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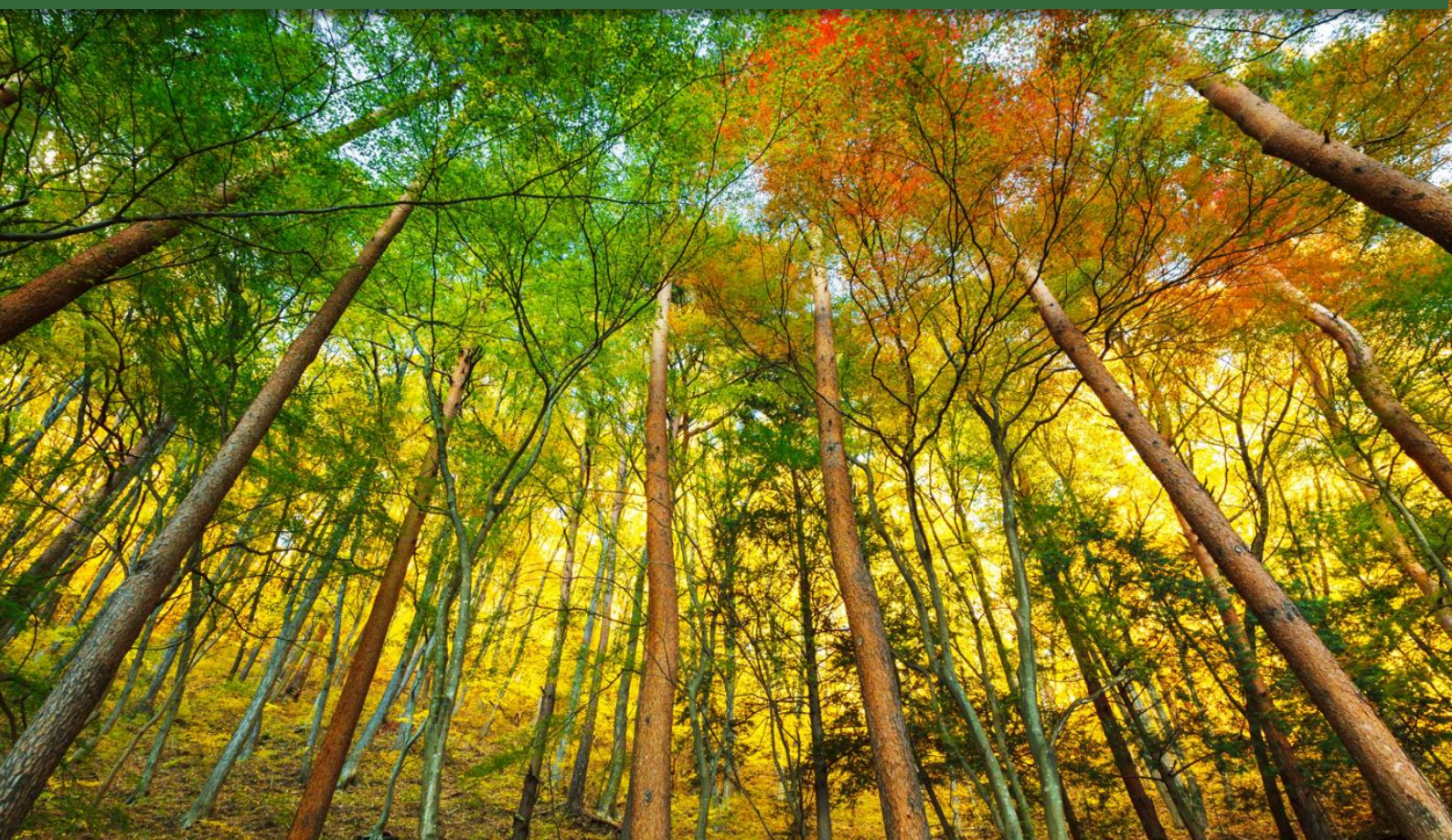
Air Quality Impact Assessment Report

v1.0

Environmental and sustainability solutions provided to

Plater Chemicals Group Ltd



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1.0 INTRODUCTION

Walker Resource Management Limited (WRM) were commissioned by Plater Chemicals Group Ltd (hereon referred to as "Plater Chemicals") to undertake an Air Quality Impact Assessment (AQIA) for the operation of 1No. 5.3MWth natural gas fired boiler. The boiler is located at Plater Chemicals Production & Bio facility.

The facility is situated at

Plater Chemicals Group Ltd
High Street West
Glossop
Derbyshire
SK13 8ES

Site Grid Reference: 402363, 394291

The Air Quality Impact Assessment (AQIA) is produced as part of an application to vary the site's environmental permit to include an existing boiler which now falls within scope of the Medium Combustion Plant Directive (MCPD) on account of the net thermal input rating of the boiler being greater than 5MWth. The boiler must meet the respective Emission Limit Value (ELV) for this type of appliance as stated in the MCPD.

As such, an AQIA is required to model the impacts of the appliances on human and ecological receptors.

The AQIA clarifies the following details of the development:

- Stack heights and impact of buildings on pollutant dispersion; and
- Confirmation of emission pollutants and concentrations from each source.

1.1 Site Location

The site is located in Glossop, North Derbyshire and supplies the R&D, manufacturing, spray drying, packaging and blending operations of the Plater Group. The site is situated just north of the A57 and less than 500m southeast from Dinting train station. Glossop Brook runs along the southern perimeter of the site. The site is located approximately 1km west of Glossop town centre. Directly to the east of the facility is a Tesco Supermarket (approximately 100m away). The site is situated in an industrial area with residential areas nearby to the southeast

and north. Access to the site is via Dinting Lane off the A57. There is also a visitor entrance turning directly off the A57 through a gap in the terrace houses and over a small bridge over Glossop Brook. There are numerous residential properties situated near the site, both on the A57 and Dinting Road, with the closest receptor being residential properties located approximately 20m to the south on the A57.

The topography of the land in proximity to the site is varied with a mixture of flat and hilly terrain. The environmental setting of the site is generally residential with low rise buildings, open fields, woodland and moorland areas. A site location map is presented in Figure 1.

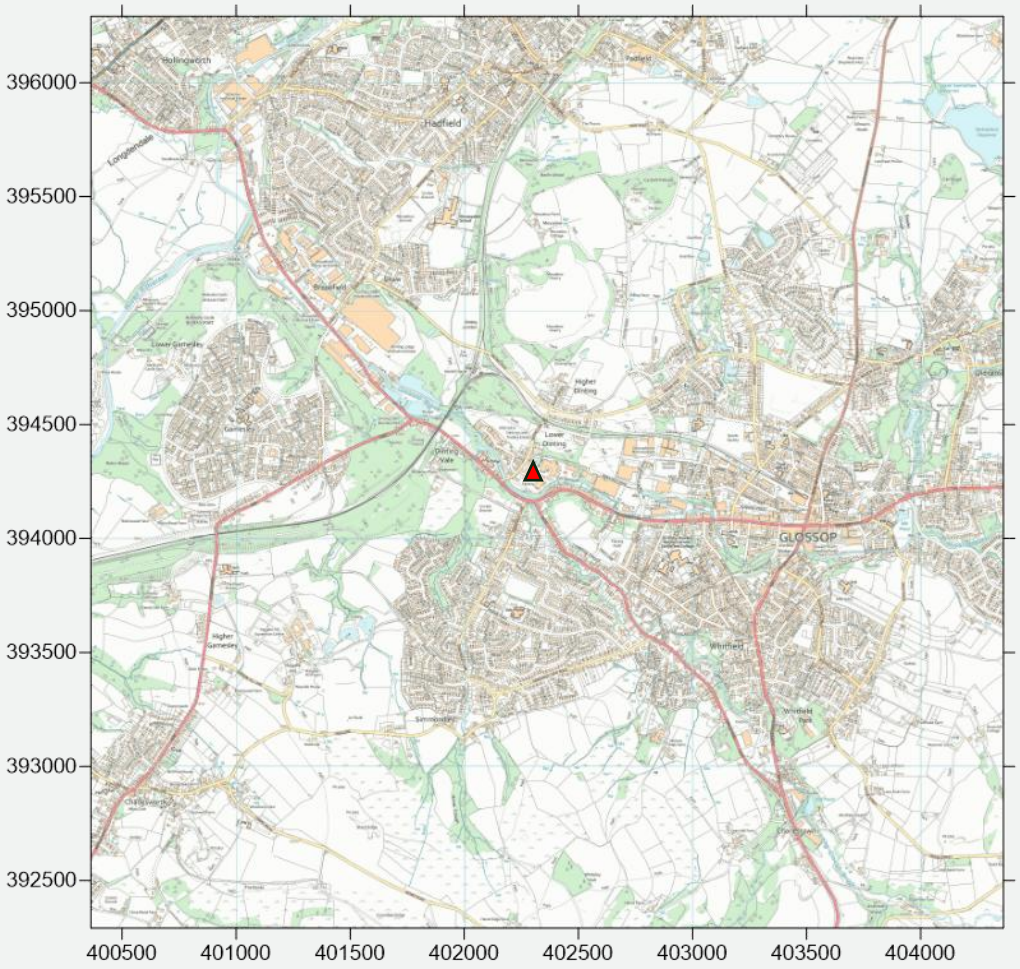


Figure 1 - Site Location Map.

1.2 Current Operations

Plater Chemicals currently operate the site under an Environmental Permit (Reference EPR/AP3737GA), with the latest version of the permit issued by the Environment Agency on

22/04/09. The permit authorises the production of metal salts, including chromium salts, rare earth metal salts, and general-purpose metal salts. These salts are produced as solutions or powders and are used in various applications such as metal catalysts, dyestuff intermediates, metal treatment chemicals, buffer solutions, antifreezes, and tannery chemicals.

The permit allows an overall production capacity of 8,600 tonnes per year, distributed as follows:

- 2,100 tonnes per year for the main chrome salt production processes (VTL1 + 2)
- 2,200 tonnes per year for the main rare earth salt production processes (VTL3 + SPV101)
- 1,300 tonnes per year for the proposed basic metal salt production processes (VO3 + VO4)

In relation to the site production operations there are a total of 12 emission points onsite which consists of:

- Dilute Sulphuric Acid Scrubber serving the Ammonia storage tank
- Dilute Sodium Hydroxide Scrubber serving the Hydrochloric Acid storage tank
- Acetic Acid Tank 1 with carbon filter
- Acetic Acid Tank 2 with carbon filter
- Acetic Acid Tank 3 with carbon filter
- Acetic Acid Tank 4 with carbon filter
- Acetic Acid Tank 5 with carbon filter
- Acetic Acid Tank 6 with carbon filter
- Acetic Acid Tank 7 with carbon filter
- 5.3MWth gas-fired boiler
- Bag filter serving the Calciner plant
- Alkali metal fluoride production with emission to atmosphere point

WRM initially undertook a H1 Assessment in order to determine the impact of the emission releases from the abatement features (scrubber, wet scrubber, carbon filters, bag filter and alkali metal fluoride production) and appliance (boiler) noted above. The H1 Assessment screened out the emissions from all emission points except the boiler as the assessment determined that the Process Contribution percentages of the Environmental Assessment Levels (EALs) were less than 10% of short-term EAL and less than 1% of long-term EAL. The gas fired boiler was determined to require further detailed air dispersion modelling by the H1 assessment, due to emission levels exceeding the EA’s environmental impact thresholds for

the appliance when compared to the EALs in the H1 Assessment. As result the site's boiler forms the only consideration of this AQIA.

The boiler routinely operates on natural gas and provides steam to be utilised in the facilities production operations. As such, for the purpose of the modelling, to represent a worst-case scenario, the emission limit value for the operation of the boiler utilising a natural gas fuel source and acting as an existing appliance, 200mg/Nm^3 has been used as the concentration, in line with the ELV in the MCPD. Table 1 (see below) displays the details on the site's boiler.

Table 1 - Boiler within the facility.

Reference	Model	Input
Boiler	1 x Ruston Thermax Two	5.3 MWth net input

1.3 Scoping Assessment

This air quality impact assessment has been prepared by WRM based on information provided by Plater Chemicals and monitoring data provided by Dunphy.

This assessment considers the impacts of combustion pollutants from the boiler on sensitive receptors adjacent to the facility. The main aims and objectives are to:

i. Quantify emissions to air from the energy centre using the ADMS 5.2 emissions modelling software;
ii. Quantify the emissions levels under short term and long term worst case scenarios;
iii. Consider site specific conditions likely to affect dispersion; and
iv. Assess varying stack heights taking into consideration downwash effects from buildings.

2.0 REGULATORY SETTING

In order to provide meaningful input parameters to be modelled against a set threshold value, the regulatory background to air quality modelling is provided. The regulatory setting forms the basis for the justification for model input data and the assessment of modelled output data against set values.

2.1 Air Quality Standards

EC Council Directive 96/62/EC on ambient air quality assessment and management (The Air Quality Framework Directive) established a framework through which the European Union will agree limits or target values for air pollutants. The limits within the EC Directive were implemented by The Air Quality Limit Value Regulations. EC Council Directive 2008/50/EC consolidated earlier air quality directives. The Limit Value Regulations set air quality standards for a range of air pollutants. The UK Government has published an Air Quality Strategy[1] which sets out how the Government proposes to fulfil the UK's obligations under the Air Quality Directive. The Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland sets out the policy, targets and objectives for a range of air pollutants.

The Technical Guidance[2] to local authorities for the review and assessment of air quality sets out the methods to be used to determine if the air quality objectives are likely to be achieved. The air quality standards are intended to protect human health and should apply to dwellings and land to which the public has access, irrespective of ownership.

2.2 Air Quality Strategy

The 'Air Quality Strategy for England, Scotland, Wales and Northern Ireland' (AQS) 2007, contains air quality objectives based on the protection of both human health and vegetation (ecosystems). The AQS sets out a framework for reducing hazards to health from air pollution and ensuring that international commitments are met.

These objectives have been set taking into account the Air Quality Standards defined in the Air Quality Standards Regulations 2007 (now superseded by the Air Quality Standards Regulations 2010).

2.3 Air Quality Management

The Environment Act 2021 requires the UK Government and the devolved administrations for Scotland and Wales to produce a national air quality strategy containing standards, objectives, and measures for improving ambient air quality and mechanisms to keep these policies under review. In addition, it sets out the responsibilities of local authorities on air quality management.

Part IV of the Environment Act 1995 (as amended by the Environment Act 2021), requires local authorities to periodically review and assess the quality of air within their administrative area.

[1] DEFRA (2007) T*he Air Quality Strategy for England, Scotland, Wales and Northern Ireland Vols 1 & 2*.
[2] DEFRA (2025) Review and Assessment Technical Guidance TG (22).

The reviews have to consider the present and future air quality and whether any air quality objectives prescribed in regulations are being achieved or are likely to be achieved in the future.

Where any of the prescribed air quality objectives are not likely to be achieved, the authority concerned must designate an Air Quality Management Area (AQMA). For each AQMA, the local authority has a duty to draw up an Air Quality Action Plan (AQAP) setting out the measures the authority intends to introduce to deliver improvements in local air quality in pursuit of the air quality objectives.

DEFRA has published technical guidance for use by local authorities in their review and assessment work. This guidance, referred to in this report as Local Air Quality Management.TG (22), has been used where appropriate in the assessment presented here.

2.4 General Nuisance

Part III of the Environmental Protection Act (EPA) 1990 (as amended by the Noise and Statutory Nuisance Act 1993) contains the main legislation on Statutory Nuisance and allows local authorities and individuals to take action to prevent a statutory nuisance. Section 79 of the EPA defines, amongst other things, smoke, fumes, dust and smells emitted from industrial, trade or business premises so as to be prejudicial to health or a nuisance, as a potential Statutory Nuisance. It also defines accumulation or deposit, which is prejudicial to health as a nuisance.

2.5 Planning Policy Guidance

Policy guidance for local planning authorities regarding local air quality and new development is provided in the National Planning Policy Framework (NPPF) superseding PPS23, which states that the 'existing, and likely future, air quality in the area of proposed development plans, including any Air Quality Management Areas (AQMA) or other areas where air quality is likely to be poor' should be considered in the preparation of development plan documents and may also be material in the consideration of individual planning applications where pollution considerations arise.

2.6 PPC Guidance

The Environment Agency for England has published Guidance that should be taken into account when determining the level of assessment required for PPC process operations. H1 is general Guidance relating to all process operations that are subject to PPC. H1 provides information about methods for quantifying environmental impacts to soil, water and air. H1

includes a list of Environmental Quality Standards (EQS) and Environmental Assessment Levels (EAL) for air quality.

The air quality criteria used in this assessment are based on the EALs published in H1. This Guidance also sets out benchmarks to assess predicted rates of deposition of pollutants to land.

2.7 Air Quality Objectives

The UK Air Quality Strategy (UKAQS 2023) (supersedes 2007 Air Quality Strategy in respect of England only) sets out a framework for the short to medium term, and the roles that Government, the Environment Agency, local government, industry & business, individuals and transport have in protecting and improving air quality.

The UKAQS includes more exacting standards for some pollutants than required by EC legislation. In the majority of cases, standards are carried into the Environmental Permitting regime as short and long term EALs. The Environment Agency's role in relation to Local Air Quality Management is described, with a commitment to ensuring that regulated installations will not contribute significantly to breaches of AQS objectives or EU limit values.

2.8 Sensitive Receptors

Nature conservation sites should be screened against the relevant standards if they occur within specified distance criteria, as detailed below:

- Special Protection Areas (SPAs), Special Areas of Conservation (SACs) or Ramsar sites within 10km of the installation;
- Sites of Special Scientific Interest (SSSIs) within 2 km of the installation; and
- National Nature Reserves (NNRs), Local Nature Reserves (LNRs), local wildlife sites and ancient woodland within 2km of the location of the installation.

According to the Guidance in LAQM-TG (22), air quality objectives should apply to all locations where members of the public may be reasonably likely to be exposed to air pollution for the duration of the relevant objective. Thus, short-term standards such as the 1-hour objective for NO_2 should apply to footpaths at site boundaries and other areas which may be frequented by the public even for a short period of time. Longer term objectives such as the 24-hour or annual mean should apply at houses or other locations which the public can be expected to occupy on a continuous basis. These objectives do not apply to exposure at the workplace. The long-term impacts on human health from exposure to residual process emissions of dioxins, furans and metals are mainly from ingestion, rather than inhalation.

3.0 EMISSION INVENTORY AND BASELINE DATA

An emission inventory has been created from technical data for the existing plant as outlined in Section 1.2. Information has been provided by Plater Chemicals, Dunphy and benchmarked data from relevant AQIA's WRM has previously undertaken.

3.1 Emission Inventory

WRM has compiled an inventory for the existing process emissions based on the emissions limit values in Annex II of the Medium Combustion Plant Directive (NOx) and technical data provided by technology providers via Plater Chemicals. The emission inventory for the process is summarised in Table 2 below. It should be noted that whilst the boiler only operates approximately 5,000 hours a year in line with the site production hours, it has been assumed for a worst-case that the boiler operates 8,760 hours for the purpose of the dispersion modelling.

Table 2 - Summary of Emission Source

Source	Frequency	Conditions
Boiler 1 (5.3MWth)	8,760 hours	Elevated Point

3.2 Background Pollution

The following section explains how background data for each pollutant was sourced.

Estimates of background pollution have been obtained from the DEFRA sponsored air quality archive. The 2021 updates of the maps were used to project forward to 2025 for NO_2 according to DEFRA guidance for new assessments and, incorporate background-based maps for years 2021 to 2040, as such no adjustment factor for year of study was required.

For the purposes of data input to the ADMS model, background units must be converted to ppb, if required. The applied conversion factors for ppb to $\mu g/m^3$ are 1.91 (NO_2).

Table 3 - Applied Background Air Quality Concentrations

NO_2	
(ug/m^3)	ppb
9.5	5.0

3.3 Human Receptors

A desk-top study was undertaken in order to identify any sensitive receptor locations in the vicinity of the site that required specific consideration during the assessment. The location of the nearest sensitive receptors and the distances and direction of these receptors from the site are summarised in Table 4 below and are mapped out in Appendix A. The site is located immediately adjacent to an Air Quality Management Area (AQMA).

Table 4 - Human Receptor Locations.

Receptor	Distance to Site (m)	Coordinates (x,y)
HR01 - Residential properties on Dinting Road	309	402365, 394600
HR02 - Residential properties on Dinting Road	244	402392, 394532
HR03 - Residential property off Dinting Road	437	402448, 394720
HR04 - Residential properties on Dinting Road	248	402464, 394517
HR05 – Residential property on Lower Dinting Road	209	402508, 394442
HR06 - Residential properties on Dinting Road	349	402586, 394561
HR07 – Residential property on Spire Hollin	604	402782, 394728
HR08 – Residential property on Spire Hollin	625	402816, 394725
HR09 – Residential property on Spire Hollin	717	402892, 394773
HR10 - Residential properties on Dinting Road	576	402822, 394641

Receptor	Distance to Site (m)	Coordinates (x,y)
HR11 – Residential properties on Dinting Road	651	402887, 394674
HR12 – Residential properties on Dinting Road	788	403004, 394753
HR 13 – Residential property off Park Dene Drive	1,000	403192, 394856
HR14 – Residential property on Birchside Avenue	530	402826, 394552
HR15 – Residential property on Spire Hollin	785	403046, 394683
HR16- Residential property on Dinting Road	982	403210, 394786
HR17 – Residential property on 10 Foot Close	563	402888, 394553
HR18 – Residential property on Spire Hollin	798	403081, 394643
HR19 – Residential property on North Road	995	403258, 394730
HR20 – Residential property on Ashleigh Avenue	647	402954, 394556
HR21 – Residential property on Spire Hollin	853	403140, 394644
HR22 – Residential property on North Road	1,020	403292, 394707
HR23 – Commercial property on Surrey Street	358	402705, 394394
HR24 – St Luke's C of E Primary School	673	403005, 394492
HR25 – Residential property on North Road	968	403289, 394577
HR26 – Commercial property on Surrey Street	513	402872, 394374
HR27 – Residential property on Spire Hollin	1,020	403367, 394470
HR28 – Commercial property on Wren Nest Road	158	402522, 394288

Receptor	Distance to Site (m)	Coordinates (x,y)
HR29 – Residential property on Shrewsbury Street	701	403062, 394286
HR30 – Residential property on Talbot Street	1,090	403453, 394350
HR31 – Commercial property on Wren Nest Road	220	402577, 394233
HR32 – Aldi supermarket off Arundel Street	750	403107, 394172
HR33 – Residential property on Norfolk Street/Howard Street	1,150	403517, 394204
HR34 - Commercial property on A57	357	402701, 394140
HR35 – Residential property on St Mary's Road	729	403057, 394059
HR36 – Glossop Indoor Market on Victoria Street	1,120	403448, 393993
HR37 – Residential properties on A57	112	402456, 394230
HR38 – Residential property on Sunlaws Street	560	402854, 394019
HR39 – Residential property on Princess Street	924	403152, 393809
HR40 – Residential property on A57	80	402404, 394222
HR41 – Residential property on Pikes Lane	555	402710, 393857
HR42 – Residential property on Slaterlands Road	950	403050, 393633
HR43 – Residential property on A47	106	402374, 394186
HR44 – Residential property on Brookside	553	402583, 393783
HR45 – Residential property on Howard Meadow	1,070	402909, 393371
HR46 – Residential property Simmondley Lane	217	402286, 394088

Receptor	Distance to Site (m)	Coordinates (x,y)
HR47 – Residential property on Penine Road	690	402372, 393601
HR48 – Residential property on The Oaks	984	402487, 393315
HR49 – Residential property on Simmondley Lane	184	402246, 394147
HR50 – Residential property on Brockholes	641	401941, 393809
HR51 – Residential property on Kingfisher Way	892	401743, 393649
HR52 – Residential property on Storth Bank	1,160	401801, 393270
HR53 – Residential receptor on Simmondley Lane	200	402204, 394172
HR54 – Residential receptor on Curlew Way	575	401871, 393992
HR55 - Agricultural receptor off Glossop Road	1,270	401278, 393630
HR56 – Commercial receptor on Adderly Place	263	402115, 394203
HR57 – Commercial receptor on Glossop Road	1,450	400976, 393862
HR58 – Residential receptor on Gamesley Fold	1,730	400713, 393770
HR59 – Residential receptor on Adderley Place	494	401875, 394212
HR60 – Residential receptor on Glossop Road	1,420	400955, 394103
HR61 – Residential receptor on Dinting Lane	150	402214, 394292
HR62 – Residential receptor on Adderly place	481	401884, 394333
HR63 – Residential receptor on Cottage Lane	997	401368, 394378
HR64 – Resdiential receptor on Dinting Lane	127	402240, 394318

Receptor	Distance to Site (m)	Coordinates (x,y)
HR65 – Residential receptor on Dinting Lane	393	401985, 394395
HR66 - Residential receptor on Cottage Lane	1,010	401394, 394574
HR67 – Residential receptor on Dinting Lane	90	402285, 394334
HR68 – Commercial receptor off Dinting Lane	280	402138, 394456
HR69 – Commercial receptor off Shaw Lane	880	401686, 394855
HR70 – Residential Receptor off Dinting Lane	69	402309, 394334
HR71 – Residential property on Shaw Lane	1,090	401658, 395119
HR72 – Residential receptor on Denting Lane	91	402309, 394364
HR73 – Commercial/residential receptor off Dinting Road (train station)	556	402051, 394750
HR74 – Residential receptor on The Shaw	906	401888, 395065
HR75 – Residential receptor off Dinting Lane	88	402328, 394370
HR76 – Residential receptor on The Shaw	866	402040, 395091
HR77 – Glossopdale School and Sixth Form	1,190	401917, 395389
HR78 – Residential receptor on Dinting Lane	103	402340, 394391
HR79 – Commercial/industrial receptor of Dinting Road	794	402218, 395068
HR80 – Residential receptor on Littlebrook Close	1,400	402115, 395669

3.4 Ecological Receptor Locations

A desk-top study was undertaken in order to identify any ecological receptor locations in the vicinity of the site that required specific consideration during the assessment. In terms of identifying sensitive locations, consideration has been given to sensitive receptors at distances stated within Section 2.8.

The location of the sensitive receptors and the distances from the site are summarised in Table 5 below and are mapped out in Appendix B.

Table 5 - Ecological Receptor Locations.

Receptor	Habitat	Distance to Site (m)	Coordinates (x,y)
ER01A – Peak District Moors (South Pennine Moors Phase 1) SPA & SAC / Dark Peak SSSI	Blanket bog and dry heath, with other habitats including wet heath, acid grassland, flushes, gritstone edges, streams, and fringe woodland.	3,310	402334, 397594
ER01B - Peak District Moors (South Pennine Moors Phase 1) SPA & SAC / Dark Peak SSSI		3,350	404369, 396984
ER01C - Peak District Moors (South Pennine Moors Phase 1) SPA & SAC / Dark Peak SSSI		2,950	405248, 393626
ER01D - Peak District Moors (South Pennine Moors Phase 1) SPA & SAC / Dark Peak SSSI		2,490	403875, 392310
ER02 – Glossop Brook LWS	Standing open water, flowing water rivers and streams, aquatic vegetation, marginal vegetation and secondary broad-leaved woodland.	57	402392, 394243
ER03 – North Road Ponds LWS	Standing open water, marginal vegetation and unimproved neutral grassland.	1,160	403031, 395236

Receptor	Habitat	Distance to Site (m)	Coordinates (x,y)
ER04 – Dinting Wood LWS	Ancient semi-natural oak woodland, ancient semi-natural wet woodland, and wet grassland.	569	401812, 394446
ER05 – Melandra Castle and Railway LWS	Secondary broad-leaved woodland, unimproved acid grassland, scrub - woodland, scrub, tall-herb - open vegetation, semi-improved neutral grassland – rough.	1,170	401362, 394915
ER06 – Drifting Lodge Grassland LWS	Unimproved neutral grassland, semi-improved neutral grassland, rush-pasture, tall-herb - open vegetation.	607	401890, 394673
ER07 – Robin Wood 1 LWS	Ancient semi-natural woodland - mixed deciduous, flowing water rivers and streams.	1,850	400508, 394404
ER08 – Banks Wood LWS	Secondary broad-leaved plantation, secondary broad-leaved wet woodland, unimproved neutral grassland, flowing water rivers and streams and under scrub – bramble.	1,270	402328, 395550
ER09 – Dinting Nature Reserve LWS	Ancient semi-natural ash woodland, ancient semi-natural oak woodland, unimproved acid grassland, tall-herb – bracken and standing open water – pond.	1,180	401678, 394521
ER10 – Ancient Woodland (Horse Clough)	Oak woodland and unimproved grassland.	1,260	401967, 393095

Receptor	Habitat	Distance to Site (m)	Coordinates (x,y)
ER11 – Ancient Woodland (Oak Wood - (Long Clough)	Oak woodland (broadleaved & deciduous), large sloping area of grassland and areas of unimproved grassland.	2,000	403233, 392485

3.5 Critical Loads and Levels

The Air Pollution Information System (APIS) is a support tool for assessment of potential effects of air pollutants on habitats and species developed in partnership by the UK conservation agencies and regulatory agencies and the Centre for Ecology and Hydrology. APIS has been used to provide information on:

i. identification of whether the habitats present are sensitive;
ii. critical levels and current baseline concentrations; and,
iii. critical loads and current N deposition rates.

4.0 ASSESSMENT METHODOLOGY

The following section outlines the data and model parameters utilised in order to model the emissions from the existing facility at identified sensitive receptors. Identification is provided of data sources, input parameters within the chosen model and acknowledgement of uncertainty inherent with modelling exercises.

4.1 Dispersion Modelling

The transport and transformation of a pollutant in the boundary layer can be predicted with a reasonable degree of confidence using an appropriate mathematical model. The model used for this exercise is ADMS 5.2 which is developed by Cambridge Environmental Research Consultants (CERC) Ltd. ADMS 5 is a short-range dispersion modelling software package that simulates a wide range of buoyant and passive releases to atmosphere. It is a new generation model utilising boundary layer height and Monin-Obukhov length to describe the atmospheric boundary layer and a skewed Gaussian concentration distribution to calculate dispersion under convective conditions. The model utilises meteorological data to define conditions for plume rise, transport and diffusion. It estimates the concentration for each source and receptor combination for each hour of input meteorology and calculates user-selected long-term and short-term averages. The model is routinely used by UK environment agencies.

The principal factors affecting the concentration of a pollutant are:

- source characteristics including source strength, height of discharge, density, and temperature of the release;
- prevailing atmospheric conditions including wind speed, wind direction, cloud cover, precipitation, ambient temperature and the depth of the boundary layer; and
- adjacent buildings, topography and local surface conditions.

These factors can be assigned numerical values and the resultant downwind concentrations of pollutants may be predicted.

4.2 Approach to Model Uncertainty

Uncertainty in dispersion modelling predictions can be associated with a variety of factors, including:

- Model uncertainty - due to model limitations;
- Data uncertainty - due to errors in input data, including emission estimates, land use characteristics and meteorology; and,
- Variability - randomness of measurements used.

Potential uncertainties in model results have been minimised as far as practicable and worst-case inputs used in order to provide a robust assessment. This included the following:

- Choice of model - ADMS 5 is a commonly used atmospheric dispersion model and results have been verified through a number of studies to ensure predictions are as accurate as possible;
- Meteorological data - Modelling was undertaken using five annual meteorological data sets from the closest observation site to the facility, selecting the year in which the worst-case conditions were identified when modelled;
- Operating conditions - Operational parameters were supplied by Plater Chemicals and Dunphy based on monitoring and operational activities. As such, these are considered to be representative of likely operating conditions;
- Emission rates - Emission rates were derived from process design and are therefore considered to be representative of potential releases during normal operation;
- Receptor locations - Receptor points were included at sensitive locations to provide consideration of impacts on these areas. Emission levels at any point within the assessment extents may be derived from the output model results; and,

- Variability - All model inputs are as accurate as possible and worst-case conditions were considered as necessary in order to ensure a robust assessment of potential pollutant concentrations.

Results were considered in the context of the relevant assessment levels. It is considered that the use of the stated measures to reduce uncertainty and the use of worst-case assumptions when necessary has resulted in model accuracy of an acceptable level.

4.3 Model Parameters

The emission conditions of the identified pollutant source are based on the emission limit values stipulated within Annex II of the Medium Combustion Plant Directive (NOx). This emission limit value was multiplied by the volumetric flowrate through the exhaust stack to produce pollutant emission rates based on the emission limit value. This is summarised in **Error! Reference source not found.** below, in accordance with the requirements of EA Guidelines. There is one combustion process leading to the emission of pollutants that require assessment. As mentioned above, for the purpose of this modelling, a worst-case scenario of the appliance operating concurrently has been assumed.

Table 6 - Summary of Modelled Source Conditions.

Parameter	Boiler
Coordinates	402348, 394241
Exit Diameter (m)	0.7m
Release Height (m)	15m
Exit Temperature (°C)	162°C
Reference Conditions	273.15K; 101.3kPa, Dry & 3% Oxygen
Normalised Efflux Velocity (Nm/s)	7.82Nm/s
Normalised Volumetric Flowrate (Nm^3/s)	3.11Nm^3/s
NO_x Concentration (mg/Nm^3)	200mg/Nm^3

NO_x Emission Rate (g/s)	0.6221
O_2 Content (%)	3.3%
H_2O Content (%)	10.75%

4.4 Meteorological Data

Meteorological data used in this assessment was taken from Manchester meteorological station, over the period of 2022 to 2024 (inclusive). The meteorological station is located approximately 23km west of the Plater Chemicals facility. DEFRA guidance LAQM.TG (22) recommends data from the nearest meteorological observing station is usually applied for detailed modelling but may not always be the most appropriate if there are, for example coastal or terrain influences, or major urban effects. This is the closest meteorological station to the site of which most represents the topography and environmental setting. All meteorological data used in the assessment was provided by the Met Office, which is an established distributor of meteorological data within the UK.

The worst-case results vary with the year of hourly sequential meteorological data used to predict dispersion. The worst-case meteorological data for dispersion is for the year 2022 and this has been used in all subsequent analysis. Met data for this period is presented as a wind rose in Figure 3 below, with all data in Appendix B.

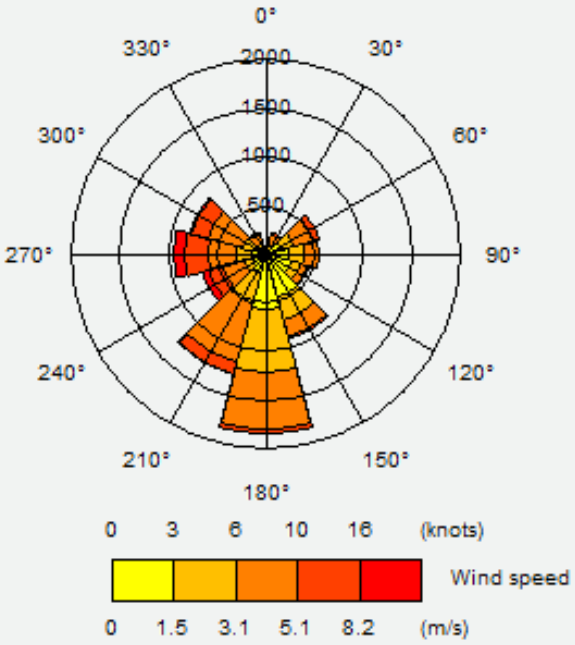


Figure 2 - Manchester Meteorological Data for 2022.

4.5 Terrain

The model terrain algorithm should only be used where slopes are >1:10. The site is on level ground where terrain effects are unlikely to affect dispersion and terrain effects have therefore been discounted.

4.6 Buildings

The dispersion model used can take account of the effects of recirculating flow or downwash effects caused by buildings near the point of release, although these effects are generally not important where the release is close to the ground. Building effects have been considered for all point source releases. The details of buildings used in the assessment are presented in Table 7 below, and schematically in Figure 3 .

Table 7 - Buildings Included within Model Assessment.

Building	Coordinates (x,y)	Shape	Height	Length/Diameter (m)	Width (m)	Angle (°)
Boiler House	402346, 394246	Rectangular	6.5	14	6	28
Shed 1	402359, 394328	Rectangular	7.6	34	12	294

Building	Coordinates (x,y)	Shape	Height	Length/Diameter (m)	Width (m)	Angle (°)
Shed 2 & 2A	402378, 394332	Rectangular	8.5	50	12	294
Shed 3 & Bio	402469, 394310	Rectangular	8.8	43	17	286
Shed 3A	402484, 394285	Rectangular	7.2	26	14	15
Shed 4 & 5	402327, 394242	Rectangular	7.5	39	26	29
Shed 6 & 7 & 8	402283, 394294	Rectangular	6.7	37	19	292
Process & Shed 14	402348, 394314	Rectangular	11.4	26	22	294
Spray Cooler 4	402407, 394319	Rectangular	12.7	14	13	294
Spray Cooler 5	402383, 394317	Rectangular	12.3	17	12	294
Spray Dryer 9 & 11	402374, 394266	Rectangular	15.3	17	14	306
Dryer 10 & Picking Shed	402342, 394275	Rectangular	8.5	25	6	301
Vacuum Dryer & Powder Blenders & Liquid Mixing Area	402393, 394297	Rectangular	11.3	40	19	26
Calciner	402302, 394283	Rectangular	6	13	6	24
Office & Store & Weighbridge Office	402409, 394287	Rectangular	6.7	19	21	296
Maintenance & Welding Bay	402269, 394269	Rectangular	8.3	19	19	291

Building	Coordinates (x,y)	Shape	Height	Length/Diameter (m)	Width (m)	Angle (°)
Lab & Sales	402417, 394303	Rectangular	6.1	19	8	296

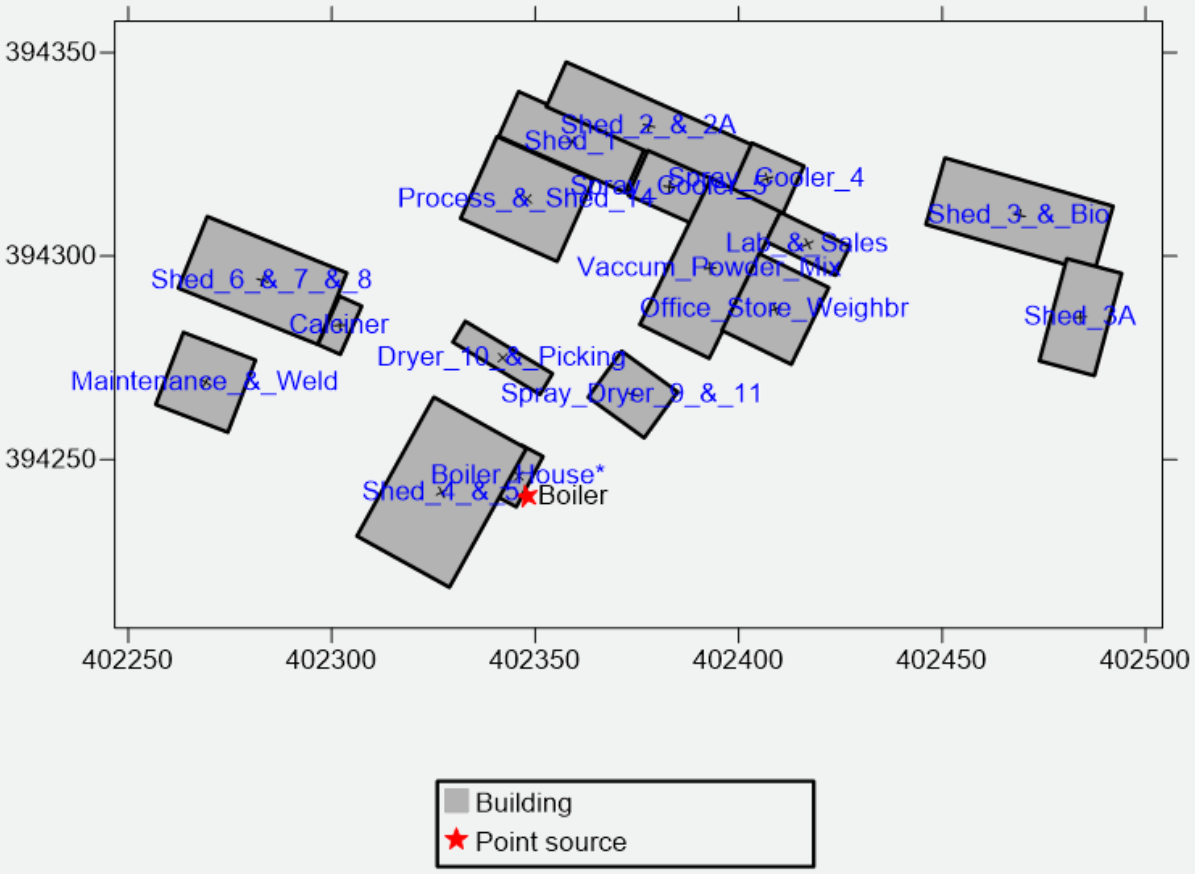


Figure 3 - Building and Point Source Layout.

4.7 Special Treatment of Model Results

Nitric Oxide to NO_2 Conversion

NOx emitted to atmosphere as a result of combustion will consist largely of nitric oxide (NO), a relatively innocuous substance. Once released into the atmosphere, NO is oxidised to NO_2. The proportion of NO converted to NO_2 depends on a number of factors including wind speed, distance from the source, solar radiation and the availability of oxidants, such as ozone (O_3).

Following the EA Air Quality Modelling and Assessment Unit (AQMAU) guidance on conversion ratio for NOx and NO_2, a worst-case scenario has been applied in that 35% of NOx is presented as NO_2 in relation to short-term impacts.

Averaging Periods

Where the short-term environmental standard is measured using a time period other than hourly, conversion factors are applied to model results to present the correct concentrations. Hourly concentrations are therefore multiplied by the appropriate factor identified below:

- 1.34 to convert to a 15-minute average
- 0.7 to convert to an 8-hour average
- 0.59 to convert to a 24-hour average

4.8 Human Receptor Assessment

The Environment Agency publishes a list of pollutants to include within an assessment where released at source. The H1 document includes a list of Environmental Quality Standards (EQS) and Environmental Assessment Levels (EAL) for air quality. The air quality criteria used in this assessment are based on the EALs published in H1. This Guidance also sets out benchmarks to assess predicted rates of deposition of pollutants to land. The environmental assessment levels for human receptors are provided in Table 8 below for the appropriate averaging period and pollutants.

Table 8 - Human Receptor Environmental Assessment Levels (EAL)

Pollutant	Averaging Period	EAL (µg/m³)
Nitrogen Dioxide	1-hour mean ≤18 exceedances	200
	Annual mean	40

4.9 Ecological Receptor Assessment

The EA's Operational Instruction details how the air quality impacts on ecological sites should be assessed. This guidance provides risk-based screening criteria to determine whether impacts will:

- Have a likely significant effect on a European site;
- Be an operation likely to damage (OLD) a Site of Special Scientific Interest (SSSI); or

- Result in significant pollution of a National Nature Reserve (NNR), Local Nature Reserve (LNR), Local Wildlife Site (LWS) or ancient woodland (AWL).

The environmental assessment levels for ecological receptors is provided in Table 9 below for the appropriate averaging period and pollutants.

Table 9 - Ecological Receptor Environmental Assessment Levels

Pollutant	Averaging Period	EAL (μg/m^3)
Nitrogen Oxide (as NO_2)	Annual mean	30
Nitrogen Oxide (as NO_2)	Daily mean	75

4.10 Critical Load Assessment

Designated habitats may contain species, habitats or other receptors which are potentially sensitive to atmospheric pollution for which indicative exposure thresholds for their protection have been defined. These thresholds are known as Critical Levels (for airborne concentrations) and Critical Loads (for deposition rates).

Critical levels are a quantitative estimate of exposure to one or more airborne pollutants in gaseous form, below which significant harmful effects on sensitive elements of the environment do not occur, according to present knowledge. Critical levels for the protection of vegetation and ecosystems are specified within the Air Quality Standards Regulations.

Critical loads are a quantitative estimate of exposure to deposition of one or more pollutants, below which significant harmful effects on sensitive elements of the environment do not occur, according to present knowledge. Critical loads are set for the deposition of various substances to sensitive ecosystems.

Empirical critical loads for eutrophication (derived from a range of experimental studies) are assigned based for different habitats, including grassland ecosystems, mire, bog and fen habitats, freshwaters, heathland ecosystems, coastal and marine habitats, and forest habitats and can be obtained from the UK Air Pollution Information System (APIS).

4.11 Deposition Rates

Deposition rates for the process contribution (PC), were calculated using empirical methods recommended by the EA (AQTAG06). If the annual average ground level concentration of a

pollutant is Pc ($\mu g/m^3$) and the dry deposition velocity for that pollutant is Vd (m/s) then the annual dry deposition rate Dr (kg/ha/yr) is calculated from the formula detailed below. A conversion factor is applied to the calculation, and this differs for Nutrient Nitrogen Deposition and Acid Nitrogen Deposition.

Cf for NO_2= the conversion factor value (95.9 for Nutrient Nitrogen Deposition & 6.84 for Acid Deposition) which converts to kg/ha/yr.

Dry deposition velocities vary depending on the type of land mass and weather conditions such as humidity. The following values have been used for Vd, as presented within the Technical Guidance note.

- Vd for NO_2 – 0.0015 m/s for grassland habitats & 0.03 m/s for woodland/forest habitats

Deposition Rate (Dr) = Pc x Vd x Cf

4.12 Significance of Impact

This AQIA will provide quantitative predictions for a range of pollutants and to help assess their significance. The structure for assessing the significance of air quality impacts is set out in Table 10 below.

Table 10 - Impact Descriptors for Individual Receptors

Predicted Impact	Significance	Justification
Process Contribution + baseline greater than EAL	Major	Exceeding any air quality limit value would be unacceptable in terms of human health, or where the impact would have significant ecological impacts.
Process Contribution + baseline <100% of EAL	Moderate	Risk based approach advocated by Environment Agency taking account of model headroom and uncertainty. May not be acceptable for sensitive ecological and human receptors.
Process Contribution + baseline <70% of EAL	Minor	Risk based approach advocated by Environment Agency taking account of model headroom and uncertainty.
Process Contribution <10% of EAL	Negligible	Adopted risk-based approach taking into account the factor of 10.

Predicted Impact	Significance	Justification
Process Contribution <1% of EAL	Insignificant	The assessment criteria proposed within H1 screening tool which states that process contributions can be considered insignificant if the long-term process contribution is <1% of the long-term environmental standard.

5.0 SENSITIVITY ANALYSIS

This section presents the potential air quality impacts associated with the operation of the site, the mitigation measures that will be employed and any residual impacts. Appendix C and D summarise the findings of the potential emissions and the scale and extent of potential impacts. Aspects of the assessment are discussed in more detail below.

It is a requirement of the Royal Meteorological Society Guidelines on Dispersion Modelling and a subsequent review that dispersion modelling studies should include a sensitivity analysis for model inputs, to provide an estimate of the possible errors in the predictions. The potential errors in predictions were outlined in Section 4. The sensitivity analysis conducted for this study considers the likely variability and errors arising from meteorological data, surface roughness and stack heights.

The Environment Agency's method for assessing model uncertainty indicates that the confidence in the model is low. However, the approach to assessment is the method normally accepted by DEFRA, the EA and other regulatory bodies. The main causes of model uncertainties are:

- potential combination of the effects of terrain and buildings on dispersion;
- uncertainties in source estimates for diffuse releases; and
- the low model headroom.

Despite these uncertainties, the modelling provides a useful comparison between the likely impact for the baseline and as proposed Scenarios.

5.1 Meteorological Variability

Initially, the model predictions consider the variability of emissions around the site for a range of years (Manchester meteorological station 2022 to 2024 inclusive). This sensitivity analysis considers the predicted NO_2 for the release conditions. This indicates that for the release

conditions, the worst case NO_2 results vary with the year of hourly sequential meteorological data used to predict dispersion.

The worst case predicted impact occurs at the most affected dwellings the meteorological data from 2022 is used (see Table 11 below). This has therefore been adopted throughout to represent worst case scenario modelling.

Table 11 - PEC NO_2 (Annual Mean) Predictions with Met Data Year Adjustments

Met Data Year	2022	2023	2024
NO_2 ($\mu g/m^3$)	12.60	12.35	12.49

5.2 Surface Roughness

The land around the site consists of residential and commercial uses. The model runs were initially conducted assuming a surface roughness of 0.5m typically associated with parkland and open suburbia.

The dispersion model has been run using surface roughness values of 0.1m, 0.2m, 0.3m, 0.5m, 1.0m and 1.5m across the domain. These are likely to represent the credible range of worst-case dispersion factors within the study area. The worst case predicted impact occurs at the most affected dwellings when a surface roughness value of 1.5m is assumed (see Table 12 below). This has therefore been adopted throughout to represent worst case scenario modelling.

Table 12 - PEC NO_2 (Annual Mean) Predictions with Surface Roughness Adjustments

Surface Roughness	0.1m	0.2m	0.3m	0.5m	1.0m	1.5m
NO_2 ($\mu g/m^3$)	11.54	11.99	12.26	12.60	13.03	13.63

5.3 Release Height

The model sensitivity analysis has so far considered the likely impact from the boiler with the existing stack height of 15m. Further analysis was undertaken to determine whether increasing the stack heights will significantly improve dispersion.

The effect of increased boiler stack height has been considered for NO_2 for a range of stack heights between 15m and 20m at 1.0m intervals. There is no significant reduction in

emissions by increasing the stack height above the initial elevations. The results are summarised in Table 13 below.

Table 13 - PEC NO_2 (Annual Mean) Predictions with Release Height Adjustments

Release Height	15m	16m	17m	18m	19m	20m
NO_2 ($\mu g/m^3$)	13.63	12.98	12.70	12.45	12.20	11.93

6.0 IMPACT ASSESSMENT

This section presents the potential air quality impacts associated with the operational phase of the proposed development, the mitigation measures that will be employed and any residual impacts. Appendix C and D summarise the findings of the potential emissions and the scale and extent of potential impacts. Aspects of the assessment are discussed in more detail below.

6.1 Applied Scenarios

The predicted contours for airborne pollutants are plotted in Appendix C. The predicted concentrations at sensitive receptors are included within Appendix D and summarised in section 6.2. These predictions are based on the worst-case dispersion conditions for surface roughness (1.5m), meteorology (2022), building effects, at the existing stack height (15m) and the boiler operating continuously.

The criteria used to assess the significance of these predictions were presented earlier in Section 4.8. The significance of these predicted concentrations and deposits is summarised in Section 6.2, where the predicted value is expressed as a percentage of the EAL.

6.2 Impact Assessment at Human Receptors

The worst-case air quality impacts are summarised in the following sections for each pollutant and averaging period. The Process Contributions (PCs) and Predicted Environmental Concentrations (PECs) predicted at each sensitive receptor are itemised in Appendix D.

6.3 Long Term NO_2

Predicted annual mean maximum NO_2 PCs and PECs are presented within Table 14. Reference should be made to Appendix C for an illustration of the long-term (annual mean) NO_2 contour plot.

Table 14 – Predicted Max Annual Mean NO_2 Concentrations

Emission	Boiler				
	EAL ($\mu g/m^3$)	PC ($\mu g/m^3$)	PC% EAL	PEC ($\mu g/m^3$)	PEC% EAL
Annual Mean NO_2	40	2.83	7.07	13.63	34.07
Significance	Negligible (PC <10% of EAL)				

6.4 Short Term NO_2

Predicted 1-hr mean NO_2 maximum PCs and PECs are presented within Table 14. Reference should be made to Appendix C for an illustration of the short-term (1hr mean) NO_2 contour plot.

Table 14 - Max Predicted NO_2 Short Term Concentrations

Emission	Boiler				
	EAL ($\mu g/m^3$)	PC ($\mu g/m^3$)	PC% EAL	PEC ($\mu g/m^3$)	PEC% EAL
1hr NO_2	200	21.94	10.97	72.29	36.14
Significance	Minor (PEC <70% of EAL)				

6.5 Exceedance Analysis

In addition to UK Air Quality Strategy (AQS) objectives, the modelled pollutant emissions are also considered in context of Ambient Air Directive (AAD) Limit Values for the number of exceedances permitted within a given emission period. The results of this assessment are identified in Table 15 for the emissions resultant from the proposed development. The results identify that no exceedances for any pollutant are modelled under the worst-case exposure scenario.

Table 15 – Summary of Modelled Emission Period Exceedances

Pollutant	Emission Period	Limit	Permitted Exceedances	Modelled Exceedances
NO_2	1hr	200 $\mu g/m^3$	≤18	0
NO_2	Annual	40 $\mu g/m^3$	0	0

6.6 Impact Assessment at Ecological Receptors

Modelling of impacts at ecological receptors has been undertaken for the proposed site, to determine impacts on critical loads and critical levels, as presented within the following subsections.

6.7 Annual Mean NO_2

Predicted annual mean maximum nitrogen oxide as NO_2 PCs and PECs are presented within Table 16 for each sensitive habitat.

Table 16 - Annual Mean NO_2 Concentrations.

Boiler						
Receptor	EAL (µg/m³)	PC (µg/m³)	PC %EAL	PEC (µg/m³)	PEC % EAL	Significance
ER01A	30	0.08	0.27	9.67	32.24	Insignificant (PC <1% EAL)
ER01B	30	0.03	0.11	9.62	32.08	Insignificant (PC <1% EAL)
ER01C	30	0.03	0.10	9.62	32.07	Insignificant (PC <1% EAL)
ER01D	30	0.02	0.06	9.61	32.03	Insignificant (PC <1% EAL)
ER02	30	2.51	8.36	12.10	40.33	Negligible (PC <10% of EAL)
ER03	30	0.16	0.54	9.75	32.52	Insignificant (PC <1% EAL)
ER04	30	0.13	0.43	9.72	32.40	Insignificant (PC <1% EAL)
ER05	30	0.07	0.22	9.66	32.19	Insignificant (PC <1% EAL)
ER06	30	0.18	0.59	9.77	32.57	Insignificant (PC <1% EAL)
ER07	30	0.04	0.14	9.63	32.11	Insignificant (PC <1% EAL)
ER08	30	0.26	0.85	9.85	32.83	Insignificant (PC <1% EAL)
ER09	30	0.09	0.32	9.69	32.29	Insignificant (PC <1% EAL)
ER10	30	0.02	0.07	9.61	32.04	Insignificant (PC <1% EAL)
ER11	30	0.02	0.06	9.61	32.03	Insignificant (PC <1% EAL)

6.8 Daily Mean NO_2

Predicted daily mean maximum nitrogen oxide as NO_2 PCs and PECs are presented within Table 17 for each sensitive habitat.

Table 17 - Daily Mean NO_2 Concentrations

Boiler						
Receptor	EAL (µg/m³)	PC (µg/m³)	PC %EAL	PEC (µg/m³)	PEC % EAL	Significance
ER01A	75	0.38	0.51	6.79	9.00	Insignificant (PC <1% EAL)
ER01B	75	0.35	0.47	6.67	8.89	Insignificant (PC <1% EAL)
ER01C	75	0.33	0.44	6.60	8.80	Insignificant (PC <1% EAL)
ER01D	75	0.36	0.47	6.67	8.90	Insignificant (PC <1% EAL)
ER02	75	7.17	9.56	36.15	34.86	Negligible (PC <10% of EAL)
ER03	75	0.98	1.30	8.45	11.27	Negligible (PC <10% of EAL)
ER04	75	1.58	2.11	10.17	13.56	Negligible (PC <10% of EAL)
ER05	75	0.81	1.08	7.97	10.63	Negligible (PC <10% of EAL)
ER06	75	1.42	1.90	9.73	12.97	Negligible (PC <10% of EAL)
ER07	75	0.49	0.66	7.07	9.43	Insignificant (PC <1% EAL)
ER08	75	0.80	1.07	7.95	10.59	Negligible (PC <10% of EAL)
ER09	75	1.38	1.84	9.61	12.82	Negligible (PC <10% of EAL)
ER10	75	0.70	0.94	7.67	10.23	Insignificant (PC <1% EAL)
ER11	75	0.36	0.48	6.69	8.91	Insignificant (PC <1% EAL)

6.9 Critical Loads

The process contribution to critical loads for nitrogen deposition and acid deposition are presented in Table below with critical load values.

Table 18 - Critical Load Evaluation.

All Boilers and Generator						
Receptor	Nutrient Nitrogen (kg/ha/yr)			Acid Deposition (k_{eq}/ha/yr)		
	Critical Load	PC	PC as % CL	Critical Load	PC	PC as % CL
ER01A	10	0.028	0.28	0.223	0.0020	0.91
ER01B	10	0.012	0.12	0.223	0.0008	0.37
ER01C	10	0.005	0.05	0.223	0.0003	0.15
ER01D	10	0.004	0.04	0.223	0.0003	0.14
ER02	10	0.005	0.05	0.357	0.0004	0.10
ER03	10	0.361	3.61	1.071	0.0257	2.40
ER04	10	0.047	0.47	0.357	0.0034	0.94
ER05	10	0.037	0.37	0.357	0.0026	0.74
ER06	10	0.009	0.09	1.071	0.0007	0.06
ER07	10	0.051	0.51	0.357	0.0037	1.03
ER08	10	0.012	0.12	0.142	0.0009	0.61
ER09	10	0.074	0.74	0.357	0.0053	1.47
ER10	10	0.027	0.27	0.357	0.0019	0.54
ER11	10	0.006	0.06	0.142	0.0005	0.32

6.10 Assessment Summary

This assessment indicates that air emissions from the boilers and generator are likely to be insignificant to negligible for both long term and short-term exposure scenarios. The assessment includes both human and ecological receptors. Analysis has taken account of the downwash effect of buildings and stack heights.

The short and long-term assessment of the significance of impact from the boiler is summarised in Table below.

Table 19 - Summary of the Assessment of Significance.

Receptor Type	Assessment Scenario	Emission	Predicted Significance of Impact
Human	Long Term	NO_2	Negligible (PC <10% of EAL)
	Short Term	NO_2	Minor (PEC <70% of EAL)
Environmental	Long Term	NO_2	See above
	Short Term	NO_2	

7.0 PROPOSED MITIGATION MEASURES

The following measures are proposed to prevent or minimise impacts on air pollution:

- The combustion pollutants from the site shall be compliant with the emissions limit values stated in the Medium Combustion Plant Directive.
- Monitoring in line with permit shall be conducted by independent testing agencies.
- Supervisory staff shall be trained to ensure that the works are operated within specification.
- All process operations shall be subject to routine planned preventative maintenance.

The following conclusions are drawn from the modelled output data and justification for model approach discussed throughout.

8.0 CONCLUSIONS

8.1 Human Exposure

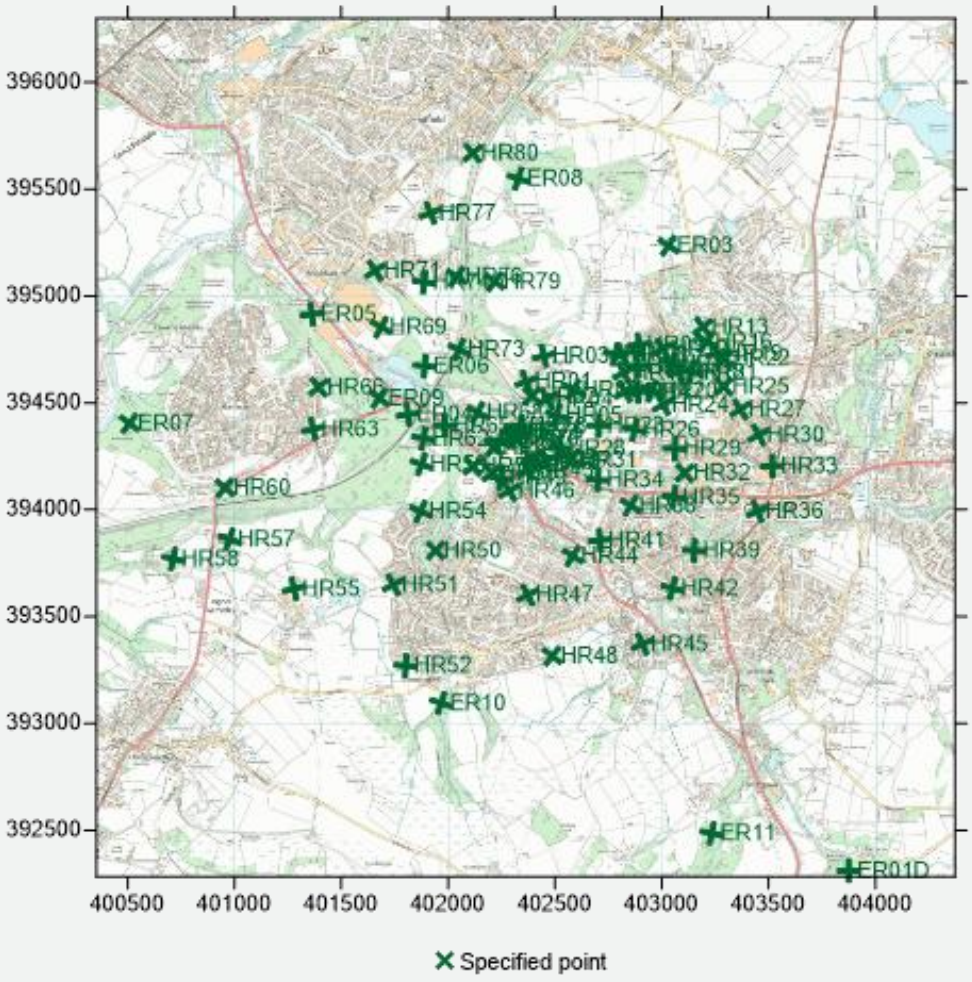
- Baseline air quality around the boiler are within European Limit Values and UK objectives.
- The overall confidence in the model predictions is medium. A detailed model sensitivity analysis has been conducted to improve the robustness of the predictions.
- The assessment takes account of the worst-case model predictions, the relevant Environmental Assessment Level (EAL) and the significance criteria as detailed.
- Exposure to the annual mean NO_2 is likely to be **negligible.**
- Short-term exposure to NO_2 is predicted to be **minor**.
- The emissions from the boiler are unlikely to result in any air quality objective or limit value being exceeded.

8.2 Ecological Exposure

- Exposure to the annual mean NO_2 is predicted to be primarily **insignificant** with only one receptor (ER02) demonstrating a **negligible** outcome.
- Short-term exposure to NO_2 is predicted to be predominantly **insignificant to negligible.**

The Nutrient Nitrogen Deposition and Acid Deposition Rate values at the designated ecological sites within the vicinity of the site primarily fell below 1% of the APIS Habitat Critical Load based on the process contribution, with the exception of ER03 which demonstrated a nutrient nitrogen result of 3.61% of the critical load on the process contribution.

APPENDIX A – SENSITIVE RECEPTORS LOCATION MAP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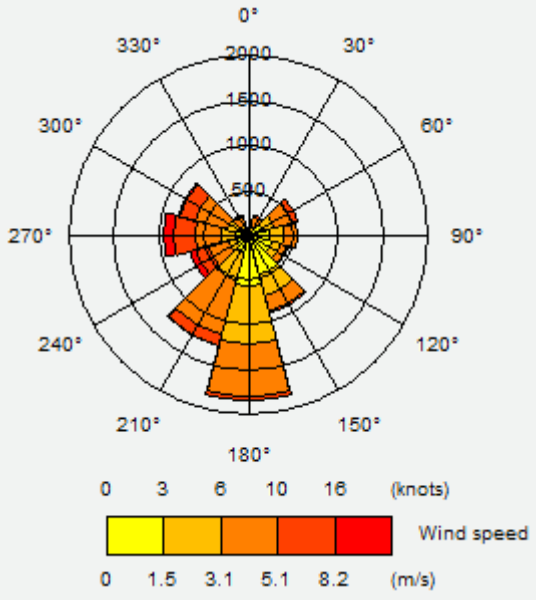
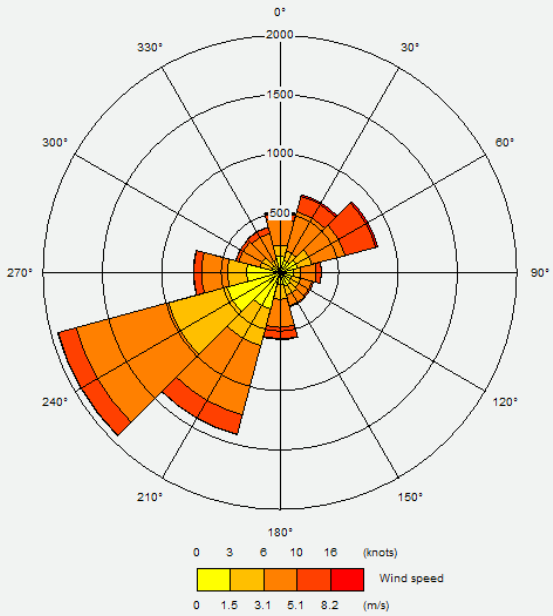
APPENDIX B – WEATHER DATA SET



Manchester Met Data - 2022



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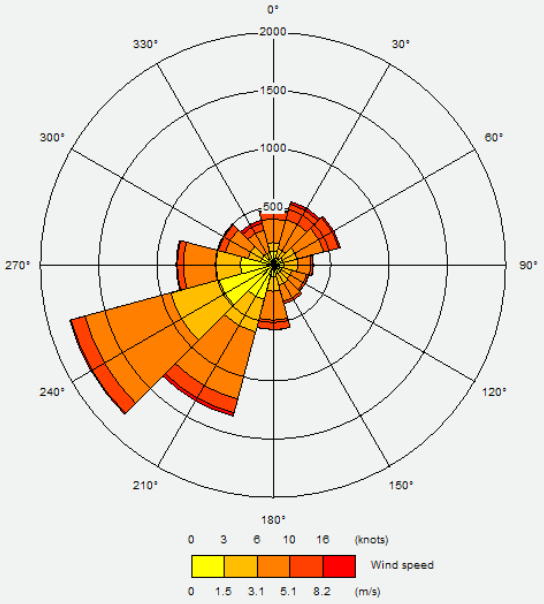
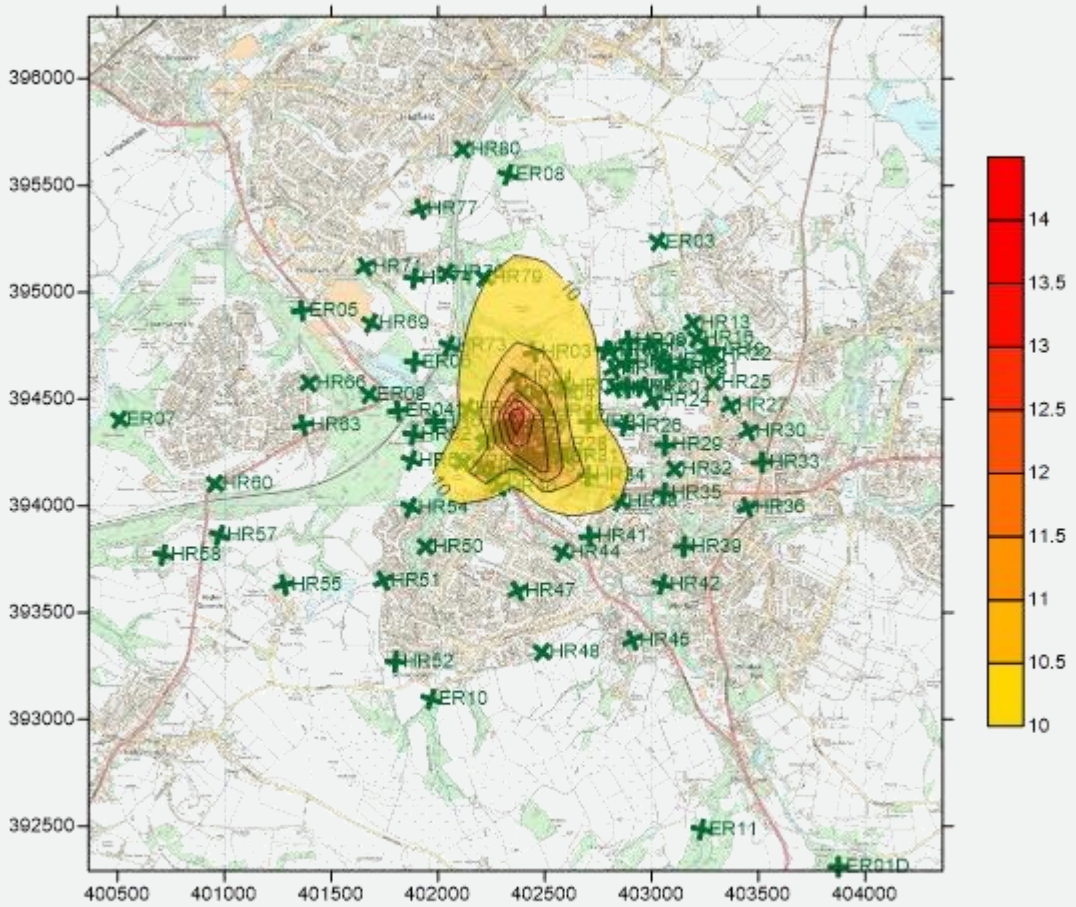


Manchester Met Data - 2024

Met Office

Data Supplier

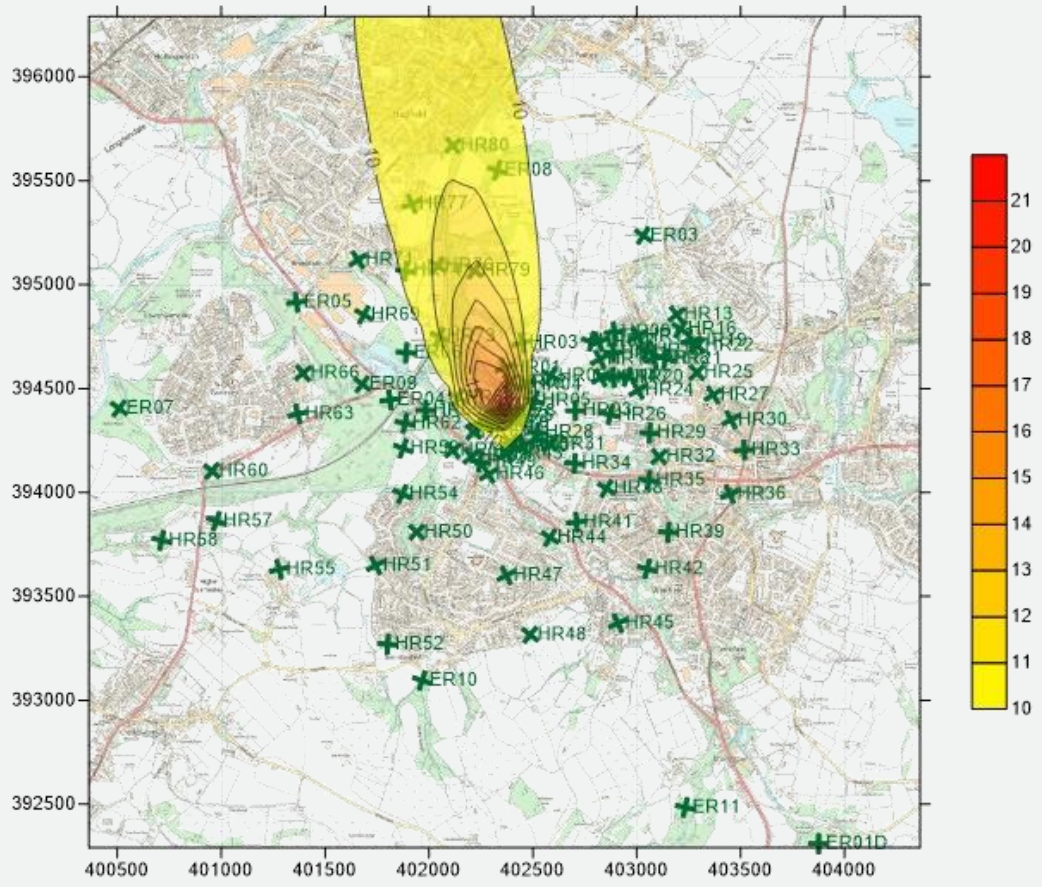
APPENDIX C – DISPERSION MODEL PLOT



Long Term PEC NO_2

Units = µg/m^3
EAL = 40 µg/m^3
SR = 1.5
RH = 15m
Met year = 2022

Plater Chemicals Group Ltd
High Street West
Glossop
Derbyshire
SK13 8ES



Short Term PEC NO_2

Units = µg/m3
EAL = 200 µg/m3
SR = 1.5m
RH = 15m
Met year = 2022

Plater Chemicals Group Ltd
High Street West
Glossop
Derbyshire
SK13 8ES

APPENDIX D – LONG TERM DATA ANALYSIS

Receptor name	X(m)	Y(m)	Z(m)	LT PC (ug/m^3) NO_2	LT PEC (ug/m^3) NO_2
HR01	402365	394600	0	1.52	11.11
HR02	402392	394532	0	2.03	11.63
HR03	402448	394720	0	0.99	10.58
HR04	402464	394517	0	1.79	11.39
HR05	402508	394442	0	1.65	11.25
HR06	402586	394561	0	0.89	10.49
HR07	402782	394728	0	0.36	9.95
HR08	402816	394725	0	0.32	9.91
HR09	402892	394773	0	0.25	9.84
HR10	402822	394641	0	0.31	9.90
HR11	402887	394674	0	0.25	9.84
HR12	403004	394753	0	0.18	9.77
HR13	403192	394856	0	0.12	9.71
HR14	402826	394552	0	0.30	9.89
HR15	403046	394683	0	0.16	9.75
HR16	403210	394786	0	0.11	9.70
HR17	402888	394553	0	0.25	9.84
HR18	403081	394643	0	0.15	9.74
HR19	403258	394730	0	0.10	9.69
HR20	402954	394556	0	0.20	9.79
HR21	403140	394644	0	0.13	9.72
HR22	403292	394707	0	0.10	9.69
HR23	402705	394394	0	0.51	10.11
HR24	403005	394492	0	0.19	9.78
HR25	403289	394577	0	0.10	9.69
HR26	402872	394374	0	0.30	9.90
HR27	403367	394470	0	0.10	9.69
HR28	402522	394288	0	1.69	11.29
HR29	403062	394286	0	0.23	9.82
HR30	403453	394350	0	0.11	9.70
HR31	402577	394233	0	1.49	11.08
HR32	403107	394172	0	0.24	9.83
HR33	403517	394204	0	0.12	9.71
HR34	402701	394140	0	0.80	10.39
HR35	403057	394059	0	0.27	9.86
HR36	403448	393993	0	0.14	9.73
HR37	402456	394230	0	3.64	13.23
HR38	402854	394019	0	0.39	9.99
HR39	403152	393809	0	0.16	9.75
HR40	402404	394222	0	4.04	13.63
HR41	402710	393857	0	0.24	9.83
HR42	403050	393633	0	0.11	9.70
HR43	402374	394186	0	0.88	10.47
HR44	402583	393783	0	0.14	9.73

Receptor name	X(m)	Y(m)	Z(m)	LT PC (ug/m^3) NO_2	LT PEC (ug/m^3) NO_2
HR45	402909	393371	0	0.06	9.65
HR46	402286	394088	0	0.52	10.11
HR47	402372	393601	0	0.04	9.63
HR48	402487	393315	0	0.03	9.62
HR49	402246	394147	0	1.21	10.80
HR50	401941	393809	0	0.16	9.76
HR51	401743	393649	0	0.10	9.69
HR52	401801	393270	0	0.04	9.63
HR53	402204	394172	0	1.25	10.84
HR54	401871	393992	0	0.25	9.84
HR55	401278	393630	0	0.07	9.67
HR56	402115	394203	0	0.75	10.34
HR57	400976	393862	0	0.06	9.65
HR58	400713	393770	0	0.05	9.64
HR59	401875	394212	0	0.27	9.86
HR60	400955	394103	0	0.06	9.66
HR61	402214	394292	0	0.78	10.37
HR62	401884	394333	0	0.20	9.79
HR63	401368	394378	0	0.08	9.67
HR64	402240	394318	0	0.94	10.54
HR65	401985	394395	0	0.22	9.82
HR66	401394	394574	0	0.06	9.65
HR67	402285	394334	0	1.74	11.33
HR68	402138	394456	0	0.53	10.13
HR69	401686	394855	0	0.11	9.70
HR70	402309	394334	0	2.86	12.45
HR71	401658	395119	0	0.11	9.70
HR72	402309	394364	0	2.87	12.46
HR73	402051	394750	0	0.31	9.90
HR74	401888	395065	0	0.17	9.77
HR75	402328	394370	0	3.56	13.15
HR76	402040	395091	0	0.25	9.84
HR77	401917	395389	0	0.17	9.76
HR78	402340	394391	0	3.69	13.28
HR79	402218	395068	0	0.40	9.99
HR80	402115	395669	0	0.20	9.79
ER01A	402334	397594	0	0.08	9.67
ER01B	404369	396984	0	0.03	9.62
ER01C	405248	393626	0	0.03	9.62
ER01D	403875	392310	0	0.02	9.61
ER02	402392	394243	0	2.51	12.10
ER03	403031	395236	0	0.16	9.75
ER04	401812	394446	0	0.13	9.72
ER05	401362	394915	0	0.07	9.66
ER06	401890	394673	0	0.18	9.77
ER07	400508	394404	0	0.04	9.63

Receptor name	X(m)	Y(m)	Z(m)	LT PC (ug/m^3) NO_2	LT PEC (ug/m^3) NO_2
ER08	402328	395550	0	0.26	9.85
ER09	401678	394521	0	0.09	9.69
ER10	401967	393095	0	0.02	9.61
ER11	403233	392485	0	0.02	9.61
MAX				**4.04**	**13.63**
			x0.7	**2.83**	
Surface Roughness		1.5			
Buildings		On			
Stack Height		**15**			
Met Data		2022			
EAL		40	1% of EAL	7.07	34.07