL
R1_1	1.5	0.32	20.9	21.2	53.1
R1_2	3.5	0.32	20.9	21.2	53.1
R1_3	6.5	0.32	20.9	21.2	53.1
R2	1.5	0.26	20.9	21.2	52.9
R3	1.5	0.43	20.9	21.3	53.3
R4	1.5	0.16	20.9	21.1	52.7
R5	1.5	0.11	20.9	21.0	52.5
R6	1.5	0.64	20.9	21.5	53.9
R7	1.5	0.56	20.9	21.5	53.7
R8	1.5	0.36	20.9	21.3	53.2
R9	1.5	0.81	20.9	21.7	54.3
R10	1.5	0.66	20.9	21.6	53.9
R11	1.5	0.27	20.9	21.2	52.9
R12	1.5	0.23	20.9	21.1	52.8
R13	1.5	0.52	20.9	21.4	53.6
R14	1.5	0.47	20.9	21.4	53.4
R15	1.5	0.44	20.9	21.3	53.3
R16	1.5	0.20	20.9	21.1	52.8
R17	1.5	0.12	20.9	21.0	52.6
R18	1.5	0.09	20.9	21.0	52.5
R19	1.5	0.21	20.9	21.1	52.8
AR1	1.5	2.12	20.9	23.0	57.5
AR2	1.5	1.82	20.9	22.7	56.8
AR3	1.5	0.93	20.9	21.8	54.6
AR4	1.5	0.35	20.9	21.2	53.1
AR5	1.5	0.36	20.9	21.3	53.1
AR6	1.5	0.38	20.9	21.3	53.2
AR7	1.5	0.42	20.9	21.3	53.3
AR8	1.5	0.60	20.9	21.5	53.7

Table G.1: Predicted Annual Mean NO_2 Concentrations for Emergency Operation (µg/m^3)					
Receptor	**Height (m)**	**Annual Mean NO_2 PC (µg/m^3)**	**Background NO_2**	**PEC NO_2 (µg/m^3)**	**PEC % EAL**
AR9	1.5	0.79	20.9	21.7	54.2
AR10	1.5	0.34	20.9	21.2	53.1
AR11	1.5	0.35	20.9	21.3	53.1
AR12	1.5	0.38	20.9	21.3	53.2
AR13	1.5	0.41	20.9	21.3	53.3
AR14	1.5	0.50	20.9	21.4	53.5
AR15	1.5	0.61	20.9	21.5	53.8
AR16	1.5	0.37	20.9	21.3	53.2
AR17	1.5	0.36	20.9	21.3	53.2
AR18	1.5	0.40	20.9	21.3	53.2
AR19	1.5	0.34	20.9	21.2	53.1
AR20	1.5	0.34	20.9	21.2	53.1
AR21	1.5	0.32	20.9	21.2	53.0
AR22	1.5	0.33	20.9	21.2	53.1
AR23	1.5	0.27	20.9	21.2	52.9
AR24	1.5	0.28	20.9	21.2	53.0
AR25	1.5	0.44	20.9	21.3	53.4
AR26	1.5	0.48	20.9	21.4	53.5
AR27	1.5	0.43	20.9	21.3	53.3
AR28	1.5	0.36	20.9	21.3	53.1
AR29	1.5	0.43	20.9	21.3	53.3
AR30	1.5	0.49	20.9	21.4	53.5
AR31	1.5	0.50	20.9	21.4	53.5
AR32	1.5	1.44	20.9	22.3	55.8
AR33	1.5	1.26	20.9	22.2	55.4

100th Percentile Hourly Mean NO_2 Results

Table G.2: Predicted 100th percentile NO_2 Concentrations for Emergency Operation (µg/m³)

Receptor	Height (m)	100th Percentile NO_2 PC (µg/m³)	Background NO_2	PEC NO_2 (µg/m³)	AEGL
R1_1	1.5	219.2	41.8	261.0	<AEGL-1
R1_2	3.5	219.6	41.8	261.4	<AEGL-1
R1_3	6.5	220.6	41.8	262.4	<AEGL-1
R2	1.5	213.9	41.8	255.7	<AEGL-1
R3	1.5	301.5	41.8	343.3	<AEGL-1
R4	1.5	290.9	41.8	332.7	<AEGL-1
R5	1.5	339.4	41.8	381.2	<AEGL-1
R6	1.5	200.4	41.8	242.2	<AEGL-1
R7	1.5	186.5	41.8	228.3	<AEGL-1
R8	1.5	146.2	41.8	188.0	<AEGL-1
R9	1.5	216.2	41.8	258.0	<AEGL-1
R10	1.5	178.4	41.8	220.2	<AEGL-1
R11	1.5	319.9	41.8	361.7	<AEGL-1
R12	1.5	276.8	41.8	318.6	<AEGL-1
R13	1.5	143.2	41.8	185.0	<AEGL-1
R14	1.5	132.6	41.8	174.4	<AEGL-1
R15	1.5	157.9	41.8	199.7	<AEGL-1
R16	1.5	131.3	41.8	173.1	<AEGL-1
R17	1.5	302.2	41.8	344.0	<AEGL-1
R18	1.5	240.7	41.8	282.5	<AEGL-1
R19	1.5	166.8	41.8	208.6	<AEGL-1
AR1	1.5	470.2	41.8	512.0	<AEGL-1
AR2	1.5	487.0	41.8	528.8	<AEGL-1
AR3	1.5	404.7	41.8	446.5	<AEGL-1
AR4	1.5	383.7	41.8	425.5	<AEGL-1
AR5	1.5	394.2	41.8	436.0	<AEGL-1
AR6	1.5	396.2	41.8	438.0	<AEGL-1
AR7	1.5	395.5	41.8	437.3	<AEGL-1
AR8	1.5	413.0	41.8	454.8	<AEGL-1
AR9	1.5	410.8	41.8	452.6	<AEGL-1
AR10	1.5	383.7	41.8	425.5	<AEGL-1

Table G.2: Predicted 100th percentile NO_2 Concentrations for Emergency Operation (µg/m³)

Receptor	Height (m)	100th Percentile NO_2 PC (µg/m³)	Background NO_2	PEC NO_2 (µg/m³)	AEGL
AR11	1.5	390.2	41.8	432.0	<AEGL-1
AR12	1.5	394.9	41.8	436.7	<AEGL-1
AR13	1.5	394.5	41.8	436.3	<AEGL-1
AR14	1.5	410.7	41.8	452.5	<AEGL-1
AR15	1.5	407.0	41.8	448.8	<AEGL-1
AR16	1.5	392.6	41.8	434.4	<AEGL-1
AR17	1.5	368.5	41.8	410.3	<AEGL-1
AR18	1.5	399.6	41.8	441.4	<AEGL-1
AR19	1.5	380.6	41.8	422.4	<AEGL-1
AR20	1.5	389.7	41.8	431.5	<AEGL-1
AR21	1.5	357.3	41.8	399.1	<AEGL-1
AR22	1.5	378.3	41.8	420.1	<AEGL-1
AR23	1.5	288.5	41.8	330.3	<AEGL-1
AR24	1.5	300.5	41.8	342.3	<AEGL-1
AR25	1.5	408.0	41.8	449.8	<AEGL-1
AR26	1.5	402.6	41.8	444.4	<AEGL-1
AR27	1.5	373.2	41.8	415.0	<AEGL-1
AR28	1.5	312.6	41.8	354.4	<AEGL-1
AR29	1.5	332.6	41.8	374.4	<AEGL-1
AR30	1.5	369.9	41.8	411.7	<AEGL-1
AR31	1.5	388.1	41.8	429.9	<AEGL-1
AR32	1.5	279.0	41.8	320.8	<AEGL-1
AR33	1.5	258.7	41.8	300.5	<AEGL-1

Particulate Matter

Table G.3: Predicted Daily Mean PM_{10} Concentrations (µg/m³)				
Receptor	**Height (m)**	**Max Daily Mean PM_{10} PC (µg/m³)**	**Background PM_{10}**	**PC PM_{10} (%)**
R1_1	1.5	0.72	15.7	1.43
R1_2	3.5	0.72	15.7	1.44
R1_3	6.5	0.72	15.7	1.44
R2	1.5	0.53	15.7	1.05
R3	1.5	0.94	15.7	1.88
R4	1.5	0.30	15.7	0.60
R5	1.5	0.23	16.1	0.46
R6	1.5	1.19	16.0	2.38
R7	1.5	1.03	16.0	2.06
R8	1.5	0.66	16.0	1.32
R9	1.5	1.23	16.0	2.45
R10	1.5	1.03	16.0	2.05
R11	1.5	0.39	16.0	0.79
R12	1.5	0.34	16.0	0.68
R13	1.5	0.84	16.0	1.69
R14	1.5	0.78	16.0	1.57
R15	1.5	0.77	15.7	1.53
R16	1.5	0.41	15.7	0.81
R17	1.5	0.24	15.7	0.48
R18	1.5	0.18	15.7	0.35
R19	1.5	0.49	15.7	0.98
AR1	1.5	3.63	15.7	7.26
AR2	1.5	3.42	16.0	6.84
AR3	1.5	1.72	15.7	3.45
AR4	1.5	0.64	15.7	1.29
AR5	1.5	0.70	15.7	1.39
AR6	1.5	0.75	15.7	1.51
AR7	1.5	0.86	15.7	1.72
AR8	1.5	1.16	15.7	2.33
AR9	1.5	1.49	15.7	2.99
AR10	1.5	0.61	15.7	1.22
AR11	1.5	0.68	15.7	1.36

Table G.3: Predicted Daily Mean PM_{10} Concentrations (µg/m³)				
Receptor	**Height (m)**	**Max Daily Mean PM_{10} PC (µg/m³)**	**Background PM_{10}**	**PC PM_{10} (%)**
AR12	1.5	0.76	15.7	1.51
AR13	1.5	0.87	15.7	1.74
AR14	1.5	1.13	15.7	2.27
AR15	1.5	1.27	15.7	2.54
AR16	1.5	0.75	15.7	1.51
AR17	1.5	0.72	15.7	1.44
AR18	1.5	0.86	15.7	1.72
AR19	1.5	0.58	15.7	1.15
AR20	1.5	0.68	15.7	1.35
AR21	1.5	0.54	15.7	1.09
AR22	1.5	0.64	15.7	1.29
AR23	1.5	0.46	15.7	0.92
AR24	1.5	0.49	15.7	0.99
AR25	1.5	1.09	15.7	2.18
AR26	1.5	1.06	15.7	2.13
AR27	1.5	1.05	15.7	2.11
AR28	1.5	0.81	15.7	1.61
AR29	1.5	0.90	15.7	1.80
AR30	1.5	1.09	15.7	2.17
AR31	1.5	1.11	15.7	2.22
AR32	1.5	2.25	16.0	4.49
AR33	1.5	1.97	16.0	3.95

SO_2

Table G.4: Predicted 15-minute Mean SO_2 Concentrations (µg/m³)			
Receptor	**Height (m)**	**Max 15-minute mean SO_2 PC (µg/m³)**	**PC SO_2 (%)**
R1_1	1.5	1.00	0.38
R1_2	3.5	1.00	0.38
R1_3	6.5	1.00	0.38
R2	1.5	0.98	0.37
R3	1.5	1.33	0.50
R4	1.5	0.49	0.18
R5	1.5	0.58	0.22
R6	1.5	0.99	0.37
R7	1.5	0.94	0.35
R8	1.5	0.75	0.28
R9	1.5	1.05	0.40
R10	1.5	0.94	0.35
R11	1.5	0.89	0.33
R12	1.5	0.78	0.29
R13	1.5	0.78	0.29
R14	1.5	0.66	0.25
R15	1.5	0.79	0.30
R16	1.5	0.73	0.27
R17	1.5	0.66	0.25
R18	1.5	0.57	0.22
R19	1.5	0.79	0.30
AR1	1.5	1.91	0.72
AR2	1.5	2.07	0.78
AR3	1.5	1.68	0.63
AR4	1.5	1.54	0.58
AR5	1.5	1.65	0.62
AR6	1.5	1.67	0.63
AR7	1.5	1.69	0.64
AR8	1.5	1.75	0.66
AR9	1.5	1.72	0.65
AR10	1.5	1.56	0.59
AR11	1.5	1.66	0.62

Table G.4: Predicted 15-minute Mean SO_2 Concentrations (µg/m³)			
Receptor	**Height (m)**	**Max 15-minute mean SO_2 PC (µg/m³)**	**PC SO_2 (%)**
AR12	1.5	1.69	0.64
AR13	1.5	1.69	0.63
AR14	1.5	1.77	0.66
AR15	1.5	1.73	0.65
AR16	1.5	1.68	0.63
AR17	1.5	1.62	0.61
AR18	1.5	1.68	0.63
AR19	1.5	1.64	0.62
AR20	1.5	1.64	0.62
AR21	1.5	1.53	0.58
AR22	1.5	1.62	0.61
AR23	1.5	1.25	0.47
AR24	1.5	1.31	0.49
AR25	1.5	1.79	0.67
AR26	1.5	1.74	0.66
AR27	1.5	1.60	0.60
AR28	1.5	1.32	0.50
AR29	1.5	1.46	0.55
AR30	1.5	1.55	0.58
AR31	1.5	1.61	0.61
AR32	1.5	1.40	0.53
AR33	1.5	1.26	0.47

Table G.5: Predicted Hourly Mean SO_2 Concentrations (µg/m³)			
Receptor	**Height (m)**	**Max 1-hour mean SO_2 PC (µg/m³)**	**PC SO_2 (%)**
R1_1	1.5	0.88	0.00
R1_2	3.5	0.88	0.00
R1_3	6.5	0.88	0.00
R2	1.5	0.85	0.00
R3	1.5	1.25	0.00
R4	1.5	0.34	0.00
R5	1.5	0.38	0.00

Table G.5: Predicted Hourly Mean SO_2 Concentrations (µg/m³)			
Receptor	**Height (m)**	**Max 1-hour mean SO_2 PC (µg/m³)**	**PC SO_2 (%)**
R6	1.5	0.83	0.00
R7	1.5	0.79	0.00
R8	1.5	0.58	0.00
R9	1.5	0.85	0.00
R10	1.5	0.71	0.00
R11	1.5	0.45	0.00
R12	1.5	0.39	0.00
R13	1.5	0.60	0.00
R14	1.5	0.54	0.00
R15	1.5	0.65	0.00
R16	1.5	0.50	0.00
R17	1.5	0.39	0.00
R18	1.5	0.32	0.00
R19	1.5	0.65	0.00
AR1	1.5	1.81	0.01
AR2	1.5	1.93	0.01
AR3	1.5	1.52	0.00
AR4	1.5	1.42	0.00
AR5	1.5	1.44	0.00
AR6	1.5	1.48	0.00
AR7	1.5	1.51	0.00
AR8	1.5	1.57	0.00
AR9	1.5	1.60	0.00
AR10	1.5	1.43	0.00
AR11	1.5	1.43	0.00
AR12	1.5	1.51	0.00
AR13	1.5	1.51	0.00
AR14	1.5	1.60	0.00
AR15	1.5	1.60	0.00
AR16	1.5	1.51	0.00
AR17	1.5	1.48	0.00
AR18	1.5	1.51	0.00
AR19	1.5	1.45	0.00

Table G.5: Predicted Hourly Mean SO_2 Concentrations (µg/m³)			
Receptor	**Height (m)**	**Max 1-hour mean SO_2 PC (µg/m³)**	**PC SO_2 (%)**
AR20	1.5	1.45	0.00
AR21	1.5	1.44	0.00
AR22	1.5	1.44	0.00
AR23	1.5	1.14	0.00
AR24	1.5	1.15	0.00
AR25	1.5	1.61	0.00
AR26	1.5	1.59	0.00
AR27	1.5	1.47	0.00
AR28	1.5	1.21	0.00
AR29	1.5	1.35	0.00
AR30	1.5	1.44	0.00
AR31	1.5	1.48	0.00
AR32	1.5	1.19	0.00
AR33	1.5	1.08	0.00

Table G.6: Predicted Daily Mean SO_2 Concentrations (µg/m³)			
Receptor	**Height (m)**	**Max Daily Mean SO_2 PC (µg/m³)**	**PC SO_2 (%)**
R1_1	1.5	0.53	0.43
R1_2	3.5	0.53	0.43
R1_3	6.5	0.54	0.43
R2	1.5	0.35	0.28
R3	1.5	0.70	0.56
R4	1.5	0.18	0.15
R5	1.5	0.22	0.17
R6	1.5	0.50	0.40
R7	1.5	0.49	0.39
R8	1.5	0.31	0.25
R9	1.5	0.43	0.35
R10	1.5	0.36	0.29
R11	1.5	0.16	0.13
R12	1.5	0.13	0.10
R13	1.5	0.29	0.23

Table G.6: Predicted Daily Mean SO_2 Concentrations (µg/m³)			
Receptor	**Height (m)**	**Max Daily Mean SO_2 PC (µg/m³)**	**PC SO_2 (%)**
R14	1.5	0.33	0.26
R15	1.5	0.35	0.28
R16	1.5	0.17	0.14
R17	1.5	0.12	0.10
R18	1.5	0.11	0.08
R19	1.5	0.29	0.23
AR1	1.5	1.43	1.15
AR2	1.5	1.29	1.03
AR3	1.5	0.84	0.67
AR4	1.5	0.55	0.44
AR5	1.5	0.46	0.37
AR6	1.5	0.54	0.43
AR7	1.5	0.60	0.48
AR8	1.5	0.66	0.53
AR9	1.5	0.80	0.64
AR10	1.5	0.53	0.42
AR11	1.5	0.46	0.37
AR12	1.5	0.55	0.44
AR13	1.5	0.62	0.49
AR14	1.5	0.66	0.53
AR15	1.5	0.80	0.64
AR16	1.5	0.55	0.44
AR17	1.5	0.54	0.43
AR18	1.5	0.60	0.48
AR19	1.5	0.51	0.41
AR20	1.5	0.46	0.37
AR21	1.5	0.48	0.38
AR22	1.5	0.46	0.37
AR23	1.5	0.37	0.30
AR24	1.5	0.39	0.31
AR25	1.5	0.65	0.52
AR26	1.5	0.79	0.63
AR27	1.5	0.67	0.54

Table G.6: Predicted Daily Mean SO_2 Concentrations ($\mu g/m^3$)			
Receptor	**Height (m)**	**Max Daily Mean SO_2 PC ($\mu g/m^3$)**	**PC SO_2 (%)**
AR28	1.5	0.57	0.46
AR29	1.5	0.74	0.59
AR30	1.5	0.81	0.65
AR31	1.5	0.85	0.68
AR32	1.5	0.76	0.60
AR33	1.5	0.69	0.55

CO

Table G.7: Predicted 8-hour Mean CO Concentrations (µg/m³)			
Receptor	**Height (m)**	**8-Hour running CO PC (µg/m³)**	**PC CO (%)**
R1_1	1.5	63.47	0.63
R1_2	3.5	63.44	0.63
R1_3	6.5	63.32	0.63
R2	1.5	58.83	0.59
R3	1.5	84.83	0.85
R4	1.5	22.09	0.22
R5	1.5	24.64	0.25
R6	1.5	54.33	0.54
R7	1.5	51.04	0.51
R8	1.5	37.67	0.38
R9	1.5	56.13	0.56
R10	1.5	42.02	0.42
R11	1.5	22.36	0.22
R12	1.5	18.37	0.18
R13	1.5	38.18	0.38
R14	1.5	35.84	0.36
R15	1.5	41.56	0.42
R16	1.5	26.59	0.27
R17	1.5	21.90	0.22
R18	1.5	18.47	0.18
R19	1.5	41.03	0.41
AR1	1.5	128.92	1.29
AR2	1.5	130.98	1.31
AR3	1.5	115.76	1.16
AR4	1.5	89.51	0.90
AR5	1.5	99.64	1.00
AR6	1.5	101.24	1.01
AR7	1.5	94.46	0.94
AR8	1.5	108.21	1.08
AR9	1.5	116.79	1.17
AR10	1.5	96.72	0.97
AR11	1.5	101.76	1.02

Table G.7: Predicted 8-hour Mean CO Concentrations (µg/m³)			
Receptor	**Height (m)**	**8-Hour running CO PC (µg/m³)**	**PC CO (%)**
AR12	1.5	101.26	1.01
AR13	1.5	93.49	0.93
AR14	1.5	109.52	1.10
AR15	1.5	116.98	1.17
AR16	1.5	101.84	1.02
AR17	1.5	98.22	0.98
AR18	1.5	94.60	0.95
AR19	1.5	98.35	0.98
AR20	1.5	106.64	1.07
AR21	1.5	96.06	0.96
AR22	1.5	103.37	1.03
AR23	1.5	74.17	0.74
AR24	1.5	81.71	0.82
AR25	1.5	108.49	1.08
AR26	1.5	116.35	1.16
AR27	1.5	105.56	1.06
AR28	1.5	89.64	0.90
AR29	1.5	100.49	1.00
AR30	1.5	97.77	0.98
AR31	1.5	104.09	1.04
AR32	1.5	78.91	0.79
AR33	1.5	69.92	0.70

Table G.8: Predicted Hourly Mean CO Concentrations (µg/m³)			
Receptor	**Height (m)**	**1-hour running CO PC (µg/m³)**	**PC CO (µg/m³)**
R1_1	1.5	70.63	0.24
R1_2	3.5	70.73	0.24
R1_3	6.5	71.05	0.24
R2	1.5	69.90	0.23
R3	1.5	97.18	0.32
R4	1.5	40.23	0.13
R5	1.5	46.95	0.16

Table G.8: Predicted Hourly Mean CO Concentrations (µg/m³)			
Receptor	**Height (m)**	**1-hour running CO PC (µg/m³)**	**PC CO (µg/m³)**
R6	1.5	64.40	0.21
R7	1.5	60.01	0.20
R8	1.5	47.07	0.16
R9	1.5	69.54	0.23
R10	1.5	57.52	0.19
R11	1.5	44.31	0.15
R12	1.5	38.32	0.13
R13	1.5	46.15	0.15
R14	1.5	42.69	0.14
R15	1.5	51.24	0.17
R16	1.5	42.47	0.14
R17	1.5	41.84	0.14
R18	1.5	33.31	0.11
R19	1.5	53.80	0.18
AR1	1.5	152.38	0.51
AR2	1.5	157.06	0.52
AR3	1.5	140.67	0.47
AR4	1.5	123.44	0.41
AR5	1.5	133.94	0.45
AR6	1.5	152.38	0.51
AR7	1.5	156.34	0.52
AR8	1.5	160.61	0.54
AR9	1.5	157.50	0.53
AR10	1.5	141.50	0.47
AR11	1.5	133.99	0.45
AR12	1.5	156.06	0.52
AR13	1.5	159.71	0.53
AR14	1.5	163.37	0.54
AR15	1.5	159.38	0.53
AR16	1.5	158.14	0.53
AR17	1.5	150.74	0.50
AR18	1.5	161.32	0.54
AR19	1.5	140.95	0.47

Table G.8: Predicted Hourly Mean CO Concentrations (µg/m³)			
Receptor	**Height (m)**	**1-hour running CO PC (µg/m³)**	**PC CO (µg/m³)**
AR20	1.5	135.03	0.45
AR21	1.5	126.29	0.42
AR22	1.5	130.10	0.43
AR23	1.5	107.18	0.36
AR24	1.5	109.89	0.37
AR25	1.5	165.37	0.55
AR26	1.5	161.36	0.54
AR27	1.5	138.10	0.46
AR28	1.5	105.72	0.35
AR29	1.5	109.41	0.36
AR30	1.5	119.22	0.40
AR31	1.5	135.15	0.45
AR32	1.5	90.11	0.30
AR33	1.5	83.37	0.28

Lon-3 Combined with Lon-2 Emergency Scenario Results

The results of the dispersion modelling for Lon-3 and Lon-2 operating at the same time at existing receptors are shown in Table G.10. The results are the highest from the five years' worth of modelling.

Annual Mean NO_2 Results

Table G.10: Predicted 100th percentile NO_2 Concentrations for Emergency Operation (µg/m³)

Receptor	Height (m)	Annual Mean NO_2 PC (µg/m³)	Background NO_2	PEC NO_2 (µg/m³)	PEC % EAL
R1_1	1.5	0.83	20.9	21.73	54.3
R1_2	3.5	0.84	20.9	21.74	54.4
R1_3	6.5	0.86	20.9	21.76	54.4
R2	1.5	0.60	20.9	21.50	53.7
R3	1.5	0.71	20.9	21.61	54.0
R4	1.5	0.26	20.9	21.16	52.9
R5	1.5	0.17	20.9	21.07	52.7
R6	1.5	0.87	20.9	21.77	54.4
R7	1.5	0.76	20.9	21.66	54.2
R8	1.5	0.51	20.9	21.41	53.5
R9	1.5	1.17	20.90	22.07	55.2
R10	1.5	0.97	20.9	21.87	54.7
R11	1.5	0.43	20.9	21.33	53.3
R12	1.5	0.37	20.9	21.27	53.2
R13	1.5	0.85	20.9	21.75	54.4
R14	1.5	0.85	20.9	21.75	54.4
R15	1.5	0.84	20.9	21.74	54.4
R16	1.5	0.44	20.9	21.34	53.3
R17	1.5	0.25	20.9	21.15	52.9
R18	1.5	0.16	20.9	21.06	52.7
R19	1.5	0.53	20.9	21.43	53.6
AR1	1.5	2.61	20.9	23.51	58.8
AR2	1.5	2.24	20.9	23.14	57.9
AR3	1.5	1.95	20.9	22.85	57.1
AR4	1.5	0.91	20.9	21.81	54.5
AR5	1.5	1.14	20.9	22.04	55.1
AR6	1.5	1.14	20.9	22.04	55.1
AR7	1.5	1.08	20.9	21.98	54.9

Table G.10: Predicted 100th percentile NO_2 Concentrations for Emergency Operation ($\mu g/m^3$)

Receptor	Height (m)	Annual Mean NO_2 PC ($\mu g/m^3$)	Background NO_2	PEC NO_2 ($\mu g/m^3$)	PEC % EAL
AR8	1.5	1.22	20.9	22.12	55.3
AR9	1.5	1.46	20.9	22.36	55.9
AR10	1.5	0.55	20.9	21.45	53.6
AR11	1.5	0.61	20.9	21.51	53.8
AR12	1.5	0.61	20.9	21.51	53.8
AR13	1.5	0.63	20.9	21.53	53.8
AR14	1.5	0.72	20.9	21.62	54.0
AR15	1.5	0.90	20.9	21.80	54.5
AR16	1.5	0.52	20.9	21.42	53.5
AR17	1.5	0.45	20.9	21.35	53.4
AR18	1.5	0.55	20.9	21.45	53.6
AR19	1.5	0.47	20.9	21.37	53.4
AR20	1.5	0.46	20.9	21.36	53.4
AR21	1.5	0.43	20.9	21.33	53.3
AR22	1.5	0.42	20.9	21.32	53.3
AR23	1.5	0.40	20.9	21.30	53.3
AR24	1.5	0.36	20.9	21.26	53.2
AR25	1.5	0.58	20.9	21.48	53.7
AR26	1.5	0.60	20.9	21.50	53.8
AR27	1.5	0.54	20.9	21.44	53.6
AR28	1.5	0.51	20.9	21.41	53.5
AR29	1.5	0.55	20.9	21.45	53.6
AR30	1.5	0.60	20.9	21.50	53.7
AR31	1.5	0.68	20.9	21.58	53.9
AR32	1.5	1.94	20.9	22.84	57.1
AR33	1.5	1.78	20.9	22.68	56.7

100th Percentile NO_2 Results

Table G.11: Predicted 100th percentile NO_2 Concentrations for Emergency Operation (µg/m³)

Receptor	Height (m)	100th Percentile NO_2 PC (µg/m³)	Background NO_2	PEC NO_2 (µg/m³)	AEGL
R1_1	1.5	500.7	41.8	542.5	<AEGL-1
R1_2	3.5	502.9	41.8	544.7	<AEGL-1
R1_3	6.5	509.2	41.8	551.0	<AEGL-1
R2	1.5	561.4	41.8	603.2	<AEGL-1
R3	1.5	428.9	41.8	470.7	<AEGL-1
R4	1.5	356.3	41.8	398.1	<AEGL-1
R5	1.5	488.3	41.8	530.1	<AEGL-1
R6	1.5	259.5	41.8	301.3	<AEGL-1
R7	1.5	243.5	41.8	285.3	<AEGL-1
R8	1.5	192.8	41.8	234.6	<AEGL-1
R9	1.5	251.2	41.8	293.0	<AEGL-1
R10	1.5	208.2	41.8	250.0	<AEGL-1
R11	1.5	416.1	41.8	457.9	<AEGL-1
R12	1.5	334.5	41.8	376.3	<AEGL-1
R13	1.5	191.2	41.8	233.0	<AEGL-1
R14	1.5	161.1	41.8	202.9	<AEGL-1
R15	1.5	161.8	41.8	203.6	<AEGL-1
R16	1.5	166.5	41.8	208.3	<AEGL-1
R17	1.5	425.8	41.8	467.6	<AEGL-1
R18	1.5	317.9	41.8	359.7	<AEGL-1
R19	1.5	414.0	41.8	455.8	<AEGL-1
AR1	1.5	533.5	41.8	575.3	<AEGL-1
AR2	1.5	571.4	41.8	613.2	<AEGL-1
AR3	1.5	413.5	41.8	455.3	<AEGL-1
AR4	1.5	398.3	41.8	440.1	<AEGL-1
AR5	1.5	414.9	41.8	456.7	<AEGL-1
AR6	1.5	413.2	41.8	455.0	<AEGL-1
AR7	1.5	415.9	41.8	457.7	<AEGL-1
AR8	1.5	435.3	41.8	477.1	<AEGL-1
AR9	1.5	433.2	41.8	475.0	<AEGL-1
AR10	1.5	396.7	41.8	438.5	<AEGL-1

Table G.11: Predicted 100th percentile NO_2 Concentrations for Emergency Operation ($\mu g/m^3$)

Receptor	Height (m)	100th Percentile NO_2 PC ($\mu g/m^3$)	Background NO_2	PEC NO_2 ($\mu g/m^3$)	AEGL
AR11	1.5	412.3	41.8	454.1	<AEGL-1
AR12	1.5	413.2	41.8	455.0	<AEGL-1
AR13	1.5	420.4	41.8	462.2	<AEGL-1
AR14	1.5	431.2	41.8	473.0	<AEGL-1
AR15	1.5	429.3	41.8	471.1	<AEGL-1
AR16	1.5	417.5	41.8	459.3	<AEGL-1
AR17	1.5	388.4	41.8	430.2	<AEGL-1
AR18	1.5	425.2	41.8	467.0	<AEGL-1
AR19	1.5	393.3	41.8	435.1	<AEGL-1
AR20	1.5	415.8	41.8	457.6	<AEGL-1
AR21	1.5	379.8	41.8	421.6	<AEGL-1
AR22	1.5	402.2	41.8	444.0	<AEGL-1
AR23	1.5	358.1	41.8	399.9	<AEGL-1
AR24	1.5	385.0	41.8	426.8	<AEGL-1
AR25	1.5	427.7	41.8	469.5	<AEGL-1
AR26	1.5	423.6	41.8	465.4	<AEGL-1
AR27	1.5	397.7	41.8	439.5	<AEGL-1
AR28	1.5	423.8	41.8	465.6	<AEGL-1
AR29	1.5	369.1	41.8	410.9	<AEGL-1
AR30	1.5	379.4	41.8	421.2	<AEGL-1
AR31	1.5	390.9	41.8	432.7	<AEGL-1
AR32	1.5	293.7	41.8	335.5	<AEGL-1
AR33	1.5	258.8	41.8	300.6	<AEGL-1

Particulate Matter

Table G.10: Predicted Daily Mean PM_{10} Concentrations (µg/m³)				
Receptor	**Height (m)**	**Max Daily Mean PM_{10} PC (µg/m³)**	**Background PM_{10}**	**PC PM_{10} (%)**
R1_1	1.5	2.92	15.7	5.83
R1_2	3.5	2.96	15.7	5.92
R1_3	6.5	3.07	15.7	6.13
R2	1.5	1.72	15.7	3.44
R3	1.5	2.57	15.7	5.15
R4	1.5	0.66	15.7	1.32
R5	1.5	0.49	16.1	0.99
R6	1.5	2.01	16.0	4.01
R7	1.5	1.82	16.0	3.65
R8	1.5	1.22	16.0	2.44
R9	1.5	2.37	16.0	4.75
R10	1.5	1.98	16.0	3.96
R11	1.5	0.92	16.0	1.84
R12	1.5	0.73	16.0	1.46
R13	1.5	1.77	16.0	3.55
R14	1.5	1.90	16.0	3.80
R15	1.5	2.16	15.7	4.31
R16	1.5	1.27	15.7	2.54
R17	1.5	0.73	15.7	1.47
R18	1.5	0.50	15.7	1.00
R19	1.5	1.94	15.7	3.88
AR1	1.5	5.37	15.7	10.74
AR2	1.5	5.08	16.0	10.16
AR3	1.5	3.80	15.7	7.59
AR4	1.5	1.92	15.7	3.84
AR5	1.5	2.42	15.7	4.83
AR6	1.5	2.60	15.7	5.20
AR7	1.5	2.50	15.7	5.01
AR8	1.5	2.54	15.7	5.08
AR9	1.5	2.65	15.7	5.30
AR10	1.5	1.42	15.7	2.85
AR11	1.5	1.56	15.7	3.11

Table G.10: Predicted Daily Mean PM_{10} Concentrations ($\mu g/m^3$)				
Receptor	**Height (m)**	**Max Daily Mean PM_{10} PC ($\mu g/m^3$)**	**Background PM_{10}**	**PC PM_{10} (%)**
AR12	1.5	1.68	15.7	3.36
AR13	1.5	1.93	15.7	3.85
AR14	1.5	1.92	15.7	3.83
AR15	1.5	2.17	15.7	4.34
AR16	1.5	1.34	15.7	2.68
AR17	1.5	1.03	15.7	2.06
AR18	1.5	1.64	15.7	3.27
AR19	1.5	1.30	15.7	2.60
AR20	1.5	1.23	15.7	2.46
AR21	1.5	1.16	15.7	2.31
AR22	1.5	1.10	15.7	2.19
AR23	1.5	1.17	15.7	2.35
AR24	1.5	0.85	15.7	1.70
AR25	1.5	1.80	15.7	3.59
AR26	1.5	1.79	15.7	3.59
AR27	1.5	1.58	15.7	3.16
AR28	1.5	1.45	15.7	2.91
AR29	1.5	1.75	15.7	3.50
AR30	1.5	2.03	15.7	4.07
AR31	1.5	1.94	15.7	3.88
AR32	1.5	3.69	16.0	7.38
AR33	1.5	3.36	16.0	6.73

SO_2

Table G.12: Predicted 15-minute Mean SO_2 Concentrations (µg/m³)			
Receptor	**Height (m)**	**Max 15-minute mean SO_2 PC (µg/m³)**	**PC SO_2 (%)**
R1_1	1.5	2.18	0.82
R1_2	3.5	2.19	0.82
R1_3	6.5	2.22	0.84
R2	1.5	2.41	0.90
R3	1.5	1.82	0.68
R4	1.5	0.50	0.19
R5	1.5	0.69	0.26
R6	1.5	1.24	0.47
R7	1.5	1.18	0.44
R8	1.5	0.92	0.34
R9	1.5	1.13	0.42
R10	1.5	0.97	0.36
R11	1.5	0.91	0.34
R12	1.5	0.79	0.30
R13	1.5	0.78	0.29
R14	1.5	0.67	0.25
R15	1.5	0.79	0.30
R16	1.5	0.75	0.28
R17	1.5	0.78	0.30
R18	1.5	0.74	0.28
R19	1.5	1.77	0.67
AR1	1.5	2.22	0.83
AR2	1.5	2.39	0.90
AR3	1.5	1.78	0.67
AR4	1.5	1.60	0.60
AR5	1.5	1.74	0.65
AR6	1.5	1.74	0.66
AR7	1.5	1.79	0.67
AR8	1.5	1.85	0.70
AR9	1.5	1.82	0.68
AR10	1.5	1.69	0.64
AR11	1.5	1.73	0.65

Table G.12: Predicted 15-minute Mean SO_2 Concentrations (µg/m³)			
Receptor	**Height (m)**	**Max 15-minute mean SO_2 PC (µg/m³)**	**PC SO_2 (%)**
AR12	1.5	1.76	0.66
AR13	1.5	1.80	0.68
AR14	1.5	1.88	0.71
AR15	1.5	1.83	0.69
AR16	1.5	1.76	0.66
AR17	1.5	1.72	0.65
AR18	1.5	1.80	0.67
AR19	1.5	1.69	0.63
AR20	1.5	1.74	0.65
AR21	1.5	1.63	0.61
AR22	1.5	1.72	0.65
AR23	1.5	1.51	0.57
AR24	1.5	1.49	0.56
AR25	1.5	1.90	0.71
AR26	1.5	1.82	0.68
AR27	1.5	1.71	0.64
AR28	1.5	1.73	0.65
AR29	1.5	1.63	0.61
AR30	1.5	1.66	0.63
AR31	1.5	1.72	0.65
AR32	1.5	1.40	0.53
AR33	1.5	1.26	0.47

Table G.13: Predicted Hourly Mean SO_2 Concentrations (µg/m³)			
Receptor	**Height (m)**	**Max 1-hour mean SO_2 PC (µg/m³)**	**PC SO_2 (%)**
R1_1	1.5	2.00	0.01
R1_2	3.5	2.01	0.01
R1_3	6.5	2.03	0.01
R2	1.5	2.12	0.01
R3	1.5	1.72	0.00
R4	1.5	0.42	0.00
R5	1.5	0.54	0.00

Table G.13: Predicted Hourly Mean SO_2 Concentrations (µg/m^3)			
Receptor	**Height (m)**	**Max 1-hour mean SO_2 PC (µg/m^3)**	**PC SO_2 (%)**
R6	1.5	1.07	0.00
R7	1.5	1.01	0.00
R8	1.5	0.76	0.00
R9	1.5	0.98	0.00
R10	1.5	0.83	0.00
R11	1.5	0.57	0.00
R12	1.5	0.46	0.00
R13	1.5	0.62	0.00
R14	1.5	0.60	0.00
R15	1.5	0.67	0.00
R16	1.5	0.67	0.00
R17	1.5	0.60	0.00
R18	1.5	0.47	0.00
R19	1.5	1.54	0.00
AR1	1.5	2.07	0.01
AR2	1.5	2.29	0.01
AR3	1.5	1.66	0.00
AR4	1.5	1.49	0.00
AR5	1.5	1.58	0.00
AR6	1.5	1.63	0.00
AR7	1.5	1.63	0.00
AR8	1.5	1.69	0.00
AR9	1.5	1.71	0.00
AR10	1.5	1.52	0.00
AR11	1.5	1.59	0.00
AR12	1.5	1.64	0.00
AR13	1.5	1.64	0.00
AR14	1.5	1.71	0.00
AR15	1.5	1.71	0.00
AR16	1.5	1.65	0.00
AR17	1.5	1.61	0.00
AR18	1.5	1.64	0.00
AR19	1.5	1.55	0.00

Table G.13: Predicted Hourly Mean SO_2 Concentrations (µg/m³)			
Receptor	**Height (m)**	**Max 1-hour mean SO_2 PC (µg/m³)**	**PC SO_2 (%)**
AR20	1.5	1.59	0.00
AR21	1.5	1.53	0.00
AR22	1.5	1.56	0.00
AR23	1.5	1.37	0.00
AR24	1.5	1.36	0.00
AR25	1.5	1.72	0.00
AR26	1.5	1.71	0.00
AR27	1.5	1.59	0.00
AR28	1.5	1.57	0.00
AR29	1.5	1.52	0.00
AR30	1.5	1.55	0.00
AR31	1.5	1.62	0.00
AR32	1.5	1.25	0.00
AR33	1.5	1.08	0.00

Table G.14: Predicted Daily Mean SO_2 Concentrations (µg/m³)			
Receptor	**Height (m)**	**Max Daily Mean SO_2 PC (µg/m³)**	**PC SO_2 (%)**
R1_1	1.5	1.18	0.94
R1_2	3.5	1.18	0.95
R1_3	6.5	1.20	0.96
R2	1.5	0.96	0.77
R3	1.5	1.06	0.85
R4	1.5	0.28	0.23
R5	1.5	0.29	0.23
R6	1.5	0.71	0.57
R7	1.5	0.65	0.52
R8	1.5	0.45	0.36
R9	1.5	0.64	0.51
R10	1.5	0.48	0.39
R11	1.5	0.24	0.19
R12	1.5	0.19	0.15
R13	1.5	0.43	0.35

Table G.14: Predicted Daily Mean SO_2 Concentrations (µg/m³)			
Receptor	**Height (m)**	**Max Daily Mean SO_2 PC (µg/m³)**	**PC SO_2 (%)**
R14	1.5	0.45	0.36
R15	1.5	0.48	0.38
R16	1.5	0.36	0.28
R17	1.5	0.22	0.18
R18	1.5	0.18	0.14
R19	1.5	0.75	0.60
AR1	1.5	1.62	1.30
AR2	1.5	1.69	1.35
AR3	1.5	0.90	0.72
AR4	1.5	0.73	0.59
AR5	1.5	0.71	0.57
AR6	1.5	0.68	0.55
AR7	1.5	0.76	0.60
AR8	1.5	0.81	0.65
AR9	1.5	0.86	0.69
AR10	1.5	0.75	0.60
AR11	1.5	0.70	0.56
AR12	1.5	0.68	0.54
AR13	1.5	0.76	0.61
AR14	1.5	0.79	0.64
AR15	1.5	0.88	0.71
AR16	1.5	0.67	0.54
AR17	1.5	0.64	0.51
AR18	1.5	0.75	0.60
AR19	1.5	0.75	0.60
AR20	1.5	0.68	0.54
AR21	1.5	0.74	0.59
AR22	1.5	0.64	0.51
AR23	1.5	0.75	0.60
AR24	1.5	0.59	0.48
AR25	1.5	0.78	0.62
AR26	1.5	0.87	0.70
AR27	1.5	0.77	0.62

Table G.14: Predicted Daily Mean SO_2 Concentrations (µg/m³)			
Receptor	**Height (m)**	**Max Daily Mean SO_2 PC (µg/m³)**	**PC SO_2 (%)**
AR28	1.5	0.73	0.58
AR29	1.5	0.80	0.64
AR30	1.5	0.87	0.70
AR31	1.5	0.91	0.73
AR32	1.5	0.93	0.74
AR33	1.5	0.82	0.66

CO

Table G.15: Predicted 8-hour Mean CO Concentrations (µg/m³)			
Receptor	**Height (m)**	**8-Hour running CO PC (µg/m³)**	**PC CO (%)**
R1_1	1.5	171.63	1.72
R1_2	3.5	172.27	1.72
R1_3	6.5	174.14	1.74
R2	1.5	185.65	1.86
R3	1.5	141.91	1.42
R4	1.5	31.49	0.31
R5	1.5	40.89	0.41
R6	1.5	79.43	0.79
R7	1.5	76.84	0.77
R8	1.5	58.15	0.58
R9	1.5	69.39	0.69
R10	1.5	61.82	0.62
R11	1.5	32.26	0.32
R12	1.5	28.63	0.29
R13	1.5	47.09	0.47
R14	1.5	45.55	0.46
R15	1.5	51.46	0.51
R16	1.5	48.72	0.49
R17	1.5	31.85	0.32
R18	1.5	29.71	0.30
R19	1.5	121.97	1.22

Table G.15: Predicted 8-hour Mean CO Concentrations (µg/m³)			
Receptor	**Height (m)**	**8-Hour running CO PC (µg/m³)**	**PC CO (%)**
AR1	1.5	156.72	1.57
AR2	1.5	171.26	1.71
AR3	1.5	126.20	1.26
AR4	1.5	105.00	1.05
AR5	1.5	119.47	1.19
AR6	1.5	121.71	1.22
AR7	1.5	116.39	1.16
AR8	1.5	123.03	1.23
AR9	1.5	131.61	1.32
AR10	1.5	111.11	1.11
AR11	1.5	120.94	1.21
AR12	1.5	122.01	1.22
AR13	1.5	115.32	1.15
AR14	1.5	124.35	1.24
AR15	1.5	131.81	1.32
AR16	1.5	122.74	1.23
AR17	1.5	117.70	1.18
AR18	1.5	115.86	1.16
AR19	1.5	116.82	1.17
AR20	1.5	126.07	1.26
AR21	1.5	108.98	1.09
AR22	1.5	120.50	1.21
AR23	1.5	109.76	1.10
AR24	1.5	109.41	1.09
AR25	1.5	123.36	1.23
AR26	1.5	131.20	1.31
AR27	1.5	120.90	1.21
AR28	1.5	127.47	1.27
AR29	1.5	117.46	1.17
AR30	1.5	108.94	1.09
AR31	1.5	112.32	1.12
AR32	1.5	96.69	0.97
AR33	1.5	81.95	0.82

Table G.16: Predicted Hourly Mean CO Concentrations (µg/m³)			
Receptor	**Height (m)**	**1-hour running CO PC (µg/m³)**	**PC CO (µg/m³)**
R1_1	1.5	184.91	0.62
R1_2	3.5	185.75	0.62
R1_3	6.5	188.21	0.63
R2	1.5	208.10	0.69
R3	1.5	151.22	0.50
R4	1.5	54.55	0.18
R5	1.5	73.00	0.24
R6	1.5	89.74	0.30
R7	1.5	84.40	0.28
R8	1.5	66.63	0.22
R9	1.5	85.57	0.29
R10	1.5	72.14	0.24
R11	1.5	63.21	0.21
R12	1.5	50.88	0.17
R13	1.5	68.44	0.23
R14	1.5	59.15	0.20
R15	1.5	56.99	0.19
R16	1.5	58.94	0.20
R17	1.5	64.33	0.21
R18	1.5	48.58	0.16
R19	1.5	151.25	0.50
AR1	1.5	177.63	0.59
AR2	1.5	195.18	0.65
AR3	1.5	145.70	0.49
AR4	1.5	129.00	0.43
AR5	1.5	149.50	0.50
AR6	1.5	163.24	0.54
AR7	1.5	167.19	0.56
AR8	1.5	171.46	0.57
AR9	1.5	168.36	0.56
AR10	1.5	142.93	0.48
AR11	1.5	152.28	0.51

Table G.16: Predicted Hourly Mean CO Concentrations (µg/m³)			
Receptor	**Height (m)**	**1-hour running CO PC (µg/m³)**	**PC CO (µg/m³)**
AR12	1.5	166.92	0.56
AR13	1.5	170.56	0.57
AR14	1.5	174.23	0.58
AR15	1.5	170.24	0.57
AR16	1.5	169.00	0.56
AR17	1.5	158.98	0.53
AR18	1.5	172.18	0.57
AR19	1.5	142.56	0.48
AR20	1.5	154.65	0.52
AR21	1.5	131.67	0.44
AR22	1.5	145.22	0.48
AR23	1.5	129.75	0.43
AR24	1.5	140.03	0.47
AR25	1.5	176.23	0.59
AR26	1.5	172.22	0.57
AR27	1.5	145.83	0.49
AR28	1.5	152.14	0.51
AR29	1.5	127.35	0.42
AR30	1.5	127.31	0.42
AR31	1.5	136.22	0.45
AR32	1.5	101.00	0.34
AR33	1.5	86.60	0.29

Lon-3 North Testing Scenario Results

Annual Mean NO_2 Results for 636 testing hours

Table G.17: Predicted Annual Mean NO_2 Concentrations for Testing (µg/m³)					
Receptor	**Height (m)**	**Annual Mean NO_2 PC (µg/m³)**	**Background NO_2**	**PEC NO_2 (µg/m³)**	**PEC % EAL**
R1_1	1.5	0.12	20.9	21.0	52.6
R1_2	3.5	0.12	20.9	21.0	52.6
R1_3	6.5	0.12	20.9	21.0	52.6
R2	1.5	0.10	20.9	21.0	52.5
R3	1.5	0.16	20.9	21.1	52.7
R4	1.5	0.04	20.9	20.9	52.4
R5	1.5	0.04	20.9	20.9	52.3
R6	1.5	0.16	20.9	21.1	52.7
R7	1.5	0.14	20.9	21.0	52.6
R8	1.5	0.09	20.9	21.0	52.5
R9	1.5	0.24	20.90	21.1	52.8
R10	1.5	0.20	20.9	21.1	52.7
R11	1.5	0.07	20.9	21.0	52.4
R12	1.5	0.06	20.9	21.0	52.4
R13	1.5	0.15	20.9	21.0	52.6
R14	1.5	0.14	20.9	21.0	52.6
R15	1.5	0.15	20.9	21.1	52.6
R16	1.5	0.06	20.9	21.0	52.4
R17	1.5	0.03	20.9	20.9	52.3
R18	1.5	0.02	20.9	20.9	52.3
R19	1.5	0.08	20.9	21.0	52.4
AR1	1.5	0.62	20.9	21.5	53.8
AR2	1.5	0.49	20.9	21.4	53.5
AR3	1.5	0.34	20.9	21.2	53.1
AR4	1.5	0.12	20.9	21.0	52.6
AR5	1.5	0.13	20.9	21.0	52.6
AR6	1.5	0.18	20.9	21.1	52.7
AR7	1.5	0.20	20.9	21.1	52.8
AR8	1.5	0.27	20.9	21.2	52.9
AR9	1.5	0.29	20.9	21.2	53.0
AR10	1.5	0.12	20.9	21.0	52.5

Table G.17: Predicted Annual Mean NO_2 Concentrations for Testing (µg/m³)					
Receptor	**Height (m)**	**Annual Mean NO_2 PC (µg/m³)**	**Background NO_2**	**PEC NO_2 (µg/m³)**	**PEC % EAL**
AR11	1.5	0.12	20.9	21.0	52.6
AR12	1.5	0.17	20.9	21.1	52.7
AR13	1.5	0.19	20.9	21.1	52.7
AR14	1.5	0.23	20.9	21.1	52.8
AR15	1.5	0.29	20.9	21.2	53.0
AR16	1.5	0.16	20.9	21.1	52.7
AR17	1.5	0.16	20.9	21.1	52.7
AR18	1.5	0.19	20.9	21.1	52.7
AR19	1.5	0.12	20.9	21.0	52.5
AR20	1.5	0.12	20.9	21.0	52.6
AR21	1.5	0.11	20.9	21.0	52.5
AR22	1.5	0.12	20.9	21.0	52.5
AR23	1.5	0.10	20.9	21.0	52.5
AR24	1.5	0.11	20.9	21.0	52.5
AR25	1.5	0.20	20.9	21.1	52.8
AR26	1.5	0.22	20.9	21.1	52.8
AR27	1.5	0.20	20.9	21.1	52.7
AR28	1.5	0.16	20.9	21.1	52.7
AR29	1.5	0.19	20.9	21.1	52.7
AR30	1.5	0.20	20.9	21.1	52.8
AR31	1.5	0.21	20.9	21.1	52.8
AR32	1.5	0.48	20.9	21.4	53.5
AR33	1.5	0.43	20.9	21.3	53.3

100th Percentile NO_2 Results

Table G.18: Predicted 100th percentile NO_2 Concentrations for Testing (µg/m³)					
Receptor	**Height (m)**	**100th Percentile NO_2 PC (µg/m³)**	**Background NO_2**	**PEC NO_2 (µg/m³)**	**PEC % EAL**
R1_1	1.5	13.9	41.8	55.7	27.9
R1_2	3.5	13.9	41.8	55.7	27.9
R1_3	6.5	13.9	41.8	55.7	27.9
R2	1.5	12.9	41.8	54.7	27.4
R3	1.5	22.2	41.8	64.0	32.0
R4	1.5	14.0	41.8	55.8	27.9
R5	1.5	19.8	41.8	61.6	30.8
R6	1.5	14.0	41.8	55.8	27.9
R7	1.5	13.0	41.8	54.8	27.4
R8	1.5	9.9	41.8	51.7	25.8
R9	1.5	16.8	41.8	58.6	29.3
R10	1.5	15.6	41.8	57.4	28.7
R11	1.5	20.4	41.8	62.2	31.1
R12	1.5	23.1	41.8	64.9	32.5
R13	1.5	11.0	41.8	52.8	26.4
R14	1.5	10.3	41.8	52.1	26.0
R15	1.5	11.1	41.8	52.9	26.5
R16	1.5	7.9	41.8	49.7	24.9
R17	1.5	15.7	41.8	57.5	28.8
R18	1.5	16.9	41.8	58.7	29.4
R19	1.5	10.1	41.8	51.9	26.0
AR1	1.5	35.3	41.8	77.1	38.6
AR2	1.5	32.4	41.8	74.2	37.1
AR3	1.5	53.8	41.8	95.6	47.8
AR4	1.5	24.5	41.8	66.3	33.2
AR5	1.5	24.4	41.8	66.2	33.1
AR6	1.5	24.9	41.8	66.7	33.3
AR7	1.5	25.0	41.8	66.8	33.4
AR8	1.5	53.8	41.8	95.6	47.8
AR9	1.5	53.8	41.8	95.6	47.8
AR10	1.5	24.1	41.8	65.9	33.0
AR11	1.5	24.0	41.8	65.8	32.9

Table G.18: Predicted 100th percentile NO_2 Concentrations for Testing (µg/m³)					
Receptor	**Height (m)**	**100th Percentile NO_2 PC (µg/m³)**	**Background NO_2**	**PEC NO_2 (µg/m³)**	**PEC % EAL**
AR12	1.5	24.6	41.8	66.4	33.2
AR13	1.5	24.8	41.8	66.6	33.3
AR14	1.5	53.7	41.8	95.5	47.7
AR15	1.5	53.8	41.8	95.6	47.8
AR16	1.5	24.3	41.8	66.1	33.1
AR17	1.5	24.0	41.8	65.8	32.9
AR18	1.5	24.6	41.8	66.4	33.2
AR19	1.5	23.8	41.8	65.6	32.8
AR20	1.5	23.6	41.8	65.4	32.7
AR21	1.5	23.6	41.8	65.4	32.7
AR22	1.5	23.0	41.8	64.8	32.4
AR23	1.5	23.2	41.8	65.0	32.5
AR24	1.5	22.5	41.8	64.3	32.2
AR25	1.5	24.3	41.8	66.1	33.1
AR26	1.5	24.3	41.8	66.1	33.0
AR27	1.5	24.6	41.8	66.4	33.2
AR28	1.5	21.6	41.8	63.4	31.7
AR29	1.5	22.3	41.8	64.1	32.1
AR30	1.5	24.6	41.8	66.4	33.2
AR31	1.5	24.0	41.8	65.8	32.9
AR32	1.5	23.3	41.8	65.1	32.6
AR33	1.5	20.5	41.8	62.3	31.1

Particulate Matter

Table G.19: Predicted Daily Mean PM_{10} Concentrations (µg/m³)				
Receptor	**Height (m)**	**Max Daily Mean PM_{10} PC (µg/m³)**	**Background PM_{10}**	**PC PM_{10} (%)**
R1_1	1.5	0.03	15.7	0.05
R1_2	3.5	0.03	15.7	0.05
R1_3	6.5	0.03	15.7	0.05
R2	1.5	0.02	15.7	0.04
R3	1.5	0.03	15.7	0.07
R4	1.5	0.01	15.7	0.02
R5	1.5	0.01	16.1	0.02
R6	1.5	0.04	16.0	0.07
R7	1.5	0.03	16.0	0.06
R8	1.5	0.02	16.0	0.04
R9	1.5	0.05	16.0	0.09
R10	1.5	0.03	16.0	0.07
R11	1.5	0.01	16.0	0.03
R12	1.5	0.01	16.0	0.02
R13	1.5	0.03	16.0	0.06
R14	1.5	0.03	16.0	0.06
R15	1.5	0.04	15.7	0.07
R16	1.5	0.01	15.7	0.03
R17	1.5	0.01	15.7	0.02
R18	1.5	0.00	15.7	0.01
R19	1.5	0.02	15.7	0.04
AR1	1.5	0.14	15.7	0.27
AR2	1.5	0.11	16.0	0.22
AR3	1.5	0.07	15.7	0.14
AR4	1.5	0.03	15.7	0.05
AR5	1.5	0.03	15.7	0.05
AR6	1.5	0.04	15.7	0.08
AR7	1.5	0.05	15.7	0.10
AR8	1.5	0.06	15.7	0.12
AR9	1.5	0.06	15.7	0.12
AR10	1.5	0.02	15.7	0.05
AR11	1.5	0.03	15.7	0.05

Table G.19: Predicted Daily Mean PM_{10} Concentrations ($\mu g/m^3$)				
Receptor	**Height (m)**	**Max Daily Mean PM_{10} PC ($\mu g/m^3$)**	**Background PM_{10}**	**PC PM_{10} (%)**
AR12	1.5	0.03	15.7	0.07
AR13	1.5	0.04	15.7	0.08
AR14	1.5	0.05	15.7	0.10
AR15	1.5	0.06	15.7	0.12
AR16	1.5	0.03	15.7	0.07
AR17	1.5	0.03	15.7	0.07
AR18	1.5	0.04	15.7	0.08
AR19	1.5	0.02	15.7	0.05
AR20	1.5	0.03	15.7	0.05
AR21	1.5	0.02	15.7	0.05
AR22	1.5	0.03	15.7	0.05
AR23	1.5	0.02	15.7	0.05
AR24	1.5	0.03	15.7	0.05
AR25	1.5	0.05	15.7	0.10
AR26	1.5	0.05	15.7	0.09
AR27	1.5	0.04	15.7	0.09
AR28	1.5	0.04	15.7	0.08
AR29	1.5	0.04	15.7	0.08
AR30	1.5	0.04	15.7	0.09
AR31	1.5	0.04	15.7	0.09
AR32	1.5	0.08	16.0	0.17
AR33	1.5	0.08	16.0	0.15

Lon-3 South Testing Scenario Results

Annual Mean NO_2 Results for 636 testing hours

Table G.20: Predicted Annual Mean NO_2 Concentrations for Testing (µg/m³)					
Receptor	**Height (m)**	**Annual Mean NO_2 PC (µg/m³)**	**Background NO_2**	**PEC NO_2 (µg/m³)**	**PEC % EAL**
R1_1	1.5	0.11	20.9	21.0	52.5
R1_2	3.5	0.11	20.9	21.0	52.5
R1_3	6.5	0.11	20.9	21.0	52.5
R2	1.5	0.09	20.9	21.0	52.5
R3	1.5	0.14	20.9	21.0	52.6
R4	1.5	0.05	20.9	21.0	52.4
R5	1.5	0.04	20.9	20.9	52.4
R6	1.5	0.20	20.9	21.1	52.7
R7	1.5	0.17	20.9	21.1	52.7
R8	1.5	0.10	20.9	21.0	52.5
R9	1.5	0.23	20.90	21.1	52.8
R10	1.5	0.18	20.9	21.1	52.7
R11	1.5	0.07	20.9	21.0	52.4
R12	1.5	0.06	20.9	21.0	52.4
R13	1.5	0.12	20.9	21.0	52.5
R14	1.5	0.11	20.9	21.0	52.5
R15	1.5	0.12	20.9	21.0	52.5
R16	1.5	0.06	20.9	21.0	52.4
R17	1.5	0.03	20.9	20.9	52.3
R18	1.5	0.02	20.9	20.9	52.3
R19	1.5	0.07	20.9	21.0	52.4
AR1	1.5	0.57	20.9	21.5	53.7
AR2	1.5	0.58	20.9	21.5	53.7
AR3	1.5	0.20	20.9	21.1	52.7
AR4	1.5	0.13	20.9	21.0	52.6
AR5	1.5	0.14	20.9	21.0	52.6
AR6	1.5	0.14	20.9	21.0	52.6
AR7	1.5	0.15	20.9	21.0	52.6
AR8	1.5	0.17	20.9	21.1	52.7
AR9	1.5	0.21	20.9	21.1	52.8
AR10	1.5	0.13	20.9	21.0	52.6

Table G.20: Predicted Annual Mean NO_2 Concentrations for Testing (µg/m³)					
Receptor	**Height (m)**	**Annual Mean NO_2 PC (µg/m³)**	**Background NO_2**	**PEC NO_2 (µg/m³)**	**PEC % EAL**
AR11	1.5	0.13	20.9	21.0	52.6
AR12	1.5	0.13	20.9	21.0	52.6
AR13	1.5	0.14	20.9	21.0	52.6
AR14	1.5	0.16	20.9	21.1	52.7
AR15	1.5	0.15	20.9	21.1	52.6
AR16	1.5	0.13	20.9	21.0	52.6
AR17	1.5	0.13	20.9	21.0	52.6
AR18	1.5	0.14	20.9	21.0	52.6
AR19	1.5	0.13	20.9	21.0	52.6
AR20	1.5	0.13	20.9	21.0	52.6
AR21	1.5	0.12	20.9	21.0	52.5
AR22	1.5	0.13	20.9	21.0	52.6
AR23	1.5	0.10	20.9	21.0	52.5
AR24	1.5	0.11	20.9	21.0	52.5
AR25	1.5	0.16	20.9	21.1	52.7
AR26	1.5	0.15	20.9	21.0	52.6
AR27	1.5	0.15	20.9	21.0	52.6
AR28	1.5	0.13	20.9	21.0	52.6
AR29	1.5	0.14	20.9	21.0	52.6
AR30	1.5	0.15	20.9	21.1	52.6
AR31	1.5	0.16	20.9	21.1	52.6
AR32	1.5	0.35	20.9	21.3	53.1
AR33	1.5	0.28	20.9	21.2	52.9

100th Percentile NO_2 Results

Table G.21: Predicted 100th percentile NO_2 Concentrations for Testing (µg/m³)					
Receptor	**Height (m)**	**100th Percentile NO_2 PC (µg/m³)**	**Background NO_2**	**PEC NO_2 (µg/m³)**	**PEC % EAL**
R1_1	1.5	13.7	41.8	55.5	27.8
R1_2	3.5	13.7	41.8	55.5	27.8
R1_3	6.5	13.6	41.8	55.4	27.7
R2	1.5	13.3	41.8	55.1	27.6
R3	1.5	23.0	41.8	64.8	32.4
R4	1.5	13.6	41.8	55.4	27.7
R5	1.5	25.8	41.8	67.6	33.8
R6	1.5	11.6	41.8	53.4	26.7
R7	1.5	11.2	41.8	53.0	26.5
R8	1.5	8.3	41.8	50.1	25.1
R9	1.5	12.4	41.8	54.2	27.1
R10	1.5	10.3	41.8	52.1	26.1
R11	1.5	16.2	41.8	58.0	29.0
R12	1.5	15.4	41.8	57.2	28.6
R13	1.5	8.0	41.8	49.8	24.9
R14	1.5	7.2	41.8	49.0	24.5
R15	1.5	9.2	41.8	51.0	25.5
R16	1.5	8.4	41.8	50.2	25.1
R17	1.5	19.6	41.8	61.4	30.7
R18	1.5	12.5	41.8	54.3	27.1
R19	1.5	8.8	41.8	50.6	25.3
AR1	1.5	31.3	41.8	73.1	36.6
AR2	1.5	29.2	41.8	71.0	35.5
AR3	1.5	24.9	41.8	66.7	33.4
AR4	1.5	24.7	41.8	66.5	33.2
AR5	1.5	24.7	41.8	66.5	33.2
AR6	1.5	24.7	41.8	66.5	33.2
AR7	1.5	24.7	41.8	66.5	33.2
AR8	1.5	24.5	41.8	66.3	33.1
AR9	1.5	24.9	41.8	66.7	33.3
AR10	1.5	24.4	41.8	66.2	33.1
AR11	1.5	24.3	41.8	66.1	33.1

Table G.21: Predicted 100th percentile NO_2 Concentrations for Testing (µg/m^3)					
Receptor	**Height (m)**	**100th Percentile NO_2 PC (µg/m^3)**	**Background NO_2**	**PEC NO_2 (µg/m^3)**	**PEC % EAL**
AR12	1.5	24.3	41.8	66.1	33.0
AR13	1.5	24.2	41.8	66.0	33.0
AR14	1.5	24.2	41.8	66.0	33.0
AR15	1.5	24.6	41.8	66.4	33.2
AR16	1.5	24.1	41.8	65.9	32.9
AR17	1.5	24.0	41.8	65.8	32.9
AR18	1.5	24.0	41.8	65.8	32.9
AR19	1.5	24.1	41.8	65.9	32.9
AR20	1.5	23.9	41.8	65.7	32.8
AR21	1.5	23.7	41.8	65.5	32.8
AR22	1.5	24.1	41.8	65.9	32.9
AR23	1.5	22.5	41.8	64.3	32.1
AR24	1.5	23.1	41.8	64.9	32.5
AR25	1.5	23.9	41.8	65.7	32.8
AR26	1.5	24.1	41.8	65.9	33.0
AR27	1.5	23.5	41.8	65.3	32.7
AR28	1.5	23.0	41.8	64.8	32.4
AR29	1.5	23.3	41.8	65.1	32.6
AR30	1.5	23.4	41.8	65.2	32.6
AR31	1.5	24.0	41.8	65.8	32.9
AR32	1.5	14.9	41.8	56.7	28.3
AR33	1.5	14.3	41.8	56.1	28.0

Particulate Matter

Table G.22: Predicted Daily Mean PM_{10} Concentrations (µg/m³)				
Receptor	**Height (m)**	**Max Daily Mean PM_{10} PC (µg/m³)**	**Background PM_{10}**	**PC PM_{10} (%)**
R1_1	1.5	0.03	15.7	0.05
R1_2	3.5	0.03	15.7	0.05
R1_3	6.5	0.03	15.7	0.05
R2	1.5	0.02	15.7	0.04
R3	1.5	0.04	15.7	0.07
R4	1.5	0.01	15.7	0.03
R5	1.5	0.01	16.1	0.02
R6	1.5	0.04	16.0	0.08
R7	1.5	0.04	16.0	0.07
R8	1.5	0.02	16.0	0.04
R9	1.5	0.04	16.0	0.08
R10	1.5	0.03	16.0	0.07
R11	1.5	0.01	16.0	0.03
R12	1.5	0.01	16.0	0.02
R13	1.5	0.02	16.0	0.05
R14	1.5	0.02	16.0	0.04
R15	1.5	0.03	15.7	0.06
R16	1.5	0.01	15.7	0.03
R17	1.5	0.01	15.7	0.01
R18	1.5	0.00	15.7	0.01
R19	1.5	0.02	15.7	0.03
AR1	1.5	0.12	15.7	0.25
AR2	1.5	0.13	16.0	0.26
AR3	1.5	0.04	15.7	0.09
AR4	1.5	0.03	15.7	0.05
AR5	1.5	0.03	15.7	0.06
AR6	1.5	0.03	15.7	0.06
AR7	1.5	0.03	15.7	0.05
AR8	1.5	0.03	15.7	0.07
AR9	1.5	0.05	15.7	0.09
AR10	1.5	0.03	15.7	0.06
AR11	1.5	0.03	15.7	0.06

Table G.22: Predicted Daily Mean PM_{10} Concentrations ($\mu g/m^3$)				
Receptor	**Height (m)**	**Max Daily Mean PM_{10} PC ($\mu g/m^3$)**	**Background PM_{10}**	**PC PM_{10} (%)**
AR12	1.5	0.03	15.7	0.05
AR13	1.5	0.03	15.7	0.06
AR14	1.5	0.04	15.7	0.07
AR15	1.5	0.04	15.7	0.07
AR16	1.5	0.03	15.7	0.05
AR17	1.5	0.03	15.7	0.05
AR18	1.5	0.03	15.7	0.06
AR19	1.5	0.03	15.7	0.06
AR20	1.5	0.03	15.7	0.06
AR21	1.5	0.03	15.7	0.06
AR22	1.5	0.03	15.7	0.06
AR23	1.5	0.02	15.7	0.05
AR24	1.5	0.02	15.7	0.05
AR25	1.5	0.03	15.7	0.07
AR26	1.5	0.04	15.7	0.07
AR27	1.5	0.03	15.7	0.07
AR28	1.5	0.03	15.7	0.06
AR29	1.5	0.04	15.7	0.07
AR30	1.5	0.04	15.7	0.08
AR31	1.5	0.04	15.7	0.08
AR32	1.5	0.07	16.0	0.13
AR33	1.5	0.06	16.0	0.11

Lon-3 and Lon-2 North Testing Scenario Results

Annual Mean NO_2 Results for 636 testing hours

Table G.23: Predicted Annual Mean NO_2 Concentrations for Testing					
Receptor	**Height (m)**	**Annual Mean NO_2 PC (µg/m³)**	**Background NO_2**	**PEC NO_2 (µg/m³)**	**PEC % EAL**
R1_1	1.5	0.39	20.9	21.3	53.2
R1_2	3.5	0.39	20.9	21.3	53.2
R1_3	6.5	0.40	20.9	21.3	53.2
R2	1.5	0.33	20.9	21.2	53.1
R3	1.5	0.42	20.9	21.3	53.3
R4	1.5	0.08	20.9	21.0	52.5
R5	1.5	0.07	20.9	21.0	52.4
R6	1.5	0.24	20.9	21.1	52.9
R7	1.5	0.21	20.9	21.1	52.8
R8	1.5	0.14	20.9	21.0	52.6
R9	1.5	0.36	20.9	21.3	53.1
R10	1.5	0.31	20.9	21.2	53.0
R11	1.5	0.12	20.9	21.0	52.6
R12	1.5	0.11	20.9	21.0	52.5
R13	1.5	0.26	20.9	21.2	52.9
R14	1.5	0.26	20.9	21.2	52.9
R15	1.5	0.29	20.9	21.2	53.0
R16	1.5	0.15	20.9	21.0	52.6
R17	1.5	0.08	20.9	21.0	52.4
R18	1.5	0.05	20.9	21.0	52.4
R19	1.5	0.23	20.9	21.1	52.8
AR1	1.5	0.81	20.9	21.7	54.3
AR2	1.5	0.65	20.9	21.6	53.9
AR3	1.5	0.74	20.9	21.6	54.1
AR4	1.5	0.80	20.9	21.7	54.3
AR5	1.5	0.73	20.9	21.6	54.1
AR6	1.5	0.66	20.9	21.6	53.9
AR7	1.5	0.50	20.9	21.4	53.5
AR8	1.5	0.55	20.9	21.4	53.6
AR9	1.5	0.59	20.9	21.5	53.7
AR10	1.5	0.15	20.9	21.1	52.6

Table G.23: Predicted Annual Mean NO_2 Concentrations for Testing					
Receptor	**Height (m)**	**Annual Mean NO_2 PC (µg/m³)**	**Background NO_2**	**PEC NO_2 (µg/m³)**	**PEC % EAL**
AR11	1.5	0.35	20.9	21.2	53.1
AR12	1.5	0.36	20.9	21.3	53.1
AR13	1.5	0.38	20.9	21.3	53.2
AR14	1.5	0.43	20.9	21.3	53.3
AR15	1.5	0.51	20.9	21.4	53.5
AR16	1.5	0.33	20.9	21.2	53.1
AR17	1.5	0.25	20.9	21.2	52.9
AR18	1.5	0.37	20.9	21.3	53.2
AR19	1.5	0.13	20.9	21.0	52.6
AR20	1.5	0.17	20.9	21.1	52.7
AR21	1.5	0.13	20.9	21.0	52.6
AR22	1.5	0.15	20.9	21.1	52.6
AR23	1.5	0.16	20.9	21.1	52.7
AR24	1.5	0.14	20.9	21.0	52.6
AR25	1.5	0.39	20.9	21.3	53.2
AR26	1.5	0.41	20.9	21.3	53.3
AR27	1.5	0.39	20.9	21.3	53.2
AR28	1.5	0.39	20.9	21.3	53.2
AR29	1.5	0.40	20.9	21.3	53.2
AR30	1.5	0.39	20.9	21.3	53.2
AR31	1.5	0.38	20.9	21.3	53.2
AR32	1.5	0.67	20.9	21.6	53.9
AR33	1.5	0.64	20.9	21.5	53.9

100th Percentile NO_2 Results

Table G.24: Predicted 100th percentile NO_2 Concentrations for Testing					
Receptor	**Height (m)**	**100th Percentile NO_2 PC (µg/m³)**	**Background NO_2**	**PEC NO_2 (µg/m³)**	**PEC % EAL**
R1_1	1.5	34.6	41.8	76.4	38.2
R1_2	3.5	34.7	41.8	76.5	38.3
R1_3	6.5	35.0	41.8	76.8	38.4
R2	1.5	37.7	41.8	79.5	39.8
R3	1.5	37.7	41.8	79.5	39.8
R4	1.5	28.1	41.8	69.9	34.9
R5	1.5	34.4	41.8	76.2	38.1
R6	1.5	19.1	41.8	60.9	30.4
R7	1.5	17.9	41.8	59.7	29.8
R8	1.5	14.3	41.8	56.1	28.0
R9	1.5	18.7	41.8	60.5	30.2
R10	1.5	18.4	41.8	60.2	30.1
R11	1.5	32.1	41.8	73.9	36.9
R12	1.5	28.6	41.8	70.4	35.2
R13	1.5	15.1	41.8	56.9	28.4
R14	1.5	12.0	41.8	53.8	26.9
R15	1.5	11.6	41.8	53.4	26.7
R16	1.5	13.9	41.8	55.7	27.9
R17	1.5	32.0	41.8	73.8	36.9
R18	1.5	33.8	41.8	75.6	37.8
R19	1.5	25.3	41.8	67.1	33.6
AR1	1.5	47.1	41.8	88.9	44.5
AR2	1.5	49.3	41.8	91.1	45.6
AR3	1.5	53.8	41.8	95.6	47.8
AR4	1.5	27.0	41.8	68.8	34.4
AR5	1.5	27.5	41.8	69.3	34.6
AR6	1.5	31.1	41.8	72.9	36.5
AR7	1.5	32.6	41.8	74.4	37.2
AR8	1.5	53.8	41.8	95.6	47.8
AR9	1.5	53.8	41.8	95.6	47.8
AR10	1.5	26.7	41.8	68.5	34.2
AR11	1.5	27.1	41.8	68.9	34.5

Table G.24: Predicted 100th percentile NO_2 Concentrations for Testing					
Receptor	**Height (m)**	**100th Percentile NO_2 PC (µg/m³)**	**Background NO_2**	**PEC NO_2 (µg/m³)**	**PEC % EAL**
AR12	1.5	31.3	41.8	73.1	36.5
AR13	1.5	32.3	41.8	74.1	37.1
AR14	1.5	53.7	41.8	95.5	47.7
AR15	1.5	53.8	41.8	95.6	47.8
AR16	1.5	31.3	41.8	73.1	36.5
AR17	1.5	31.3	41.8	73.1	36.6
AR18	1.5	32.2	41.8	74.0	37.0
AR19	1.5	26.7	41.8	68.5	34.2
AR20	1.5	26.9	41.8	68.7	34.4
AR21	1.5	28.5	41.8	70.3	35.1
AR22	1.5	27.2	41.8	69.0	34.5
AR23	1.5	40.1	41.8	81.9	40.9
AR24	1.5	34.8	41.8	76.6	38.3
AR25	1.5	35.6	41.8	77.4	38.7
AR26	1.5	34.7	41.8	76.5	38.2
AR27	1.5	39.4	41.8	81.2	40.6
AR28	1.5	41.7	41.8	83.5	41.7
AR29	1.5	34.3	41.8	76.1	38.0
AR30	1.5	34.7	41.8	76.5	38.3
AR31	1.5	34.8	41.8	76.6	38.3
AR32	1.5	26.0	41.8	67.8	33.9
AR33	1.5	22.3	41.8	64.1	32.1

Particulate Matter

Table G.25: Predicted Daily Mean PM_{10} Concentrations (µg/m³)				
Receptor	**Height (m)**	**Max Daily Mean PM_{10} PC (µg/m³)**	**Background PM_{10}**	**PC PM_{10} (%)**
R1_1	1.5	0.17	15.7	0.35
R1_2	3.5	0.18	15.7	0.35
R1_3	6.5	0.18	15.7	0.36
R2	1.5	0.11	15.7	0.23
R3	1.5	0.17	15.7	0.35
R4	1.5	0.03	15.7	0.05
R5	1.5	0.03	16.1	0.05
R6	1.5	0.07	16.0	0.14
R7	1.5	0.06	16.0	0.13
R8	1.5	0.05	16.0	0.09
R9	1.5	0.08	16.0	0.17
R10	1.5	0.07	16.0	0.15
R11	1.5	0.03	16.0	0.06
R12	1.5	0.02	16.0	0.05
R13	1.5	0.06	16.0	0.13
R14	1.5	0.07	16.0	0.14
R15	1.5	0.08	15.7	0.16
R16	1.5	0.06	15.7	0.11
R17	1.5	0.03	15.7	0.06
R18	1.5	0.02	15.7	0.03
R19	1.5	0.09	15.7	0.18
AR1	1.5	0.22	15.7	0.43
AR2	1.5	0.18	16.0	0.35
AR3	1.5	0.20	15.7	0.41
AR4	1.5	0.20	15.7	0.40
AR5	1.5	0.19	15.7	0.39
AR6	1.5	0.19	15.7	0.38
AR7	1.5	0.18	15.7	0.35
AR8	1.5	0.19	15.7	0.39
AR9	1.5	0.18	15.7	0.37
AR10	1.5	0.04	15.7	0.07
AR11	1.5	0.10	15.7	0.20

Table G.25: Predicted Daily Mean PM_{10} Concentrations ($\mu g/m^3$)				
Receptor	**Height (m)**	**Max Daily Mean PM_{10} PC ($\mu g/m^3$)**	**Background PM_{10}**	**PC PM_{10} (%)**
AR12	1.5	0.16	15.7	0.33
AR13	1.5	0.16	15.7	0.33
AR14	1.5	0.19	15.7	0.38
AR15	1.5	0.17	15.7	0.34
AR16	1.5	0.15	15.7	0.31
AR17	1.5	0.08	15.7	0.16
AR18	1.5	0.16	15.7	0.33
AR19	1.5	0.03	15.7	0.06
AR20	1.5	0.05	15.7	0.11
AR21	1.5	0.03	15.7	0.06
AR22	1.5	0.04	15.7	0.08
AR23	1.5	0.04	15.7	0.09
AR24	1.5	0.03	15.7	0.07
AR25	1.5	0.17	15.7	0.33
AR26	1.5	0.17	15.7	0.34
AR27	1.5	0.17	15.7	0.34
AR28	1.5	0.16	15.7	0.33
AR29	1.5	0.16	15.7	0.32
AR30	1.5	0.14	15.7	0.29
AR31	1.5	0.16	15.7	0.32
AR32	1.5	0.15	16.0	0.29
AR33	1.5	0.13	16.0	0.27

Lon-3 and Lon-2 South Testing Scenario Results

Annual Mean NO_2 Results for 636 testing hours

Table G.26: Predicted Annual Mean NO_2 Concentrations for Testing (µg/m³)					
Receptor	**Height (m)**	**Annual Mean NO_2 PC (µg/m³)**	**Background NO_2**	**PEC NO_2 (µg/m³)**	**PEC % EAL**
R1_1	1.5	0.38	20.9	21.3	53.2
R1_2	3.5	0.38	20.9	21.3	53.2
R1_3	6.5	0.39	20.9	21.3	53.2
R2	1.5	0.26	20.9	21.2	52.9
R3	1.5	0.34	20.9	21.2	53.1
R4	1.5	0.09	20.9	21.0	52.5
R5	1.5	0.07	20.9	21.0	52.4
R6	1.5	0.29	20.9	21.2	53.0
R7	1.5	0.25	20.9	21.1	52.9
R8	1.5	0.16	20.9	21.1	52.7
R9	1.5	0.34	20.9	21.2	53.1
R10	1.5	0.28	20.9	21.2	53.0
R11	1.5	0.12	20.9	21.0	52.5
R12	1.5	0.10	20.9	21.0	52.5
R13	1.5	0.22	20.9	21.1	52.8
R14	1.5	0.22	20.9	21.1	52.8
R15	1.5	0.24	20.9	21.1	52.8
R16	1.5	0.14	20.9	21.0	52.6
R17	1.5	0.08	20.9	21.0	52.4
R18	1.5	0.05	20.9	20.9	52.4
R19	1.5	0.20	20.9	21.1	52.7
AR1	1.5	0.84	20.9	21.7	54.4
AR2	1.5	0.82	20.9	21.7	54.3
AR3	1.5	1.16	20.9	22.1	55.1
AR4	1.5	0.45	20.9	21.4	53.4
AR5	1.5	0.51	20.9	21.4	53.5
AR6	1.5	0.55	20.9	21.4	53.6
AR7	1.5	0.72	20.9	21.6	54.1
AR8	1.5	0.90	20.9	21.8	54.5
AR9	1.5	0.91	20.9	21.8	54.5
AR10	1.5	0.41	20.9	21.3	53.3

Table G.26: Predicted Annual Mean NO_2 Concentrations for Testing (µg/m³)					
Receptor	**Height (m)**	**Annual Mean NO_2 PC (µg/m³)**	**Background NO_2**	**PEC NO_2 (µg/m³)**	**PEC % EAL**
AR11	1.5	0.41	20.9	21.3	53.3
AR12	1.5	0.40	20.9	21.3	53.3
AR13	1.5	0.45	20.9	21.3	53.4
AR14	1.5	0.48	20.9	21.4	53.4
AR15	1.5	0.70	20.9	21.6	54.0
AR16	1.5	0.31	20.9	21.2	53.0
AR17	1.5	0.26	20.9	21.2	52.9
AR18	1.5	0.32	20.9	21.2	53.0
AR19	1.5	0.41	20.9	21.3	53.3
AR20	1.5	0.41	20.9	21.3	53.3
AR21	1.5	0.32	20.9	21.2	53.1
AR22	1.5	0.31	20.9	21.2	53.0
AR23	1.5	0.29	20.9	21.2	53.0
AR24	1.5	0.26	20.9	21.2	52.9
AR25	1.5	0.27	20.9	21.2	52.9
AR26	1.5	0.19	20.9	21.1	52.7
AR27	1.5	0.18	20.9	21.1	52.7
AR28	1.5	0.19	20.9	21.1	52.7
AR29	1.5	0.18	20.9	21.1	52.7
AR30	1.5	0.19	20.9	21.1	52.7
AR31	1.5	0.32	20.9	21.2	53.0
AR32	1.5	0.54	20.9	21.4	53.6
AR33	1.5	0.47	20.9	21.4	53.4

100th Percentile Hourly Mean NO_2 Results

Table G.27: Predicted 100th percentile NO_2 Concentrations for Testing (µg/m³)					
Receptor	**Height (m)**	**100th Percentile NO_2 PC (µg/m³)**	**Background NO_2**	**PEC NO_2 (µg/m³)**	**PEC % EAL**
R1_1	1.5	41.9	41.8	125.5	62.8
R1_2	3.5	42.0	41.8	125.6	62.8
R1_3	6.5	42.5	41.8	126.1	63.0
R2	1.5	38.1	41.8	121.7	60.8
R3	1.5	43.6	41.8	127.2	63.6
R4	1.5	27.4	41.8	111.0	55.5
R5	1.5	34.5	41.8	118.1	59.0
R6	1.5	18.2	41.8	101.8	50.9
R7	1.5	17.3	41.8	100.9	50.4
R8	1.5	13.5	41.8	97.1	48.5
R9	1.5	16.7	41.8	100.3	50.1
R10	1.5	14.8	41.8	98.4	49.2
R11	1.5	28.9	41.8	112.5	56.2
R12	1.5	23.8	41.8	107.4	53.7
R13	1.5	14.8	41.8	98.4	49.2
R14	1.5	10.0	41.8	93.6	46.8
R15	1.5	10.1	41.8	93.7	46.9
R16	1.5	12.4	41.8	96.0	48.0
R17	1.5	27.4	41.8	111.0	55.5
R18	1.5	23.5	41.8	107.1	53.5
R19	1.5	26.3	41.8	109.9	54.9
AR1	1.5	37.3	41.8	120.9	60.5
AR2	1.5	36.4	41.8	120.0	60.0
AR3	1.5	28.1	41.8	111.7	55.8
AR4	1.5	34.2	41.8	117.8	58.9
AR5	1.5	33.7	41.8	117.3	58.6
AR6	1.5	32.7	41.8	116.3	58.1
AR7	1.5	37.7	41.8	121.3	60.7
AR8	1.5	36.8	41.8	120.4	60.2
AR9	1.5	35.5	41.8	119.1	59.5
AR10	1.5	34.0	41.8	117.6	58.8
AR11	1.5	33.3	41.8	116.9	58.5

Table G.27: Predicted 100th percentile NO_2 Concentrations for Testing (µg/m³)					
Receptor	**Height (m)**	**100th Percentile NO_2 PC (µg/m³)**	**Background NO_2**	**PEC NO_2 (µg/m³)**	**PEC % EAL**
AR12	1.5	31.7	41.8	115.3	57.7
AR13	1.5	37.7	41.8	121.3	60.6
AR14	1.5	36.5	41.8	120.1	60.1
AR15	1.5	27.7	41.8	111.3	55.7
AR16	1.5	38.0	41.8	121.6	60.8
AR17	1.5	38.1	41.8	121.7	60.9
AR18	1.5	37.6	41.8	121.2	60.6
AR19	1.5	33.6	41.8	117.2	58.6
AR20	1.5	33.1	41.8	116.7	58.3
AR21	1.5	34.4	41.8	118.0	59.0
AR22	1.5	32.8	41.8	116.4	58.2
AR23	1.5	36.4	41.8	120.0	60.0
AR24	1.5	37.6	41.8	121.2	60.6
AR25	1.5	36.4	41.8	120.0	60.0
AR26	1.5	27.4	41.8	111.0	55.5
AR27	1.5	28.6	41.8	112.2	56.1
AR28	1.5	41.3	41.8	124.9	62.4
AR29	1.5	34.0	41.8	117.6	58.8
AR30	1.5	27.0	41.8	110.6	55.3
AR31	1.5	26.4	41.8	110.0	55.0
AR32	1.5	17.2	41.8	100.8	50.4
AR33	1.5	15.3	41.8	98.9	49.4

Particulate Matter

Table G.28: Predicted Daily Mean PM_{10} Concentrations (µg/m³)				
Receptor	**Height (m)**	**Max Daily Mean PM_{10} PC (µg/m³)**	**Background PM_{10}**	**PC PM_{10} (%)**
R1_1	1.5	0.16	15.7	0.31
R1_2	3.5	0.16	15.7	0.31
R1_3	6.5	0.16	15.7	0.32
R2	1.5	0.08	15.7	0.17
R3	1.5	0.14	15.7	0.27
R4	1.5	0.03	15.7	0.06
R5	1.5	0.02	16.1	0.05
R6	1.5	0.08	16.0	0.16
R7	1.5	0.07	16.0	0.14
R8	1.5	0.05	16.0	0.09
R9	1.5	0.08	16.0	0.16
R10	1.5	0.06	16.0	0.12
R11	1.5	0.03	16.0	0.06
R12	1.5	0.02	16.0	0.05
R13	1.5	0.05	16.0	0.11
R14	1.5	0.06	16.0	0.12
R15	1.5	0.07	15.7	0.14
R16	1.5	0.05	15.7	0.10
R17	1.5	0.03	15.7	0.06
R18	1.5	0.02	15.7	0.03
R19	1.5	0.08	15.7	0.17
AR1	1.5	0.21	15.7	0.42
AR2	1.5	0.21	16.0	0.42
AR3	1.5	0.25	15.7	0.50
AR4	1.5	0.17	15.7	0.34
AR5	1.5	0.19	15.7	0.39
AR6	1.5	0.19	15.7	0.38
AR7	1.5	0.21	15.7	0.41
AR8	1.5	0.22	15.7	0.44
AR9	1.5	0.21	15.7	0.41
AR10	1.5	0.15	15.7	0.31
AR11	1.5	0.15	15.7	0.30

Table G.28: Predicted Daily Mean PM_{10} Concentrations ($\mu g/m^3$)				
Receptor	**Height (m)**	**Max Daily Mean PM_{10} PC ($\mu g/m^3$)**	**Background PM_{10}**	**PC PM_{10} (%)**
AR12	1.5	0.14	15.7	0.28
AR13	1.5	0.14	15.7	0.28
AR14	1.5	0.14	15.7	0.28
AR15	1.5	0.16	15.7	0.33
AR16	1.5	0.11	15.7	0.21
AR17	1.5	0.09	15.7	0.19
AR18	1.5	0.11	15.7	0.22
AR19	1.5	0.16	15.7	0.31
AR20	1.5	0.15	15.7	0.30
AR21	1.5	0.13	15.7	0.25
AR22	1.5	0.12	15.7	0.24
AR23	1.5	0.11	15.7	0.21
AR24	1.5	0.08	15.7	0.15
AR25	1.5	0.08	15.7	0.16
AR26	1.5	0.07	15.7	0.13
AR27	1.5	0.05	15.7	0.10
AR28	1.5	0.05	15.7	0.10
AR29	1.5	0.05	15.7	0.11
AR30	1.5	0.06	15.7	0.11
AR31	1.5	0.10	15.7	0.19
AR32	1.5	0.11	16.0	0.23
AR33	1.5	0.10	15.7	0.21

Lon-3 Admin and Lon-2 North Testing Scenario Results

Annual Mean NO_2 Results for 57 hours testing of admin generator

Table G.29: Predicted Annual Mean NO_2 Concentrations for Testing (µg/m³)					
Receptor	**Height (m)**	**Annual Mean NO_2 PC (µg/m³)**	**Background NO_2**	**PEC NO_2 (µg/m³)**	**PEC % EAL**
R1_1	1.5	0.03	20.9	20.9	52.3
R1_2	3.5	0.03	20.9	20.9	52.3
R1_3	6.5	0.03	20.9	20.9	52.3
R2	1.5	0.02	20.9	20.9	52.3
R3	1.5	0.03	20.9	20.9	52.3
R4	1.5	0.00	20.9	20.9	52.3
R5	1.5	0.00	20.9	20.9	52.3
R6	1.5	0.01	20.9	20.9	52.3
R7	1.5	0.01	20.9	20.9	52.3
R8	1.5	0.01	20.9	20.9	52.3
R9	1.5	0.01	20.90	20.9	52.3
R10	1.5	0.01	20.9	20.9	52.3
R11	1.5	0.01	20.9	20.9	52.3
R12	1.5	0.00	20.9	20.9	52.3
R13	1.5	0.01	20.9	20.9	52.3
R14	1.5	0.01	20.9	20.9	52.3
R15	1.5	0.02	20.9	20.9	52.3
R16	1.5	0.01	20.9	20.9	52.3
R17	1.5	0.00	20.9	20.9	52.3
R18	1.5	0.00	20.9	20.9	52.3
R19	1.5	0.02	20.9	20.9	52.3
AR1	1.5	0.04	20.9	20.9	52.4
AR2	1.5	0.03	20.9	20.9	52.3
AR3	1.5	0.09	20.9	21.0	52.5
AR4	1.5	0.07	20.9	21.0	52.4
AR5	1.5	0.06	20.9	21.0	52.4
AR6	1.5	0.05	20.9	21.0	52.4
AR7	1.5	0.04	20.9	20.9	52.4
AR8	1.5	0.05	20.9	21.0	52.4
AR9	1.5	0.06	20.9	21.0	52.4
AR10	1.5	0.01	20.9	20.9	52.3

Table G.29: Predicted Annual Mean NO_2 Concentrations for Testing (µg/m³)					
Receptor	**Height (m)**	**Annual Mean NO_2 PC (µg/m³)**	**Background NO_2**	**PEC NO_2 (µg/m³)**	**PEC % EAL**
AR11	1.5	0.03	20.9	20.9	52.3
AR12	1.5	0.02	20.9	20.9	52.3
AR13	1.5	0.03	20.9	20.9	52.3
AR14	1.5	0.04	20.9	20.9	52.4
AR15	1.5	0.05	20.9	21.0	52.4
AR16	1.5	0.02	20.9	20.9	52.3
AR17	1.5	0.02	20.9	20.9	52.3
AR18	1.5	0.02	20.9	20.9	52.3
AR19	1.5	0.01	20.9	20.9	52.3
AR20	1.5	0.01	20.9	20.9	52.3
AR21	1.5	0.01	20.9	20.9	52.3
AR22	1.5	0.01	20.9	20.9	52.3
AR23	1.5	0.01	20.9	20.9	52.3
AR24	1.5	0.01	20.9	20.9	52.3
AR25	1.5	0.02	20.9	20.9	52.3
AR26	1.5	0.03	20.9	20.9	52.3
AR27	1.5	0.02	20.9	20.9	52.3
AR28	1.5	0.03	20.9	20.9	52.3
AR29	1.5	0.03	20.9	20.9	52.3
AR30	1.5	0.02	20.9	20.9	52.3
AR31	1.5	0.02	20.9	20.9	52.3
AR32	1.5	0.03	20.9	20.9	52.3
AR33	1.5	0.03	20.9	20.9	52.3

100th Percentile NO_2 Results

Table G.30: Predicted 100th percentile NO_2 Concentrations for Testing (µg/m³)					
Receptor	**Height (m)**	**100th Percentile NO_2 PC (µg/m³)**	**Background NO_2**	**PEC NO_2 (µg/m³)**	**PEC % EAL**
R1_1	1.5	26.1	41.8	67.9	33.9
R1_2	3.5	26.2	41.8	68.0	34.0
R1_3	6.5	26.5	41.8	68.3	34.1
R2	1.5	31.6	41.8	73.4	36.7
R3	1.5	32.0	41.8	73.8	36.9
R4	1.5	16.5	41.8	58.3	29.2
R5	1.5	19.8	41.8	61.6	30.8
R6	1.5	11.1	41.8	52.9	26.5
R7	1.5	11.0	41.8	52.8	26.4
R8	1.5	9.2	41.8	51.0	25.5
R9	1.5	10.7	41.8	52.5	26.3
R10	1.5	10.3	41.8	52.1	26.0
R11	1.5	17.8	41.8	59.6	29.8
R12	1.5	15.1	41.8	56.9	28.4
R13	1.5	9.5	41.8	51.3	25.7
R14	1.5	9.5	41.8	51.3	25.6
R15	1.5	8.8	41.8	50.6	25.3
R16	1.5	8.8	41.8	50.6	25.3
R17	1.5	20.0	41.8	61.8	30.9
R18	1.5	19.7	41.8	61.5	30.8
R19	1.5	17.3	41.8	59.1	29.6
AR1	1.5	39.9	41.8	81.7	40.9
AR2	1.5	52.0	41.8	93.8	46.9
AR3	1.5	138.5	41.8	180.3	90.1
AR4	1.5	53.6	41.8	95.4	47.7
AR5	1.5	79.0	41.8	120.8	60.4
AR6	1.5	79.0	41.8	120.8	60.4
AR7	1.5	79.0	41.8	120.8	60.4
AR8	1.5	138.5	41.8	180.3	90.1
AR9	1.5	138.5	41.8	180.3	90.1
AR10	1.5	53.6	41.8	95.4	47.7
AR11	1.5	79.0	41.8	120.8	60.4

Table G.30: Predicted 100th percentile NO_2 Concentrations for Testing (µg/m³)					
Receptor	**Height (m)**	**100th Percentile NO_2 PC (µg/m³)**	**Background NO_2**	**PEC NO_2 (µg/m³)**	**PEC % EAL**
AR12	1.5	79.0	41.8	120.8	60.4
AR13	1.5	79.0	41.8	120.8	60.4
AR14	1.5	138.5	41.8	180.3	90.1
AR15	1.5	138.5	41.8	180.3	90.1
AR16	1.5	79.0	41.8	120.8	60.4
AR17	1.5	72.5	41.8	114.3	57.2
AR18	1.5	79.0	41.8	120.8	60.4
AR19	1.5	53.6	41.8	95.4	47.7
AR20	1.5	79.0	41.8	120.8	60.4
AR21	1.5	53.6	41.8	95.4	47.7
AR22	1.5	78.6	41.8	120.4	60.2
AR23	1.5	61.1	41.8	102.9	51.4
AR24	1.5	58.0	41.8	99.8	49.9
AR25	1.5	79.0	41.8	120.8	60.4
AR26	1.5	79.0	41.8	120.8	60.4
AR27	1.5	60.3	41.8	102.1	51.0
AR28	1.5	28.9	41.8	70.7	35.4
AR29	1.5	30.6	41.8	72.4	36.2
AR30	1.5	31.8	41.8	73.6	36.8
AR31	1.5	33.5	41.8	75.3	37.7
AR32	1.5	12.8	41.8	54.6	27.3
AR33	1.5	12.2	41.8	54.0	27.0

Particulate Matter

Table G.31: Predicted Daily Mean PM_{10} Concentrations (µg/m³)				
Receptor	**Height (m)**	**Max Daily Mean PM_{10} PC (µg/m³)**	**Background PM_{10}**	**PC PM_{10} (%)**
R1_1	1.5	0.19	15.7	0.37
R1_2	3.5	0.19	15.7	0.37
R1_3	6.5	0.19	15.7	0.39
R2	1.5	0.11	15.7	0.21
R3	1.5	0.16	15.7	0.33
R4	1.5	0.02	15.7	0.04
R5	1.5	0.02	16.1	0.04
R6	1.5	0.05	16.0	0.10
R7	1.5	0.05	16.0	0.10
R8	1.5	0.03	16.0	0.07
R9	1.5	0.06	16.0	0.12
R10	1.5	0.05	16.0	0.11
R11	1.5	0.02	16.0	0.05
R12	1.5	0.02	16.0	0.04
R13	1.5	0.05	16.0	0.09
R14	1.5	0.05	16.0	0.11
R15	1.5	0.07	15.7	0.14
R16	1.5	0.05	15.7	0.10
R17	1.5	0.03	15.7	0.05
R18	1.5	0.01	15.7	0.03
R19	1.5	0.09	15.7	0.17
AR1	1.5	0.25	15.7	0.50
AR2	1.5	0.18	16.0	0.37
AR3	1.5	0.32	15.7	0.65
AR4	1.5	0.20	15.7	0.41
AR5	1.5	0.20	15.7	0.39
AR6	1.5	0.19	15.7	0.38
AR7	1.5	0.18	15.7	0.36
AR8	1.5	0.24	15.7	0.48
AR9	1.5	0.26	15.7	0.52
AR10	1.5	0.04	15.7	0.07
AR11	1.5	0.11	15.7	0.23

Table G.31: Predicted Daily Mean PM_{10} Concentrations ($\mu g/m^3$)				
Receptor	**Height (m)**	**Max Daily Mean PM_{10} PC ($\mu g/m^3$)**	**Background PM_{10}**	**PC PM_{10} (%)**
AR12	1.5	0.16	15.7	0.33
AR13	1.5	0.17	15.7	0.34
AR14	1.5	0.23	15.7	0.47
AR15	1.5	0.25	15.7	0.51
AR16	1.5	0.14	15.7	0.29
AR17	1.5	0.08	15.7	0.17
AR18	1.5	0.16	15.7	0.33
AR19	1.5	0.03	15.7	0.06
AR20	1.5	0.06	15.7	0.12
AR21	1.5	0.03	15.7	0.06
AR22	1.5	0.04	15.7	0.08
AR23	1.5	0.04	15.7	0.09
AR24	1.5	0.03	15.7	0.06
AR25	1.5	0.17	15.7	0.34
AR26	1.5	0.18	15.7	0.36
AR27	1.5	0.17	15.7	0.34
AR28	1.5	0.18	15.7	0.36
AR29	1.5	0.15	15.7	0.30
AR30	1.5	0.13	15.7	0.26
AR31	1.5	0.13	15.7	0.25
AR32	1.5	0.10	16.0	0.20
AR33	1.5	0.10	16.0	0.20