



Air Quality, Odour and Environmental Noise

**Air Quality Impact Assessment
Lhoist Western Europe
Whitwell Works, Southfield Lane
Whitwell, Worksop, Derbyshire**

Prepared by
The Airshed, 5 Lauder Place, East Linton
East Lothian EH40 3DB

Tel. 01620 860 529
mail@theairshed.com
www.airshed.co.uk
Registered in Scotland
Company No. SC309129

Record of changes

Version	Date	Change
1	22 nd January 2019	For internal review
2	29 th January 2019	For internal review
3	5 th February 2019	For client review

Prediction is very difficult, especially about the future.

Niels Bohr, Danish Physicist (1885 - 1962)

Acronyms and Symbols

ADMS 5.2	Air Dispersion Modelling System Version 5.2
AOD	Above Ordnance Datum
AQIA	Air Quality Impact Assessment
AQS	Air Quality Standards
As	Arsenic
BAT	Best Available Technique
C ₆ H ₆	Benzene
C ₂₀ H ₁₂	Benzo(a)pyrene
Cd	Cadmium
CERC	Cambridge Environmental Research Consultants
CFD	Computational Fluid Dynamics
CLF	Critical Load Function
CO	Carbon Monoxide
Co	Cobalt
Cr	Chromium
Cr _{VI}	hexavalent Chromium
Cu	Copper
°C	Degrees Centigrade
DEFRA	Department for Environment, Food and Rural Affairs
EA	Environment Agency for England and Wales
EAL	Environmental Assessment Level
EIA	Environmental Impact Assessment (a process)
EP	Environmental Permitting Regulations or Environmental Permit
EQS	Environmental Quality Standard
ES	Environmental Statement (a document or series of documents)
g/s	grams per second
H1	Horizontal Guidance Note 1
HCl	Hydrogen Chloride
HF	Hydrogen Fluoride
Hg	Mercury
HHRAP	Human Health Risk Assessment Protocol
IED	Industrial Emissions Directive
IPPC	Integrated Pollution Prevention & Control Directive
K	degrees Kelvin
kW	kiloWatt
LAQMA	Local Air Quality Management Area
m/s	metres per second
m ³ /s	cubic metres per second
mg/m ³	milligrams per cubic metre (10 ⁻³)
Mn	Manganese
ng/m ³	nanograms per cubic metre (10 ⁻⁹)
NH ₃	Ammonia
Ni	Nickel
NO ₂	Nitrogen Dioxide
NO _x	Oxides of Nitrogen
O ₂	Oxygen
OS	Ordnance Survey
Pb	Lead
pg/m ³	pico gram per cubic metre (10 ⁻¹²)
PM ₁₀	Particles with aerodynamic diameter less than 10 microns
PM _{2.5}	Particles with aerodynamic diameter less than 2.5 microns
Sb	Antimony
Sn	Tin
SO ₂	Sulphur Dioxide
TG16	Technical Guidance Note for Local Air Quality revised in 2018
Tl	Thallium
tpa	tonnes per annum
ug/m ³	micrograms per cubic metre (10 ⁻⁶)
U ₁₀	wind speed at measurement height – usually 10m above local ground level
USEPA	Environment Protection Agency (for the United States of America)
V	Vanadium
VOCs	Volatile Organic Compounds
WDF	Waste Derived Fuels

Executive Summary

Lhoist Western Europe Ltd currently operates a calcinated dolomitic lime process at Whitwell Works, Southfield Lane, Whitwell, Worksop, Derbyshire S80 3LJ. Dolomite for the process is imported from the adjacent quarry and crushed, sized and stored on site. The crushed dolomite is fed into two long rotary kilns (W1 and W2) which are heated using a mixture of petroleum coke, coal and waste derived fuels (WDF) to produce Dolime. The waste gases from each kiln are passed through separate flue gas treatment and then combined into a single flue and released through a 94m high refractory lined stack.

The process is authorised by the Environment Agency (EA) under the Environmental Permitting (England & Wales) Regulations 2016. The planning permission for the installation expires towards the end of 2019. Lhoist has appointed Caulmert Ltd to conduct an Environmental Impact Assessment (EIA) for the installation to form part of the application for planning permission to extend operations until 2043. Caulmert has appointed The Airshed to conduct the air quality impact assessment (AQIA) to form part of the Environmental Statement (ES) for the planning application.

The nearest dwellings are ~640m to the north-west of the process¹ on Southfield Lane (R1) and Middlegate (R3) in Whitwell. Sherwood Cottages is ~685m to the north-east (R11). All other dwellings are at least 700m from the process. This AQIA considers the potential adverse air quality impacts from the installation based on two emission Scenarios:

- Scenario 1 – which considers the impacts from the process based on the emission concentrations set in the Environmental Permit; and
- Scenario 2 – the effects of the process emissions based on the worst case emission test measurements reported over the last two years.

The air quality impacts from the process are assessed against Environmental Assessment Levels (EAL) derived from European Directives, UK Air Quality Standards (AQS) and DEFRA/EA Guidance for Environmental Assessment. Baseline air quality conditions have been obtained from UK Government estimates.

The assessment has regard to best practice Guidelines for dispersion modelling and includes a model sensitivity analysis for meteorological data, surface roughness and terrain. The predictions have been obtained using ADMS 5.2, a model usually accepted by the EA, subject to its proper use. Five years of hourly sequential meteorological data from the Met. Office ground station at RAF Scampton has been used to predict dispersion. Dispersion has also been predicted using AERMOD, the regulatory atmospheric dispersion model adopted by the US EPA. The results from this comparison indicate that the predictions obtained using ADMS are more conservative.

The predicted air pollution concentrations are plotted in contours, excluding background. These predictions assume the worst case meteorological conditions, pessimistic dispersion conditions and maximum emission rates at all times. The predictions in the assessment Tables are based on the worst case factors for dispersion.

The highest ground level annual mean concentrations are predicted to occur nearest to receptors south of Queens Gardens, Hodthorpe (R10), ~1200m north-east of the process. The worst case short-term ground level concentrations are predicted to occur slightly closer to the stack near Greenacres (R15), and LP2, ~900m to the north-east.

¹ Distances are calculated from the stack, not the process boundary.

Summary of Process Contribution compared to EAL – Scenario 2 – where Metals are Case Specific

Exposure Period	Pollutant	PC/EAL	Significance
		%	Tables 2.3 & 2.4
Long-term	Antimony	0%	Insignificant
	Arsenic	0%	Insignificant
	Benzene	0%	Insignificant
	Benzo(a)pyrene	0%	Insignificant
	Cadmium	0%	Insignificant
	Chromium	0%	Insignificant
	Chromium VI	0%	Insignificant
	Copper	0%	Insignificant
	Hydrogen Fluoride	0%	Insignificant
	Lead	0%	Insignificant
	Manganese	0%	Insignificant
	Mercury	0%	Insignificant
	Nickel	0%	Insignificant
	Nitrogen Dioxide	6%	Minor
	Particles PM ₁₀	0%	Insignificant
	Particles PM _{2.5}	0%	Insignificant
	Sulphur Dioxide	4%	Minor
	Vanadium	0%	Insignificant
Short-term	Antimony	0%	Insignificant
	Benzene	0%	Insignificant
	Carbon Monoxide	0%	Insignificant
	Chromium	0%	Insignificant
	Copper	0%	Insignificant
	Hydrogen Chloride	1%	Insignificant
	Hydrogen Fluoride	1%	Insignificant
	Manganese	0%	Insignificant
	Mercury	0%	Insignificant
	Nitrogen Dioxide	15%	Minor
	Particles PM ₁₀	0%	Insignificant
	Sulphur Dioxide	7%	Insignificant
	Vanadium	0%	Insignificant
Deposition	Arsenic	0%	Insignificant
	Cadmium	20%	Minor/Moderate
	Chromium	0%	Insignificant
	Chromium VI	0%	Insignificant
	Copper	0%	Insignificant
	Hydrogen Fluoride	3%	Minor
	Lead	0%	Insignificant
	Mercury	2%	Minor
	Molybdenum	0%	Insignificant
	Nickel	0%	Insignificant
Selenium	3%	Minor	

Units = (PC/EAL)%. PC = Process Contribution; EAL = Environmental Assessment Level

The impacts from the process have been assessed by comparing the predicted process contribution (PC) with the EAL, expressed as a percentage of the EAL.

The assessment is based on the predictions obtained using Scenario 2, as this is considered to represent the worst case conditions. This Scenario is based on the worst case measured emission rates and the highest recorded stack gas flows from 2017 – 2018 and Step 2 (Case Specific Screening) for metals. The worst case impacts are: of minor adverse significance for annual mean exposure to NO₂ and SO₂; of minor adverse significance for short-term exposure to NO₂; of minor/moderate adverse significance for deposition of Cadmium; and of minor adverse significance for deposition of Hydrogen Fluoride, Mercury and Selenium.

All other impacts are predicted to be insignificant at all sensitive human receptors. The predicted process contribution to the NO₂ annual mean is of slight adverse significance in terms of the IAQM assessment framework set out in Table 2.2. The predicted impacts from PM₁₀ and PM_{2.5} are of negligible significance in terms of the IAQM assessment framework. The predicted annual means with background concentrations are summarised in the Table below.

Summary of Predicted Process Contribution

Pollutant	Baseline	Predicted Environmental Concentration (Baseline + PC)	%PC/EAL	EAL
NO ₂ 1 hour 99.79%ile	26.4	56	15%	200
NO ₂ annual mean	13.2	16	7%	40
PM ₁₀ annual mean	18.2	18	0%	40
PM _{2.5} annual mean	9.9	10	0%	40
SO ₂ 99.9%ile	1.02	24	9%	266

NB. all units are ug/m³

The worst case annual mean concentrations of NO₂ and SO₂ are predicted to be of minor adverse significance. The worst case short-term concentration of NO₂ is predicted to be of minor adverse significance. All other predicted concentrations of pollutants are insignificant. All short-term and long-term pollutants are predicted to comply with EALs.

The emissions from the installation are highly unlikely to cause any Air Quality Objective or Limit Value to be exceeded.

Ecological Impacts

The ecological impact from the process is predicted to be of minor adverse significance at Wellbeck Lake SSSI and Clumber Park SSSI. Impacts at other designated sites are predicted to be insignificant.

Contents

1.0 INTRODUCTION

Background to Report
Scope of Air Quality Impact Assessment
Report Structure

2.0 RELEVANT LEGISLATION AND STANDARDS

Introduction to Section 2
Air Quality Standards
Air Quality Management Areas
Environmental Permitting Regulations
EP Guidance
Sensitive Receptors – Human Exposure
Sensitive Receptors – Ecological Exposure
Significance of Residual Impacts

3.0 BASELINE AIR QUALITY AND PROCESS EMISSION INVENTORY

Emission Inventory for the AQIA
Baseline Air Quality
Heavy Metals
PCDD/PCDFs
Ecological Sensitivities
Cumulative Impacts

4.0 DISPERSION MODELLING

Introduction to Section 4
Justification for Approach
Approach to Modelling Uncertainty
Dispersion Modelling
Model Parameters
Source Condition, Location and Height
Surface Roughness
Meteorological Data
Building Effects
Terrain Effects
Time Averaging and Percentiles
Grid Resolution and Receptors
Removal Effects
Overview of the Modelling Process

5.0 IMPACT ASSESSMENT RESULTS

Model Sensitivity Analysis
Sensitivity Analysis – Meteorological Data
Sensitivity Analysis – Surface Roughness
Sensitivity Analysis – Terrain Effects
Sensitivity Analysis – ADMS v AERMOD
Results – Human Health
Results - Ecological Impacts
Risk Assessment
Model Headroom

6.0 MITIGATION MEASURES

Operational Impacts

7.0 EVALUATION OF IMPACTS

Human Exposure
Annual Mean Exposure
Short-term Exposure
Ecological Exposure

FIGURES

1. Site Location
2. Sensitive Receptors (Human)
3. Sensitive Ecological Sites
4. Model Layout
5. Terrain Effects – Study Area
6. PM₁₀ Annual Mean
7. NO_x Annual Mean
8. NO₂ Annual Mean
9. SO₂ Annual Mean
10. NO₂ 99.79%ile Short-term
11. SO₂ 99.9%ile Short-term

TABLES

1. Selected Sensitive Dwellings within 1km
- 2.1 Environmental Assessment Levels
- 2.2 IAQM Assessment Framework
- 2.3 Air Quality Impact Assessment Criteria (Annual Mean)
- 2.4 Air Quality Impact Assessment Criteria (Short-term)
- 3.1 Summary of Emissions
- 3.3 Background Annual Mean Air Quality near Installation
- 3.3 Heavy Metals in Air
- 3.4 Mean Background Soil Concentrations
- 3.5 Baseline Ecology
- 4.1 Model Inventory
- 4.1 Summary of Modelled Conditions
- 4.3 Building Dimensions
- 5.1 Predicted Pollutant Concentrations S1
- 5.2 Predicted Pollutant Concentrations S2
- 5.3 Predicted Pollutants S1 as % of EAL
- 5.4 Predicted Pollutants S2 as % of EAL
- 5.5 Summary of Significance for Scenarios 1 & 2
- 5.6 Predicted Pollutant Concentrations Scenario 2 – Case Specific
- 5.7 Predicted Pollutants for Scenario 2 – Case Specific as % of EAL
- 5.8 Significance of Scenario 2 – Case Specific
- 5.9 Summary of Predicted Process Contribution
- 5.10 Ecological Impacts – Critical Levels – Scenario 2
- 5.11 Nitrogen as Nutrient – Critical Loads – Scenario 2
- 5.12 Acid Gas Deposition – Critical Loads – Scenario 2

APPENDICES

1. Emission Inventory
2. ADMS Model Inputs
3. ADMS Model Outputs
4. Ecological Assessment
5. Dioxin Risk Assessment

1.0 INTRODUCTION

Background to Report

- 1.1. Lhoist Western Europe Ltd currently operates a calcinated dolomitic lime process at Whitwell Works, Southfield Lane, Whitwell, Worksop, Derbyshire S80 3LJ. Dolomite for the process is imported from the adjacent quarry and crushed, sized and stored on site. The crushed dolomite is fed into two long rotary kilns (W1 and W2) which are heated using a mixture of petroleum coke, coal and waste derived fuels (WDF) to produce three types of Dolime: Dolomet; Dolofrit; and Dolopel. The waste gases from kiln W1 are passed through a four zone electrostatic precipitator (ESP). The waste gases from kiln W2 are passed through a bag filter. The treated emissions are then combined in a single flue and released through a 94m high refractory lined stack. [See Figure 1].
- 1.2. The process is authorised by the Environment Agency (EA)² under the Environmental Permitting (England & Wales) Regulations 2016. The current planning permission for the site expires in November 2019. Lhoist intends to apply to Derbyshire County Council as the Mineral Planning Authority (MPA) to extend planning permission until 2043.
- 1.3. Lhoist has appointed Caulmert Ltd to conduct an Environmental Impact Assessment for the application. Caulmert has appointed The Airshed to conduct the air quality impact assessment (AQIA) to form part of the Environmental Statement (ES) for the planning application.

Table 1 – Selected Sensitive Dwellings within 1km

Receptor name	OS X(m)	OS Y(m)	Distance (m)
R1 Southfield Lane	453192	376043	638
R3 Middlegate	453296	376109	656
R11 Sherwood Cottages	454039	375916	686
R12 Penny Green	454150	375796	717
R4 Loxley Lane	453382	376201	725
R14 Penny Green Cottages	454240	375606	746
R5 Station Road	453443	376240	756
R13 New Cottages	454227	375769	776
R49 Longhurst View	452985	376140	834
R48 Franklin Crescent	452900	376146	894
R21 Hennymoor Farm	454086	374792	907
R2 Whitwell Primary School	453071	376294	916
R7 Parkway	453522	376422	936
R47 Franklin Ave	452800	376109	940

- 1.4. The nearest dwellings are: Southfield Lane (R1), ~640m³; Middlegate (R3) ~660m, and Sherwood Cottages (R11), 685m to the north-east. All other dwellings are at least 700m from the process. The locations of sensitive

² Environment Agency Notice of variation and consolidation Permit No. EPR/BL3269IH Variation application No. EPR/BL3269IH/V007

³ Distances are calculated from the stack, not the process boundary.

receptors used to assess air quality impacts from the process are shown in Figure 2.

- 1.5. There are a number of sensitive ecological sites that may be affected by the process emissions including Markland Grips and Hollinhill Grips which are ~2.2km to the west of the process. All other designated ecological sites are at least 4km from the process. The locations of the sensitive ecological receptors considered in the study are shown in Figure 3.

Scope of Air Quality Impact Assessment

- 1.6. The aim of this assessment is to fulfil the Environmental Impact Assessment (EIA) requirements for the planning application.
- 1.7. The assessment considers the potential adverse air quality impacts from the emissions from the stack as permitted by the Environmental Permit. The assessment considers two Scenarios:
- Scenario 1 – which considers the impacts from the process based on the emission concentrations set in the current Environmental Permit. The Environmental Permit does not specify the emission rates for the process, so this assessment uses the highest stack gas flows recorded during emission tests over the last two years; and
 - Scenario 2 – the effects of the process emissions based on the worst case emission test measurements and the highest recorded process conditions as reported in the emission tests conducted in the last two years.
- 1.8. Both Scenarios assume the highest recorded process conditions as reported in the emission tests conducted in the last two years. Impacts on the local community are assessed in terms of air quality standards. The results from the AQIA are relevant when considering human health impacts. The assessment also includes a review of the likely ecological significance of atmospheric emissions.
- 1.9. The air quality impacts of road traffic have been assessed elsewhere.
- 1.10. Measures to control the impacts from fugitive emissions have not been considered quantitatively. Dust impacts from fugitive releases have been assessed elsewhere.

Report Structure

- 1.11. Section 2 discusses relevant planning policy, air quality standards, UK and European Regulations and Guidance relating to EP and air quality assessment criteria.
- 1.12. Section 3 describes the pollutant emission rates for the process used in the assessment. The section also discusses the baseline air quality conditions around the installation, taking account of the character of the emissions.
- 1.13. Section 4 sets out the reasons for the approach to assessment and details the assumptions made in the dispersion model.

- 1.14. The results and significance of the model sensitivity analysis and the overall results of the dispersion model are presented in Section 5. The mitigation measures are outlined in Section 6. The significance of the residual emissions is presented in Section 7.

2.0 RELEVANT LEGISLATION AND STANDARDS

Introduction to Section 2

- 2.1. This section discusses relevant planning policy, air quality standards, UK and European Regulations and Guidance relating to Environmental Permitting, and air quality assessment criteria.

Air Quality Standards

- 2.2. 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 limit or target values for air pollutants. The limits within the EC Directive were implemented in England and Wales by The Air Quality Limit Value Regulations 2003. EC Council Directive 2008/50/EC consolidated earlier air quality directives and introduced new mandatory limit values for PM_{2.5}. EC Council Directive 2008/50/EC has been transposed into UK legislation.
- 2.3. The Air Quality Limit Value Regulations as amended set air quality standards for a range of air pollutants. The UK Government has published an Air Quality Strategy⁴ which sets out how the Government proposes to fulfil the UK's obligations under the Air Quality Directive. The Air Quality Strategy sets out the policy, targets and objectives for air pollutants.
- 2.4. The Technical Guidance to local authorities for the review and assessment of air quality was updated in 2018.⁵ This Guidance (TG16) sets out the methods to be used to determine if the air quality objectives are likely to be achieved.

Air Quality Management Areas

- 2.5. Where the air quality objectives are likely to be exceeded then the relevant local authority must declare a Local Air Quality Management Area (LAQMA). The development is within Bolsover District Council's (BDC) area. BDC has declared 3 LAQMAs, the nearest being ~6km to the west of the process, in Barlborough, at Orchard Close and Chesterfield Road⁶. Two of the AQMA are due to be revoked following the findings of a detailed assessment. The nearest AQMA in Bolsover will be at South Normanton, near the M1, 20km to the south west of the installation. The nearest AQMA to the installation is in Sheffield, to the west of Killamarsh, ~10km to the north-west of the installation. These AQMA have been declared due to concerns that the annual means may exceed the EC annual mean Limit Values, due to emissions from road traffic.

Environmental Permitting Regulations

- 2.6. The Industrial Emissions Directive⁷ consolidates earlier European legislative accretions for Industrial Pollution Prevention & Control (IPPC) Directives and

⁴ DEFRA July 2007. The Air Quality Strategy for England, Scotland, Wales and Northern Ireland Vols 1 & 2.

⁵ DEFRA 2018. Review and Assessment Technical Guidance (TG16).

⁶ <http://www.bolsover.gov.uk/images/LIVE/A/Air-quality-Report-2018-bdc.pdf>

⁷ Directive 2010/75/EU 24th November 2010. On Industrial Emissions (integrated pollution prevention and control)

the Waste Incineration Directive (WID). The EP Regulations (England & Wales) 2016 implement the Industrial Emissions Directive. The EP Regulations require that processes achieve Best Available Technique (BAT) to prevent or minimise pollution. The BAT standards for the production of lime are defined in European Guidance.⁸ The installation falls within Chapter 3.1 Part A(1)b of Schedule 1 (Part 2) of the EP Regulations⁹, as: Producing lime or magnesium oxide in kilns with a production capacity of more than 50 tonnes per day. Lime production capacity at the installation is around 400,000 tonnes per annum, with two kilns (W1 and W2) operating continuously 24 hours per day, seven days per week.

EP Guidance

- 2.7. The Environment Agency for England has published Guidance¹⁰ that should be taken into account when determining the level of assessment required for Environmental Permits and provides information about methods for quantifying environmental impacts to soil, water and air. This Guidance includes a list of Environmental Assessment Levels (EAL) to be used to determine the potential significance of air quality impacts, and benchmarks to assess the effects of deposition of pollutants to land. These EALs are set out in Table 2.1 below.

Table 2.1 – Environmental Assessment Levels

Pollutant	Long-term	Short-term	Deposition
	ug/m ³	ug/m ³	mg/m ² /day
Ammonia	180	2500	-
Antimony	5	150	-
Arsenic	0.006	-	0.02
Benzene	5	195	-
Benzo(a)pyrene	0.00025	-	-
Cadmium	0.005	-	0.009
Carbon Monoxide	-	30000	-
Chromium	5	150	1.5
Chromium VI	0.0002	-	1.5
Copper ⁽²⁾	10	200	0.25
Hydrogen Chloride	-	750	-
Hydrogen Fluoride	16	160	2.1
Lead	0.25	-	1.1
Manganese	0.15	1500	-
Mercury	0.25	7.5	0.004
Molybdenum	-	-	0.016
Nickel	0.020	-	0.11
Nitrogen Dioxide	40	200	-
Particles PM ₁₀	40	50	-
Particles PM _{2.5}	25	-	-
Selenium	-	30	0.012
Sulphur Dioxide	20	350	-
Vanadium	5	1	-

N.B. columns are blank where there is no relevant EAL.

⁸ European Commission, May 2013. Best Available Techniques (BAT) Reference Document for the Production of Cement, Lime and Magnesium Oxide.

⁹ http://www.legislation.gov.uk/uksi/2010/675/pdfs/uksi_20100675_en.pdf

¹⁰ <https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit#screen-out-insignificant-peccs>

Sensitive Receptors – Human Exposure

- 2.8. 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 NO₂ should apply to footpaths at site boundaries and other areas which may be frequented by the public even for a short period of time.
- 2.9. 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.
- 2.10. 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. The land around the installation includes agricultural uses, allotments and gardens so that deposition effects on vegetation and soil also need to be assessed.
- 2.11. The receptors used in the assessment of exposure for human health are shown in Figure 2. The predicted impacts at these receptor locations are solely concerned with air quality impacts on human health.

Sensitive Receptors - Ecological Exposure

- 2.12. This assessment assumes that the ecological limit values for SO₂ and NO_x do not apply within the study area shown in Figure 2. This is based on paragraph 10 of 2008/50/EC¹¹ which states that compliance with critical levels for the protection of vegetation should focus on places away from built-up areas.
- 2.13. There are a number of designated sites within 10 kilometres of the process and this assessment considers the potential significance of emissions at these locations. These designated ecological sites have been identified using the UK government's website.¹² There is an important geological site (Cresswell Crags) near the installation, but this is not considered to be sensitive to the direct effects of air pollution. The locations of the ecological sites considered in the assessment are shown in Figure 3.

Significance of Residual Impacts

- 2.14. Part of the role of air quality impact assessment is to provide quantitative predictions for a range of pollutants and to provide some interpretation of their significance. The assessment criteria for particles and NO₂ are summarised in Table 2.2 below. This is based on the assessment framework derived from EPUK/IAQM professional Guidance.¹³
- 2.15. The EPUK/IAQM assessment framework focuses mainly on transport sources, but has been included in this assessment as most local authorities are familiar with its approach. This framework has not been adopted for other pollutants for which the assessment relies on the EA's risk assessment methodology.

¹¹ DIRECTIVE 2008/50/EC 21 May 2008. Ambient air quality and cleaner air for Europe
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32008L0050:EN:NOT>

¹² <https://magic.defra.gov.uk/MagicMap.aspx>

¹³ IAQM January 2017. Land-Use Planning and Development Control: Planning for Air Quality.

Table 2.2 – Definition of Impact for NO₂ and Particles (EPUK/IAQM 2017)

Long term average Concentration at receptor in assessment year	% Change in concentration relative to Air Quality Assessment Level (AQAL)			
	<1%	2-5%	6-10%	>10%
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

2.16

A more detailed assessment framework has also been used to assess the significance of air quality impacts as set out in Tables 2.3 and 2.4 below. These are based on DEFRA/EA Guidance and the EA's informal pragmatic risk assessment method.

Table 2.3 - Air Quality Impact Assessment Criteria (Annual Mean at Receptors)

Predicted Impact	Adverse Significance	Justification
Greater than air quality limit value or objective	Major	Exceeding any air quality limit value would be unacceptable in terms of human health, or where the impact would have significant adverse ecological impacts.
Process Contribution >30% of EAL	Moderate	Risk based approach advocated by Environment Agency taking account of model headroom and uncertainty.
Process Contribution <30% of EAL	Minor/ Moderate	Risk based approach advocated by Environment Agency taking account of model headroom and uncertainty.
Process Contribution <10% of EAL	Minor	Based on rule of thumb (factor of 10)
Process Contribution <1% of EAL	Insignificant	This is the assessment criteria proposed by EA as a screening method which states that process contributions can be considered insignificant if the long-term process contribution is <1% of the long-term EAL.

Table 2.4 - Air Quality Impact Assessment Criteria (Short-term at Receptors)

Predicted Impact	Adverse Significance	Justification
Greater than air quality limit value or objective	Major	Exceeding any air quality limit value would be unacceptable in terms of human health, or where the impact would have significant adverse ecological impacts.
Process Contribution >50% of EAL	Moderate	Risk based approach advocated by Environment Agency taking account of model headroom and uncertainty.
Process Contribution <50% of EAL	Minor/ Moderate	Risk based approach advocated by Environment Agency taking account of model headroom and uncertainty.
Process Contribution <30% of EAL	Minor	Risk based approach advocated by Environment Agency taking account of model headroom and uncertainty.
Process Contribution <10% of EAL	Insignificant	This is the assessment criteria proposed by EA as a screening method which states that process contributions can be considered insignificant if the short-term process contribution is <10% of the short-term EAL.

3.0 BASELINE AIR QUALITY AND PROCESS EMISSION INVENTORY

Emission Inventory for the AQIA

3.1 Two Scenarios have been assessed:

- Scenario 1 – which considers the impacts from the process based on the emission concentrations set in the current Environmental Permit; and
- Scenario 2 – the effects of the process emissions based on the worst case emission test measurements recorded over the last two years.

Table 3.1 - Summary of Emissions for Scenarios 1 and 2

Pollutant	Time Average	Scenario 1	Scenario 2	
		g/s	g/s	
Particulate (all)	daily average	1.509	2.413	
NOx		172.5	151.4	
SO2		35.14	36.80	
CO		28.74	5.800	
TOC		0.718	0.160	
HCl		8.911	5.908	
HF		0.072	1.051	
Cd & Tl		0.004	0.001	
Hg		0.004	0.001	
Sb,As,Pb,Cr,Co,Cu,Mn,Ni,V		0.287	0.046	
Dioxins and Furans I-TEQ		7.2E-09	3.2E-08	
Particulate (all)		half hour average	3.018	4.580
NOx			344.9	136.931
SO2	70.28		99.611	
CO	71.86		62.712	
TOC	1.437		0.941	
HCl	17.82		18.813	
HF	0.287	0.251		
Emission Parameters				
efflux velocity	m/s	11.0	11.0	
Temperature in stack	oC	290	290	
Volume m ³ /s	reference conditions	71.9	71.9	
Volume m ³ /s	actual	164.9	164.9	

3.2 The mass emissions for both Scenarios and the results on which the emission rates have been calculated are presented in Appendix 1 and summarised in Table 3.1 above.

3.3 The emission inventory for the AQIA initially assumes that the emission rate of each group 3 metal is being emitted at 100% of the group emission concentration limit value (0.5mg/m³) in accordance with Stage 1 of current EA Guidance on the assessment of heavy metals.¹⁴

Baseline Air Quality

3.4 Estimates of background pollutants for PM₁₀, PM_{2.5} and NO₂ have been obtained from the DEFRA sponsored air quality archive.¹⁵ The data in Table

¹⁴ Environment Agency (undated) Releases from waste incinerators – Guidance on assessing group 3 metal stack emissions from incinerators Version 4.

¹⁵ <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2015>

3.2 below presents the average and highest reported estimated background concentrations within 5km of the installation, within the study area (OS grid x 448,500 - 458,500; y 370,000 - 380,000). The most significant local sources of background air pollution are likely to be from road traffic on local primary roads and the M1, and from other industry.

Table 3.2 - Background Annual Mean Air Quality 2018 Within Study Area

Parameter	NO _x	NO ₂	PM ₁₀	PM _{2.5}
Average	14.4	10.7	14.7	9.3
Max	18.0	13.2	18.2	9.9

N.B. All units = ug/m³ within study area

Heavy Metals

3.5 The nearest monitoring stations for heavy metals in ambient air are at urban sites in Sheffield.¹⁶ [See Table 3.3 below] These may therefore not be entirely representative of local conditions at Whitwell, but provide some context for the assessment of metal concentrations in air. The levels of metals reported in Tinsley are likely to represent exposure from adjacent iron and steel processes, so that levels in Devonshire Green in Sheffield town centre and in Brisworth are likely to be more representative of exposure in the study area.

Table 3.3 – Heavy Metals in Air Sheffield

Station	Year	As	Cd	Cr	Cu	Hg[p]	Mn	Ni	Pb	Se	V
Brisworth	2013	0.77	0.31	31.86	13.88	0.07	27.43	12.44	20.80	2.62	1.94
Devonshire Green	2013	0.64	0.09	2.50	8.12	0.01	4.35	0.76	6.61	0.47	0.58
	2014	0.79	0.22	3.11	9.14		12.26	2.51	11.26	1.15	1.20
	2015	0.70	0.14	3.07	8.89		8.52	1.97	9.37	1.03	0.74
	2016	0.68	0.13	4.47	9.21		8.42	2.57	7.68	1.26	0.76
	2017	0.69	0.13	3.79	9.66		8.35	1.82	6.73	0.80	0.75
Tinsley	2013	0.84	0.32	28.61	17.86	0.04	30.52	14.44	18.21	2.24	1.67
	2014	1.04	0.58	34.48	21.69	-	36.08	19.92	18.82	2.44	1.57
	2015	0.95	0.45	28.38	19.28	-	27.73	17.55	14.98	2.22	1.42
	2016	1.04	0.40	38.67	21.43	-	27.40	20.35	14.44	3.00	1.31
	2017	1.33	0.63	45.97	19.77	-	39.77	20.86	19.86	1.78	1.41

N.B. units = ng/m³ in air as annual mean

3.6 The results from the heavy metals monitoring indicate that levels of heavy metals in air are unlikely to exceed air quality standards or Environmental Assessment Levels, even in urban areas within the UK.

3.7 The potential for environmental impact from heavy metals is more likely to arise from accumulation in soil and vegetation e.g. by deposition around uncontrolled industrial sources, or from weathering of underlying rocks and soils which may naturally contain these elements. The combined impacts can affect and accumulate within mosses and clover.¹⁷ The maps of airborne and deposition of metals in the UK are available on-line¹⁸ and the basis of the predictions has been published.¹⁹

¹⁶ https://uk-air.defra.gov.uk/data/data_selector_service#mid

¹⁷ CENTRE FOR ECOLOGY AND HYDROLOGY (Natural Environment Research Council); May 2006. The UNECE International Cooperative Programme on Vegetation Final Report.

¹⁸ <http://www.pollutantdeposition.ceh.ac.uk/content/2008>

¹⁹ CEH 2006. UK Heavy Metal Monitoring Network

- 3.8 Levels of ambient background concentrations of metals in soils have been surveyed throughout the UK.²⁰ The levels presented in Table 3.4 are the mean rural background concentrations in soil surveyed in England.

Table 3.4 - Mean Background Soil Concentrations (mg/kg)

As	Cd	Cr	Cu	Pb	Mn	Hg	Ni	Sn	Ti	V
13.9	0.43	33.4	19.8	62	615	0.11	19.5	5.05	201	46

PCDD/PCDFs

- 3.9. Dioxins is the short name given to a group of related compounds known fully as polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs). Historically, monitoring for dioxins in the UK has been conducted in industrial areas near known industrial sources, so that realistic estimates of airborne concentrations are unlikely to be available. Dioxin concentrations have been surveyed in rural soils within England. These are reported to range from 0.31 – 181.86 ng/kg WHO-TEQs with a median value of 2.84 ng/kg WHO-TEQ.²¹ The toxicity of these compounds to humans depends on the isomer. The Toxic Equivalent (TEQ) standards used to assess impacts on human health have been developed internationally. This assessment uses WHO definitions for assessing toxic equivalence.

Ecological Sensitivities

- 3.10. The critical loads approach is used to identify soils and habitats that may be sensitive to deposition from acid gas and nitrogen deposition. Critical loads are a quantitative estimate of exposure to pollutants below which significant harmful effects on sensitive ecology do not occur, according to present knowledge. There is a substantial literature on the methods used to map critical loads within the UK.²² A range of sources has been used to estimate baseline acid deposition, including the UK FRAME predictions for transport and deposition of SO₂, NH₃ and Nitrate aerosols.²³ These predictions are based on techniques adopted for long-range models in a number of European studies.²⁴
- 3.11. The baseline deposition and the sensitivity of the soils and eco-systems around the installation have been determined using the APIS website.²⁵ This provides details on sensitivity to acid gas deposition for a range of habitats, based on the critical loads approach. These data are based on predictions at 5km resolution. The baseline annual mean NO_x and SO₂ in air vary according to the location and separate values have been considered for each sensitive location. Baseline air pollution and deposition rates at the designated sites

²⁰ Environment Agency June 2007. UK Soils and Herbage Pollutant Survey UKSHS Report No. 1

²¹ Environment Agency 2007. Herbage Pollutant Survey UKSHS Report No. 10. Environmental concentrations of polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans in UK soil and herbage.

²² http://cldm.defra.gov.uk/Site_sp_crit_loads.htm

²³ Fournier N; Weston K; Dore A; Sutton M. Modelling the wet deposition of reduced nitrogen over the British Isles using a Lagrangian multi-layer atmospheric transport model. *Q. J. R. Meteorol. Soc.* (2005), 131, pp. 703–722 2004.

²⁴ <http://www.emep.int/> Note prepared for the twenty-fourth session of the Steering Body to EMEP (Co-operative Programme for Monitoring and Evaluation of the Long Range Transmission of Air Pollutants in Europe). It presents a joint effort by the Meteorological Synthesizing Centres West (MSC-W) and East (MSC-E) of EMEP to summarise the current work parameterisation schemes for removal processes of particles in the atmosphere.

²⁵ <http://www.apis.ac.uk>

are summarised in Table 3.5 below. Further details on the baseline air concentrations and deposition rates at sensitive ecological sites is presented in Appendix 5.

Table 3.5 – Baseline Ecology

Parameter	Baseline	Critical Load/Level
NO _x	20.35 ug/m ³	30 ug/m ³
SO ₂	0.51 ug/m ³	20 ug/m ³
NH ₃	1.71 ug/m ³	1 – 3 ug/m ³
Acid Deposition (S+N)	2.45 K _{eq} /ha/yr	-
Acid Deposition (Nitrogen only)	2.52 K _{eq} /ha/yr	11.225 K _{eq} /ha/yr (broadleaf woodland)*
Acid Deposition (Sulphur only)	0.51 K _{eq} /ha/yr	11.083 K _{eq} /ha/yr (broadleaf woodland)*
Nitrogen Deposition	35.28 kg N/ha/yr	10 – 20 kg N/ha/yr (broadleaf woodland)

N.B. Based on APIS data at Markland Grips for averages of 2013 - 2015

- 3.12. The relationship between acid gas deposition and sensitive ecology is complex. Empirical factors have been developed to allow the calculation of the equivalent effective acid deposition likely to occur from predicted deposition of NO_x and SO_x.²⁶ These empirical factors have been used to convert predicted NO_x and SO_x deposition into acidification equivalents. This translates the predicted deposition into units that take account of the damage that these gases are likely to have on sensitive vegetation and soils.

Cumulative Impacts

- 3.13. There are a number of sources of air pollution within the study area that have the potential to affect local air quality. This assessment assumes that all such emissions are included within the published baseline estimates described above.

²⁶ http://www.apis.ac.uk/overview/pollutants/overview_Acid_deposition.htm

Introduction to Section 4

- 4.1. This Section sets out the reasons for the approach to assessment and details the assumptions made in the dispersion model.

Justification for Approach

- 4.2. This assessment uses a dispersion model to predict the impacts based on two Scenarios based using permitted and actual emissions.
- 4.3. The likely impact from process emissions may be estimated using an appropriate atmospheric dispersion model and reliable emission estimates. The emissions from the installation are based on measured conditions and permitted emission limits set by the environmental permit.
- 4.4. The objective of the dispersion modelling assessment is to predict the likely worst case ground level concentrations at the nearest sensitive receptors around the installation.
- 4.5. The pattern of pollutant dispersion may be estimated using several years of historical meteorological data from a representative site.
- 4.6. Air quality impacts are assessed against Air Quality Limit Values, Air Quality Objectives and Environmental Assessment Levels.
- 4.7. The flow of gases in the stacks is based on the measured conditions as reported in the highest recorded emission test results in the last two years of operation (2017 and 2018).
- 4.8. The assessment predicts the dispersion around the site, assuming that the process operates at maximum throughput at all times, for both Scenarios.
- 4.9. The assessment ignores the impacts from process upsets, fluctuations and accidents as the Environmental Permit imposes conditions intended to ensure that the risk of unplanned emissions is minimised.

Approach to Modelling Uncertainty

- 4.10. Environment Agency policy statement²⁷ refers to the Royal Meteorological Society Guidelines on Dispersion Modelling. According to this Guidance, dispersion modelling studies should include a sensitivity analysis for model inputs, to provide an estimate of the possible errors in the predictions. The sensitivity analysis is discussed in more detail in Section 5. The Environment Agency has also published requirements for dispersion modelling.²⁸ This includes advice on the Agency's requirements for reporting. These Guidance documents have been taken into account in the assessment.

²⁷ Environment Agency, undated. Policy Statement EAS/2007/1/1

²⁸ Environment Agency, undated. Air Dispersion Modelling Report Requirements (for detailed dispersion modelling).

- 4.11. A widely recognised mathematical model (ADMS 5.2 version 5.2.2.0) has been used to predict how emissions will be dispersed taking account of: the source conditions (the flow rate and pollutant concentration); release conditions (efflux velocity and temperature); meteorological conditions from a representative site (in this case near ground measurements at RAF Scampton supplied by the Met. Office); and surface conditions (surface roughness and terrain).
- 4.12. The model used, ADMS 5, has been developed specifically for industrial point sources. The model is widely used in the UK for environmental assessment and is generally considered by the EA and others to be suitable for air quality impact assessment subject to its proper use. Potential difficulties and limitations in this type of study when applied to air quality impact assessments include:
- Lack of good information about the risk to human health from process emissions. This assessment relies on the statutory limit values and objectives that are based on extensive epidemiological data and the EALs published by the Environment Agency;
 - Errors in source terms used to estimate emissions. Emission rates from the process stack are based on permitted emission limits and worst case measured flow conditions. These flows have been used to determine worst case emission concentrations and emission rates;
 - Errors inherent in the dispersion model used. The model is considered to be suitable for use in this application and has been widely validated for industrial point sources; and
 - Errors introduced by the model user due to the use of inappropriate or unrepresentative input values such as meteorological data or surface roughness values. A sensitivity analysis has been conducted to take these potential errors into account. The significance of these factors is discussed in Section 5. In general this assessment includes worst case factors where these may otherwise lead to underestimates of worst case conditions.
- 4.13 The approach used in this assessment is to present a detailed account of the modelling process and to consider the model sensitivity to the main user inputs. An inventory of the models run for this project is presented in Table 4.1. [See Table at end of text, before the Figures]

Dispersion Modelling

- 4.14. 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. This mathematical model enables the calculation of sources and includes an algorithm for assessing flow around buildings and topography that may affect dispersion.
- 4.15. The principal factors affecting the concentration of a pollutant are:
- source characteristics including source strength, height of discharge, the efflux velocity, and temperature of the release;

- prevailing atmospheric conditions including wind speed, wind direction, cloud cover, precipitation, ambient temperature and the depth of the boundary layer²⁹; 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.

4.16. The model description is published in the user guide for ADMS 5.2³⁰ and details of model comparisons between measured and predicted concentrations are available.³¹

Model Parameters

4.17. The temperature and efflux velocity of the stack gases are based on measured flows reported in emission tests. The emission parameters are summarised in Table 4.2 below in accordance with the requirements of Environment Agency Guidelines. [See Tables in Appendix 1 for more details.]

Table 4.2 - Summary of Modelled Conditions

Parameter	Scenario 1	Scenario 2
OS x,y	453503.80, 375486.37	
Stack height	94.0 (m)	
Pollutant emission rate	NO _x 172.454 (g/s)	NO _x 151.413 (g/s)
Internal duct area ³²	15.03 (m ²)	
Exit temperature	290 (°C)	
Efflux velocity (actual)	11.0 (m/s)	
Volumetric flow rate (at reference conditions)	71.9 (m ³ /s)	

Source Condition, Location and Height

4.18. The emission sources for both Scenarios have been considered as continuous, steady state point source releases. The location of the stack is shown in Figures 1 - 4. The height of the release is assumed to be 94.0m above ground, based on the information provided by Lhoist. Details of the buildings and stack location were obtained from the site planning drawings, a site topographical survey and the OS map base at 1:1250 scale.

Surface Roughness

4.19. The surface roughness conditions in the study area are likely to vary widely across the domain, with open agricultural land, small urban settlements and wooded areas. The effect of surface roughness on dispersion depends on

²⁹ The boundary layer is the layer of the atmosphere near the surface of the planet that is affected by mechanical turbulence from surface friction and convective turbulence through local surface heating.

³⁰ CERC 2016 ADMS-5.2 Atmospheric Dispersion Modelling System – User Guide.

³¹ Details of model validation studies are available at <http://www.cerc.co.uk/software/publications.htm>

³² The existing stack has an estimated internal diameter of 4.375m at the exit.

the parameter considered. The worst case short-term and long-term impacts are predicted to occur under similar surface roughness conditions. The effects of surface roughness are discussed further in the sensitivity analysis in Section 5.

Meteorological Data

- 4.20. The selection of suitable meteorological data needs to be conducted with care. The main limiting factor for suitable meteorological data is continuous observations of cloud cover, used in the model to determine atmospheric stability.
- 4.21. The Meteorological Office operates a site at RAF Scampton, 43km due east of the installation. Five years of hourly sequential meteorological data (2014 - 2018 inclusive) have been used to predict the dispersion around the site. A summary of the meteorological data is presented in Appendix 2.

Building Effects

- 4.22. The dispersion model used can take account of the effects of re-circulating flow or downwash effects caused by buildings near the point of release. Building effects have been considered. The dimensions of the buildings considered are presented in Table 4.3 below. The model set-up ignores buildings < 1/3rd of the stack height. The silo building height is therefore only just above the threshold where adjacent buildings should be considered.

Table 4.3 – Building Dimensions used in Dispersion Model

Building	OS x	OS y	Height (m)	Length (m)	Width (m)	Angle to North (degrees)
Silo	453475.4	375359.8	34	34.57	9.12	171.55
Coal Mill	453523.3	375322.3	28	27.47	17.35	85.00

Terrain Effects

- 4.23. The site is located in flat, gently undulating terrain where the slopes between the source and receptors are < 1:10. Terrain is therefore unlikely to have a significant effect on air flow and dispersion at the nearest sensitive receptors. The terrain within the study area slopes gradually from west to east, which may affect local conditions. Terrain effects have therefore been considered as a precaution. The effects of terrain on flow have been considered in the model sensitivity analysis.

Time Averaging and Percentiles

- 4.24. The averaging time for particles is based on a 24 hour average with a 90.41%ile. For SO₂ the 99.9%ile of 15 minute averages has been calculated. NO_x and NO₂ are based on a 1 hour average. The 1 hour 97.79%ile has been calculated for NO_x. The short-term concentrations of Hydrogen Fluoride (HF), Hydrogen Chloride (HCl) and metals have been calculated over 1 hour (based on the 100%ile). All long-term predictions are based on the 24 hour daily average emission rates. The short-term impacts are based on the maximum permitted 30 minute average.

Grid Resolution and Receptors

- 4.25. Predictions have been made at 49 fixed point receptor locations to help assess impacts at residential receptors and to assist with the model sensitivity analysis. A further six receptor locations have been used to assess impacts at a potential housing site. These receptor locations are shown in Figure 2. A further 38 receptors have been used to assess impacts at designated ecological sites [See Figure 3]. Additionally predictions have been considered over the study area using a grid: 81 by 61 grid points around the site at intervals of 100m. The extent of the prediction grid is shown in Appendix 2.

Removal Effects

- 4.26. Atmospheric chemistry and photo-lytic reactions have been ignored. Deposition rates have been calculated in accordance with Environment Agency Guidance.

Overview of the Modelling Process

- 4.27. Details of the dispersion model runs are presented in Table 4.1.

Model Sensitivity Analysis

- 5.1. It is a requirement of the Royal Meteorological Society Guidelines on Dispersion Modelling^{33&34} that such studies should include a sensitivity analysis, to provide an estimate of the possible errors in the predictions. The potential errors in predictions were outlined in Section 4.
- 5.2. The sensitivity analysis conducted for this study considers the likely variability and errors arising from meteorological data, surface roughness, terrain effects, and a comparison between ADMS and AERMOD. The detailed model outputs are presented in Appendix 3. The model sensitivity tests are based on the emissions for Scenario 1.
- 5.3. The Environment Agency's method for assessing model uncertainty³⁵ indicates that the confidence in the model predictions is initially high because the plume is not adjacent to buildings that are likely to affect air flow and potentially cause significant downwash effects, or be affected by terrain.
- 5.4. Overall confidence in the predictions can be assessed using the concept of model headroom. This is discussed later in this section, following the discussion of the model sensitivity analysis.

Sensitivity Analysis – Meteorological Data

- 5.5. The model sensitivity analysis indicates that the predicted worst case short-term results vary by up to 10% with the year of hourly sequential meteorological data used to predict dispersion. Based on 5 years of data (RAF Scampton 2014 – 2018), the highest 99.79thile 1 hour over the five years is predicted where the meteorological data for the year 2015 is used. The meteorological data for 2015 has been used to assess short-term impacts.
- 5.6. The maximum long-term annual mean at any residential receptor³⁶ is more sensitive to the year of meteorological data used, varying by a factor of up to 1.7 (169%) over the 5 year period considered. The worst case annual mean in 5 years is predicted where the meteorological data for the year 2015 is used. The meteorological data for 2015 has been used to assess long-term impacts. The results for this assessment are presented in detail within Appendix 3.

³³ Royal Meteorological Society May 1995. Policy Statement, Atmospheric Dispersion Modelling Guidelines on the justification of choice and use of models and the communication and reporting of results

³⁴ ADMLC 2004. Guidelines for the Preparation of Dispersion Modelling Assessments for Compliance with Regulatory Requirements – an Update to the 1995 Royal Meteorological Society Guidance.

³⁵ Ji Ping Shi and Betty Ng; 2004. Risk based pragmatic approach to address model uncertainty. Air Quality Modelling and Assessment Unit The Environment Agency 29 Newport Road Cardiff CF24 0TP. Paper Given At NSCA Seminar.

³⁶ Based on TG16, long-term means only usually apply to residential areas.

Sensitivity Analysis – Surface Roughness

- 5.7. The dispersion model has been run using surface roughness values of 0.02m, 0.1m, 0.2m, 0.3m and 0.5m across the domain, to reflect the range of possible surface roughness conditions within the study area.
- 5.8. This parameter has a minor influence on predicted worst case short-term air pollutant concentrations, where the 99.79%ile 1 hour may range by up to 21% depending on the surface roughness value assumed. The worst case predicted short-term is slightly higher where a higher end surface roughness value (z=0.5m) is assumed across the domain.
- 5.9. The worst case annual mean at residential receptors is also greatest when the higher end surface roughness value (z=0.5m) is adopted. Overall, the worst case predicted annual mean varies by up to 270% depending on the surface roughness value adopted. A surface roughness value of 0.5m has been adopted across the domain to represent worst case conditions for dispersion. The results for this assessment are presented in detail within Appendix 3.

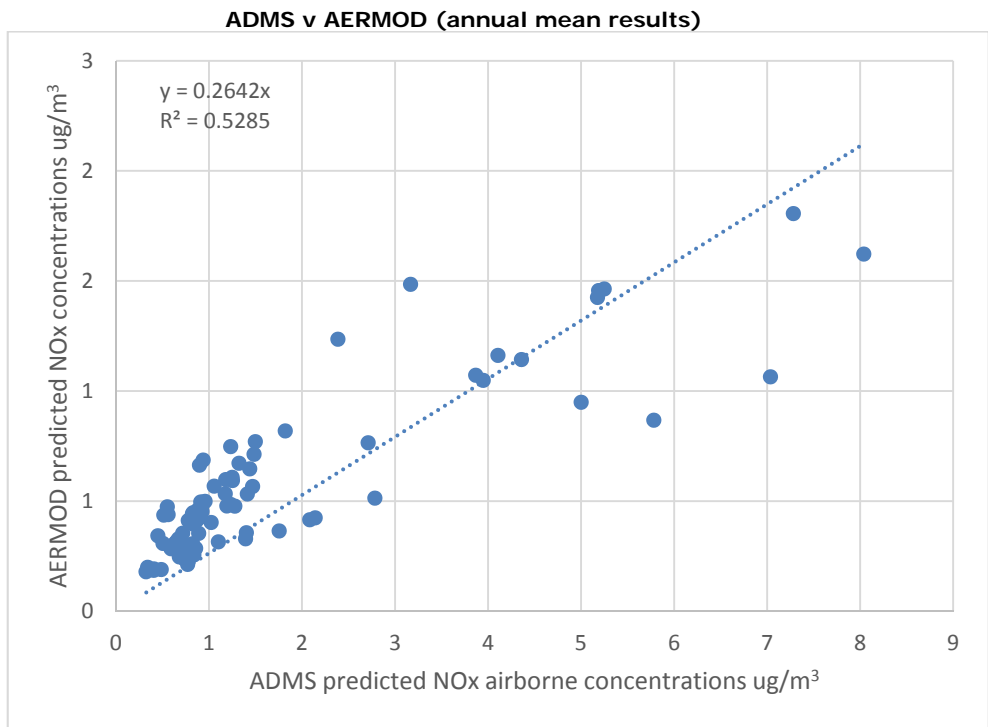
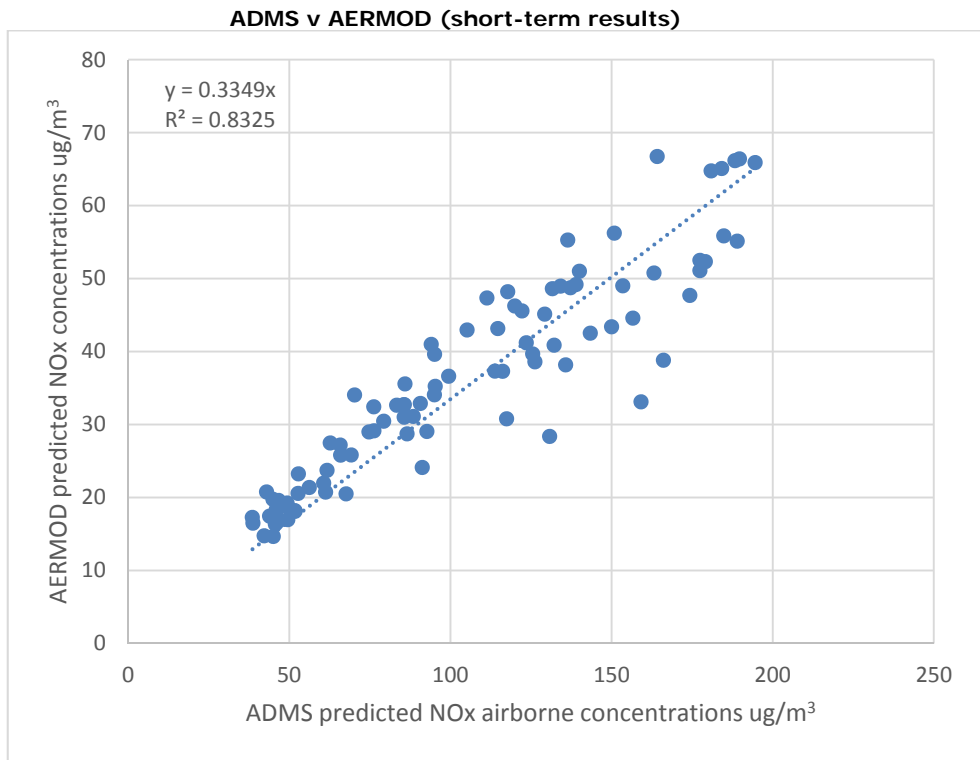
Sensitivity Analysis – Terrain Effects

- 5.10. Generally the effects of terrain should not be taken into account for slopes <1:10, but the effects of terrain on model predictions have been considered as a precaution. A smaller study area has been used to assess the impacts on terrain, due to the model limitations. Some receptor locations have been removed from these model runs to ensure that all receptor points are within the terrain grid. This considers the impacts within the study area shown in Figure 5.
- 5.11. The predicted short-term 1 hour 99.8%ile at the worst case receptor is affected only marginally when terrain effects are considered (a 1% increase). The effects of terrain on the worst case short-term concentrations have therefore been discounted.
- 5.12. The effect of terrain is slightly more significant on the predicted annual mean concentration (a 5% increase). The worst case receptor (R10) is at an elevation of approximately 72m, compared to the stack base height of ~79m, with no intervening slopes >1:10. The effects of terrain on the predicted annual mean have been discounted. The results for this assessment are presented in detail within Appendix 3.

Sensitivity Analysis – ADMS v AERMOD

- 5.13. All model results discussed above have been obtained using ADMS 5.2. The same model setup has been run using AERMOD³⁷, to determine if an alternative dispersion model provides similar predictions. There is generally good agreement in terms of the distribution of near ground level concentrations for the short-term predictions, and less so for the annual mean predictions. The relationship between the predicted short-term and long-term NO_x is plotted below.

³⁷ As implemented by current version of ADMS.



5.14. AERMOD predictions are typically $<1/3$ of the ADMS result. The predicted annual mean and short-term impacts are significantly greater when ADMS is used. ADMS has been used for all subsequent model predictions.

Results – Human Health

5.15.

The predicted concentrations at sensitive receptors for Scenarios 1 and 2 are presented in Tables 5.1 and 5.2 at the end of the text. The overall significance of these impacts is assessed in Table 5.3 (Scenario 1) and Table 5.4 (Scenario 2). These predictions are based on the worst case dispersion conditions for surface roughness and meteorological variability. The NO₂ predictions assume the standard EA conversion factors for short-term and long-term concentrations. Each Group 3 metal is assumed to be discharged at 100% of the equivalent emission rate (5mg/m³). The overall significance of the impacts is summarised in Table 5.5 below.

Table 5.5 – Summary of Pollutant Concentrations – Scenarios 1 and 2

Exposure Period	Pollutant	Scenario 1	Scenario 2
		%	%
Long-term	Antimony	0%	0%
	Arsenic	112%	18%
	Benzene	0%	0%
	Benzo(a)pyrene	0%	0%
	Cadmium	2%	0%
	Chromium	0%	0%
	Chromium VI	670%	107%
	Copper	0%	0%
	Hydrogen Fluoride	0%	0%
	Lead	3%	0%
	Manganese	4%	1%
	Mercury	0%	0%
	Nickel	33%	5%
	Nitrogen Dioxide	7%	6%
	Particles PM ₁₀	0%	0%
	Particles PM _{2.5}	0%	0%
	Sulphur Dioxide	4%	4%
Vanadium	0%	0%	
Short-term	Antimony	0%	0%
	Benzene	0%	0%
	Carbon Monoxide	0%	0%
	Chromium	0%	0%
	Copper	0%	0%
	Hydrogen Chloride	2%	1%
	Hydrogen Fluoride	0%	1%
	Manganese	0%	0%
	Mercury	0%	0%
	Nitrogen Dioxide	34%	15%
	Particles PM ₁₀	0%	0%
Sulphur Dioxide	13%	7%	
Vanadium	0%	4%	
Deposition	Arsenic	87%	14%
	Cadmium	2%	20%
	Chromium	1%	0%
	Chromium VI	0%	0%
	Copper	7%	1%
	Hydrogen Fluoride	0%	3%
	Lead	2%	0%
	Mercury	5%	5%
	Molybdenum	109%	17%
Nickel	16%	3%	

Units = (PC/EAL)%. PC = Process Contribution; EAL = Environmental Assessment Level

- 5.16. Based on this assessment, airborne concentrations of Arsenic, Chromium VI and the deposition rate of Molybdenum exceed the relevant EALs, assuming emission rates based on permitted emission concentrations and the maximum stack gas flows recorded in 2017 – 2018 (Scenario 1). No pollutants are predicted to exceed any EAL for Scenario 2, which is based on the worst case recorded emission rates recorded in 2017 – 2018 with the exception of annual mean airborne concentrations of Chromium VI.
- 5.17. The results from a further assessment of exposure based on Step 2 (Case Specific Screening) are presented in Tables 5.6 and 5.7 at the end of the text. The overall significance of the impacts is summarised in Table 5.8 below.

Table 5.8 - Significance of Impacts Scenario 2 (Case Specific for Metals)

Exposure Period	Pollutant	PC/EAL	Significance
		%	Tables 2.3 & 2.4
Long-term	Antimony	0%	Insignificant
	Arsenic	0%	Insignificant
	Benzene	0%	Insignificant
	Benzo(a)pyrene	0%	Insignificant
	Cadmium	0%	Insignificant
	Chromium	0%	Insignificant
	Chromium VI	0%	Insignificant
	Copper	0%	Insignificant
	Hydrogen Fluoride	0%	Insignificant
	Lead	0%	Insignificant
	Manganese	0%	Insignificant
	Mercury	0%	Insignificant
	Nickel	0%	Insignificant
	Nitrogen Dioxide	6%	Minor
	Particles PM ₁₀	0%	Insignificant
	Particles PM _{2.5}	0%	Insignificant
	Sulphur Dioxide	4%	Minor
Vanadium	0%	Insignificant	
Short-term	Antimony	0%	Insignificant
	Benzene	0%	Insignificant
	Carbon Monoxide	0%	Insignificant
	Chromium	0%	Insignificant
	Copper	0%	Insignificant
	Hydrogen Chloride	1%	Insignificant
	Hydrogen Fluoride	1%	Insignificant
	Manganese	0%	Insignificant
	Mercury	0%	Insignificant
	Nitrogen Dioxide	15%	Minor
	Particles PM ₁₀	0%	Insignificant
	Sulphur Dioxide	7%	Insignificant
	Vanadium	0%	Insignificant
Deposition	Arsenic	0%	Insignificant
	Cadmium	20%	Minor/Moderate
	Chromium	0%	Insignificant
	Chromium VI	0%	Insignificant
	Copper	0%	Insignificant
	Hydrogen Fluoride	3%	Minor
	Lead	0%	Insignificant
	Mercury	2%	Minor
	Molybdenum	0%	Insignificant
	Nickel	0%	Insignificant
Selenium	3%	Minor	

5.18. The results for Scenario 2, based on the worst case measured emission rates, the highest recorded stack gas flows and Step 2 (Case Specific Screening) for metals, indicate that the worst case impacts are: of minor adverse significance for annual mean exposure to NO₂ and SO₂; of minor adverse significance for short-term exposure to NO₂; of minor/moderate adverse significance for deposition of Cadmium; and of minor adverse significance for deposition of Hydrogen Fluoride, Mercury and Selenium. All other impacts are predicted to be insignificant at all sensitive human receptors in terms of the EA's risk assessment framework.

5.19. The predicted process contribution to the NO₂ annual mean is of slight adverse significance in terms of the IAQM assessment framework set out in Table 2.2. The predicted impacts from PM₁₀ and PM_{2.5} are of negligible significance in terms of the IAQM assessment framework. The predicted annual means with background concentrations for the main pollutants of interest are summarised in Table 5.9 below.

Table 5.9 - Summary of Predicted Process Contribution

Pollutant	Baseline	Predicted Environmental Concentration	Standard
NO ₂ 1 hour 99.79%ile	26.4	56	200
NO ₂ annual mean	13.2	16	40
NO _x (eco standard)	18	22	30*
PM ₁₀ annual mean	18.2	18	40
PM _{2.5} annual mean	9.9	10	40
SO ₂ 99.9%ile	1.02	24	266
SO ₂ annual mean	0.51	1	20*

NB. all units are ug/m³ * = ecological standard, i.e. to prevent damage to sensitive plants

5.20. The predicted annual mean contour for PM₁₀ is plotted in Figure 6. This shows that the greatest predicted impact is to the north-east of the installation, at a distance of ~1120m from the stack. The worst case predicted ground levels of PM₁₀ are insignificant in terms of the EA's screening method. All predicted pollutant concentrations in Figures 6 – 11 inclusive ignore background.

5.21. The predicted annual mean contour for NO_x is plotted in Figure 7. The pattern of impact is similar to the distribution of annual mean PM₁₀. This shows that the impacts at the nearest designated ecological receptors (Markland and Hollinghall Grips) are insignificant. The predicted annual mean NO₂ and SO₂ are plotted in Figures 8 and 9 respectively. These plots exhibit the same pattern of pollutant distribution as other annual mean concentrations, where the maximum predicted ground level concentrations are ~1200m to the north-east of the stack. The worst case annual mean concentrations of NO₂ and SO₂ are of minor adverse significance in terms of the assessment framework set out in Section 2.

5.22. The predicted short-term concentrations of NO₂ and SO₂ are plotted in Figures 10 and 11 respectively. The distribution of these pollutants is different from the annual mean, as the maximum ground level predictions are influenced by fewer weather conditions. The highest levels are predicted to occur to the north-east and to the south-west of the stack. The worst case short-term concentration of NO₂ is of minor adverse significance. All other predicted short-term concentrations of pollutants are insignificant in terms of the EA's assessment framework set out in Section 2.

5.23. All short-term and long-term pollutants are predicted to comply with EALs.

Results - Ecological Impacts

5.24. A separate assessment on ecological significance has been conducted for designated ecological sites within 10km of the installation. The locations of these sites are shown in Figure 3. Three aspects of the impacts on sensitive ecology have been considered:

- the impacts from air concentrations of SO₂ and NO_x on sensitive ecosystems (Critical Levels);
- the effect of acid deposition on the receiving environment in terms of Critical Loads; and
- the effects of nitrogen deposition on surrounding soils that may cause over-enrichment.

5.25. The results for Critical Levels of NO_x and SO₂ are summarised in Table 5.10 and presented in detail in Appendix 4. The worst case ground level concentrations are predicted to occur at Woodsetts Ponds (E30), a Local Nature Reserve. The worst case predicted ground level concentration at any designated SSSI is at Clumber Old Wood (E38).

Table 5.10 - Ecological Impacts – Critical Levels - Scenario 2

Pollutant (Ecological Standards)	Baseline	Predicted Environmental Concentration (PEC)	%PC/Critical Load
E30 Woodsetts Pond NO _x	20.35	21.54	4%
E30 Woodsetts Pond SO ₂	0.51	0.80	1%
E38 Clumber Park SSSI NO _x	20.35	21.00	2%
E38 Clumber Park SSSI SO ₂	0.51	0.67	1%

N.B. all units = ug/m³ annual mean

5.26. Based on this assessment the predicted impact from annual mean exposure to NO_x on designated ecological sites is of minor adverse significance in terms of ecological air quality limit values. The impact from annual mean exposure to SO₂ on designated ecological sites is predicted to be insignificant.

5.27. The process contribution (PC) of Nitrogen deposition as nutrient is of minor adverse significance in terms of the assessment framework set out in Table 2.3, where the process contribution is predicted to be up to 1.9% of the Critical Load at Clumber Park SSSI (E38) and up to 1.6% of the Critical Load at Wellbeck Lake SSSI (E15, E16 and E17), where these receptors are considered as broadleaved, mixed and yew woodland, and where the lower range of the Critical Load is assumed (10 kg N/ha/year).

Table 5.11 – Nitrogen as Nutrient – Critical Loads - Scenario 2

Ecological Receptor	Baseline	Predicted Environmental Concentration (PEC)	%PC/Critical Load (10kg N/ha/yr)
E15 Wellbeck Lake SSSI	26.32	26.47	1.5%
E16 Wellbeck Lake SSSI	26.32	26.48	1.6%
E17 Wellbeck Lake SSSI	26.32	26.47	1.5%
E22 Markland Grips SSSI	35.28	35.40	0.8%
E29 Lindrick Golf Course SSSI	24.50	24.59	0.6%
E38 Clumber Park SSSI	26.60	26.79	1.9%

N.B. where units = N kg/ha/year

- 5.28. Impacts elsewhere e.g. E29 Lindrick Golf Course SSSI (calcerous grassland) are predicted to be insignificant. The results for predicted nutrient deposition are summarised in Table 5.11 above.
- 5.29. Acid gas deposition has been predicted at the most adversely affected designated ecological sites. The predicted deposition values for NO_x, SO₂ HCL and HF have been converted into total acid equivalent using standard conversion factors³⁸ and assessed using the APIS Critical Loads function (CLF) tool.³⁹ Detailed information is presented in Appendix 4. The results for the predicted impacts at the nearest receptors are presented in Table 5.12 below.

Table 5.12– Acid Gas Deposition – Critical Loads – Scenario 2

Ecological Receptor	Baseline	Predicted Environmental Concentration (PEC)	%PC/Critical Load (APIS)
E15 Wellbeck Lake SSSI	2.30	2.35	3.6%
E16 Wellbeck Lake SSSI	2.30	2.36	4.3%
E17 Wellbeck Lake SSSI	2.30	2.35	3.6%
E22 Markland Grips SSSI	3.03	3.08	0.4%
E29 Lindrick Golf Course SSSI	2.12	2.15	0.6%
E38 Clumber Park SSSI	2.28	2.33	3.8%

N.B. Units = keq/ha/year

- 5.30. The process contribution (PC) of acid gas deposition is up to 4% at Wellbeck Lake SSSI (E15, E16 and E17) and Clumber Park SSSI (E38). Impacts at E29 Lindrick Golf Course SSSI and other receptors are <1% of the Critical Load and therefore predicted to be insignificant.
- 5.31. Based on this assessment, the predicted process impacts on designated ecological sites are of minor adverse significance or less in terms of airborne concentrations, nutrient deposition and acid gas deposition.

Risk Assessment

- 5.32. The effects of dioxin and furan type substances cannot be assessed using simple objective criteria. A risk assessment method has been used, based on the USEPA Human Health Risk Assessment Protocol (HHRAP) as implemented by Lakes Environmental iRAP, using the iRAP model default assumptions⁴⁰. The findings from this assessment are presented in Appendix 5. This indicates that the risk associated with exposure to dioxins and furans is insignificant, being well below 1% of the tolerable daily intake.

Model Headroom

- 5.33. The modelling parameters most likely to affect model confidence are building effects and terrain. The results from the model sensitivity analysis indicate that these effects are of minor significance and can be discounted. Confidence in the model predictions is medium for short-term predictions of

³⁸ Environment Agency Air Quality Modelling Unit (AQMU) March 2014. Technical guidance on detailed modelling approach for an appropriate assessment for emissions to air AQTAG06.

³⁹ <http://www.apis.ac.uk/critical-load-function-tool>

⁴⁰ <http://www.weblakes.com/products/iraph/>

NO₂ and high for annual mean concentrations of NO₂ and PM₁₀ in terms of the pragmatic risk assessment methods.⁴¹

⁴¹ Model Headroom = (EAL – model prediction – baseline)/EAL. Thus confidence in the model increases as model headroom approaches 1.00.

6.0 MITIGATION MEASURES

Operational Impacts

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

- The process shall continue to be monitored continuously using advanced automatic instrumentation to measure combustion efficiency, particles, NO_x and SO₂. Additional periodic monitoring shall be conducted by independent testing agencies.
- Supervisory staff shall continue to be trained to ensure that the works are operated within specification.
- All process operations shall continue to be subject to routine planned preventative maintenance.

7.0 EVALUATION OF IMPACTS

Human Exposure

- 7.1 Baseline air quality around the installation is good and within European Limit Values and UK Objectives. The available baseline data indicates that levels of heavy metals and dioxins in soils and vegetation are likely to be relatively low.
- 7.2 The overall confidence in the model predictions for Scenario 2 is medium for short-term pollutants and high for long-term averages. A model sensitivity analysis has been conducted to improve the robustness of the predictions. The emissions from the installation are highly unlikely to result in any Air Quality Objective or Limit Value being exceeded.
- 7.3 The assessment takes account of the worst case model predictions, the relevant Environmental Assessment Levels (EAL) and the significance criteria set out in Tables 2.2 – 2.4.
- 7.4 The predicted impacts are based on the worst case actual emission rates from the emission tests conducted in the previous two years (2017 and 2018).

Annual Mean Exposure

- 7.5 Annual mean exposure to NO₂ and SO₂ is predicted to be of minor adverse significance for Scenario 2.
- 7.6 The annual mean level of Chromium VI in air is predicted to exceed the relevant EAL based on the worst case screening method, for Scenario 2 emissions. These impacts are predicted to be insignificant when the EA's case specific screening method is adopted.

Short-term Exposure

- 7.7 Short-term exposure to NO₂ is predicted to be of minor adverse significance. All other exposure to short-term pollutants is predicted to be insignificant.

Ecological Exposure

- 7.8 The ecological impact from the process is predicted to be of minor adverse significance at Wellbeck Lake SSSI and Clumber Park SSSI. Impacts at other designated sites are predicted to be insignificant.

Tables

Model Inventory

Run	Name	Met Data	Surface roughness at site (m)	Surface roughness at met station (m)	terrain	objective	
1	Scampton 2014	.apl	RAF Scampton 2014	0.3	0.005	off	to predict deposition for range of met. conditions
2	Scampton 2015	.apl	RAF Scampton 2015	0.3	0.005	off	
3	Scampton 2016	.apl	RAF Scampton 2016	0.3	0.005	off	
4	Scampton 2017	.apl	RAF Scampton 2017	0.3	0.005	off	
5	Scampton 2018	.apl	RAF Scampton 2018	0.3	0.005	off	
6	roughness 0.005	.apl	RAF Scampton 2015	0.02	0.005	off	#REF!
7	roughness 0.02	.apl	RAF Scampton 2015	0.1	0.005	off	
8	roughness 0.1	.apl	RAF Scampton 2015	0.2	0.005	off	
9	roughness 0.2	.apl	RAF Scampton 2015	0.3	0.005	off	
10	roughness 0.3	.apl	RAF Scampton 2015	0.5	0.005	off	
11	roughness 0.5	.apl	RAF Scampton 2015	0.5	0.02	off	
12	terrain	.apl	RAF Scampton 2015	0.5	0.005	on	to provide comparison of impacts with and without terrain (smaller study area)
13	flat	.apl	RAF Scampton 2015	0.5	0.005	off	
14	Scenario 1 - annual mean	.apl	RAF Scampton 2015	0.5	0.005	off	to provide predictions for worst case dispersion conditions
15	Scenario 1 - short-term	.apl	RAF Scampton 2015	0.5	0.005	off	
15	Scenario 1 - short-term	.apl	RAF Scampton 2015	0.5	0.005	off	
16	Scenario 2 - eco - wet depo	.apl	RAF Scampton 2015	0.5	0.005	off	to predict wet deposition for HCl & HF

Pollutant	Long-term	Short-term	Deposition
	ug/m ³	ug/m ³	mg/m ² /day
Ammonia	N/A	N/A	N/A
Antimony	6.70E-03	0.22	-
Arsenic	6.70E-03	-	1.74E-02
Benzene	9.78E-04	0.03	-
Benzo(a)pyrene	8.90E-07	-	-
Cadmium	8.38E-05	-	2.17E-04
Carbon Monoxide	-	14.1	-
Chromium	6.70E-03	0.22	1.74E-02
Chromium VI	1.34E-03	-	3.47E-03
Copper	6.70E-03	0.22	1.74E-02
Hydrogen Chloride	-	13.6	-
Hydrogen Fluoride	0.00	0.22	4.34E-03
Lead	6.70E-03	-	1.74E-02
Manganese	6.70E-03	0.22	-
Mercury	8.38E-05	0.003	2.17E-04
Molybdenum	-	-	1.74E-02
Nickel	6.70E-03	-	1.74E-02
Nitrogen Dioxide	2.8	68	-
Particles PM ₁₀	0.01	0.05	-
Particles PM _{2.5}	0.01	0.04	-
Selenium	-	-	-
Sulphur Dioxide	0.84	45	-
Vanadium	6.70E-03	0.22	-

Notes

Assessment of metals based on EA Step 1 - worst case screening

Chromium VI assumed to be 0.20 of total chromium

PM10 and PM2.5 fractions of total particles based on emission test results

Pollutant	Long-term	Short-term	Deposition
	ug/m ³	ug/m ³	mg/m ² /day
Ammonia	N/A	N/A	N/A
Antimony	1.07E-03	3.50E-02	-
Arsenic	1.07E-03	-	2.78E-03
Benzene	1.57E-04	5.11E-03	-
Benzo(a)pyrene	1.42E-07	-	-
Cadmium	2.33E-05	-	1.80E-03
Carbon Monoxide	-	2.9	-
Chromium	1.07E-03	3.50E-02	2.78E-03
Chromium VI	2.14E-04	-	5.56E-04
Copper	1.07E-03	3.50E-02	2.78E-03
Hydrogen Chloride	-	4.50E+00	-
Hydrogen Fluoride	0.02	8.00E-01	6.35E-02
Lead	1.07E-03	-	2.78E-03
Manganese	1.07E-03	3.50E-02	-
Mercury	2.33E-05	7.61E-04	2.17E-04
Molybdenum	-	-	2.78E-03
Nickel	1.07E-03	-	2.78E-03
Nitrogen Dioxide	2.5	30	-
Particles PM ₁₀	0.01	0.04	-
Particles PM _{2.5}	0.01	0.03	-
Selenium	-	-	3.59E-04
Sulphur Dioxide	0.88	23	-
Vanadium	1.07E-03	3.50E-02	-

Notes

Assessment of metals based on EA Step 1 - worst case screening

Chromium VI assumed to be 0.20 of total chromium

PM10 and PM2.5 fractions of total particles based on emission test results

Pollutant	Long-term	Short-term	Deposition
	%	%	%
Ammonia	N/A	N/A	N/A
Antimony	0%	0%	-
Arsenic	112%	-	87%
Benzene	0%	0%	-
Benzo(a)pyrene	0%	-	-
Cadmium	2%	-	2%
Carbon Monoxide	-	0%	-
Chromium	0%	0%	1%
Chromium VI	670%	-	0%
Copper	0%	0%	7%
Hydrogen Chloride	-	2%	-
Hydrogen Fluoride	0%	0%	0%
Lead	3%	-	2%
Manganese	4%	0%	-
Mercury	0%	0%	5%
Molybdenum	-	-	109%
Nickel	33%	-	16%
Nitrogen Dioxide	7%	34%	-
Particles PM ₁₀	0%	0%	-
Particles PM _{2.5}	0%	-	-
Selenium	-	-	-
Sulphur Dioxide	4%	13%	-
Vanadium	0%	22%	-

Notes

Assessment of metals based on EA Step 1 - worst case screening

Chromium VI assumed to be 0.20 of total chromium

PM10 and PM2.5 fractions of total particles based on emission test results

Pollutant	Long-term	Short-term	Deposition
	%	%	%
Ammonia	N/A	N/A	N/A
Antimony	0%	0%	-
Arsenic	18%	-	14%
Benzene	0%	0%	-
Benzo(a)pyrene	0%	-	-
Cadmium	0%	-	20%
Carbon Monoxide	-	0%	-
Chromium	0%	0%	0%
Chromium VI	107%	-	0%
Copper	0%	0%	1%
Hydrogen Chloride	-	1%	-
Hydrogen Fluoride	0%	1%	3%
Lead	0%	-	0%
Manganese	1%	0%	-
Mercury	0%	0%	5%
Molybdenum	-	-	17%
Nickel	5%	-	3%
Nitrogen Dioxide	6%	15%	-
Particles PM ₁₀	0%	0%	-
Particles PM _{2.5}	0%	-	-
Selenium	-	-	-
Sulphur Dioxide	4%	7%	-
Vanadium	0%	4%	-

Notes

Assessment of metals based on EA Step 1 - worst case screening

Chromium VI assumed to be 0.20 of total chromium

PM10 and PM2.5 fractions of total particles based on emission test results

Exposure Period	Pollutant	Scenario 1	Scenario 2	Scenario 1	Scenario 2
		%	%		
Long-term	Antimony	0%	0%	Insignificant	Insignificant
	Arsenic	112%	18%	Major	Minor/Moderate
	Benzene	0%	0%	Insignificant	Insignificant
	Benzo(a)pyrene	0%	0%	Insignificant	Insignificant
	Cadmium	2%	0%	Minor	Insignificant
	Chromium	0%	0%	Insignificant	Insignificant
	Chromium VI	670%	107%	Major	Major
	Copper	0%	0%	Insignificant	Insignificant
	Hydrogen Fluoride	0%	0%	Insignificant	Insignificant
	Lead	3%	0%	Minor	Insignificant
	Manganese	4%	1%	Minor	Minor
	Mercury	0%	0%	Insignificant	Insignificant
	Nickel	33%	5%	Moderate	Minor
	Nitrogen Dioxide	7%	6%	Minor	Minor
	Particles PM ₁₀	0%	0%	Insignificant	Insignificant
	Particles PM _{2.5}	0%	0%	Insignificant	Insignificant
	Sulphur Dioxide	4%	4%	Minor	Minor
	Vanadium	0%	0%	Insignificant	Insignificant
Short-term	Antimony	0%	0%	Insignificant	Insignificant
	Benzene	0%	0%	Insignificant	Insignificant
	Carbon Monoxide	0%	0%	Insignificant	Insignificant
	Chromium	0%	0%	Insignificant	Insignificant
	Copper	0%	0%	Insignificant	Insignificant
	Hydrogen Chloride	2%	1%	Minor	Insignificant
	Hydrogen Fluoride	0%	1%	Insignificant	Insignificant
	Manganese	0%	0%	Insignificant	Insignificant
	Mercury	0%	0%	Insignificant	Insignificant
	Nitrogen Dioxide	34%	15%	Minor/Moderate	Minor
	Particles PM ₁₀	0%	0%	Insignificant	Insignificant
	Sulphur Dioxide	13%	7%	Minor	Insignificant
	Vanadium	0%	4%	Insignificant	Insignificant
Deposition	Arsenic	87%	14%	Moderate	Minor/Moderate
	Cadmium	2%	20%	Minor	Minor/Moderate
	Chromium	1%	0%	Minor	Insignificant
	Chromium VI	0%	0%	Insignificant	Insignificant
	Copper	7%	1%	Minor	Minor
	Hydrogen Fluoride	0%	3%	Insignificant	Minor
	Lead	2%	0%	Minor	Insignificant
	Mercury	5%	5%	Minor	Minor
	Molybdenum	109%	17%	Major	Minor/Moderate
	Nickel	16%	3%	Minor/Moderate	Minor

Notes

Assessment of metals based on EA Step 1 - worst case screening

Chromium VI assumed to be 0.20 of total chromium

PM10 and PM2.5 fractions of total particles based on emission test results

Pollutant	Long-term	Short-term	Deposition
	ug/m ³	ug/m ³	mg/m ² /day
Ammonia	N/A	N/A	N/A
Antimony	2.47E-06	1.75E-06	-
Arsenic	1.23E-08	-	1.39E-05
Benzene	3.60E-07	2.56E-07	-
Benzo(a)pyrene	1.64E-12	-	-
Cadmium	2.33E-05	-	1.80E-03
Carbon Monoxide	-	2.9	-
Chromium	4.54E-08	1.81E-08	3.61E-10
Chromium VI	6.41E-11	-	3.61E-10
Copper	1.43E-08	1.02E-08	8.06E-08
Hydrogen Chloride	-	4.50E+00	-
Hydrogen Fluoride	0.02	8.00E-01	6.35E-02
Lead	2.48E-08	-	1.40E-07
Manganese	2.96E-08	1.75E-06	-
Mercury	2.33E-05	7.61E-04	6.04E-05
Molybdenum	-	-	1.39E-05
Nickel	1.09E-07	-	6.11E-07
Nitrogen Dioxide	2.5	30	-
Particles PM ₁₀	0.01	0.04	-
Particles PM _{2.5}	0.01	0.03	-
Selenium	-	-	3.59E-04
Sulphur Dioxide	0.88	23	-
Vanadium	2.96E-09	1.75E-06	-

Notes

Assessment of metals based on EA Step 2 - Case specific screening

Group 3 metals assumed to be present in fractions as reported in Table A1

PM10 and PM2.5 fractions of total particles based on emission test results

Pollutant	Long-term	Short-term	Deposition
	%	%	%
Ammonia	N/A	N/A	N/A
Antimony	0%	0%	-
Arsenic	0%	-	0%
Benzene	0%	0%	-
Benzo(a)pyrene	0%	-	-
Cadmium	0%	-	20%
Carbon Monoxide	-	0%	-
Chromium	0%	0%	0%
Chromium VI	0%	-	0%
Copper	0%	0%	0%
Hydrogen Chloride	-	1%	-
Hydrogen Fluoride	0%	1%	3%
Lead	0%	-	0%
Manganese	0%	0%	-
Mercury	0%	0%	2%
Molybdenum	-	-	0%
Nickel	0%	-	0%
Nitrogen Dioxide	6%	15%	-
Particles PM ₁₀	0%	0%	-
Particles PM _{2.5}	0%	-	-
Selenium	-	-	3%
Sulphur Dioxide	4%	7%	-
Vanadium	0%	0%	-

Notes

Assessment of metals based on EA Step 2 - Case specific screening

Group 3 metals assumed to be present in fractions as reported in Table A1

PM10 and PM2.5 fractions of total particles based on emission test results

Emissions based on Scenario 2

Exposure Period	Pollutant	PC/EAL	Significance
		%	Tables 2.3 & 2.4
Long-term	Antimony	0%	Insignificant
	Arsenic	0%	Insignificant
	Benzene	0%	Insignificant
	Benzo(a)pyrene	0%	Insignificant
	Cadmium	0%	Insignificant
	Chromium	0%	Insignificant
	Chromium VI	0%	Insignificant
	Copper	0%	Insignificant
	Hydrogen Fluoride	0%	Insignificant
	Lead	0%	Insignificant
	Manganese	0%	Insignificant
	Mercury	0%	Insignificant
	Nickel	0%	Insignificant
	Nitrogen Dioxide	6%	Minor
	Particles PM ₁₀	0%	Insignificant
	Particles PM _{2.5}	0%	Insignificant
	Sulphur Dioxide	4%	Minor
	Vanadium	0%	Insignificant
Short-term	Antimony	0%	Insignificant
	Benzene	0%	Insignificant
	Carbon Monoxide	0%	Insignificant
	Chromium	0%	Insignificant
	Copper	0%	Insignificant
	Hydrogen Chloride	1%	Insignificant
	Hydrogen Fluoride	1%	Insignificant
	Manganese	0%	Insignificant
	Mercury	0%	Insignificant
	Nitrogen Dioxide	15%	Minor
	Particles PM ₁₀	0%	Insignificant
	Sulphur Dioxide	7%	Insignificant
	Vanadium	0%	Insignificant
Deposition	Arsenic	0%	Insignificant
	Cadmium	20%	Minor/Moderate
	Chromium	0%	Insignificant
	Chromium VI	0%	Insignificant
	Copper	0%	Insignificant
	Hydrogen Fluoride	3%	Minor
	Lead	0%	Insignificant
	Mercury	2%	Minor
	Molybdenum	0%	Insignificant
	Nickel	0%	Insignificant
Selenium	3%	Minor	

Notes

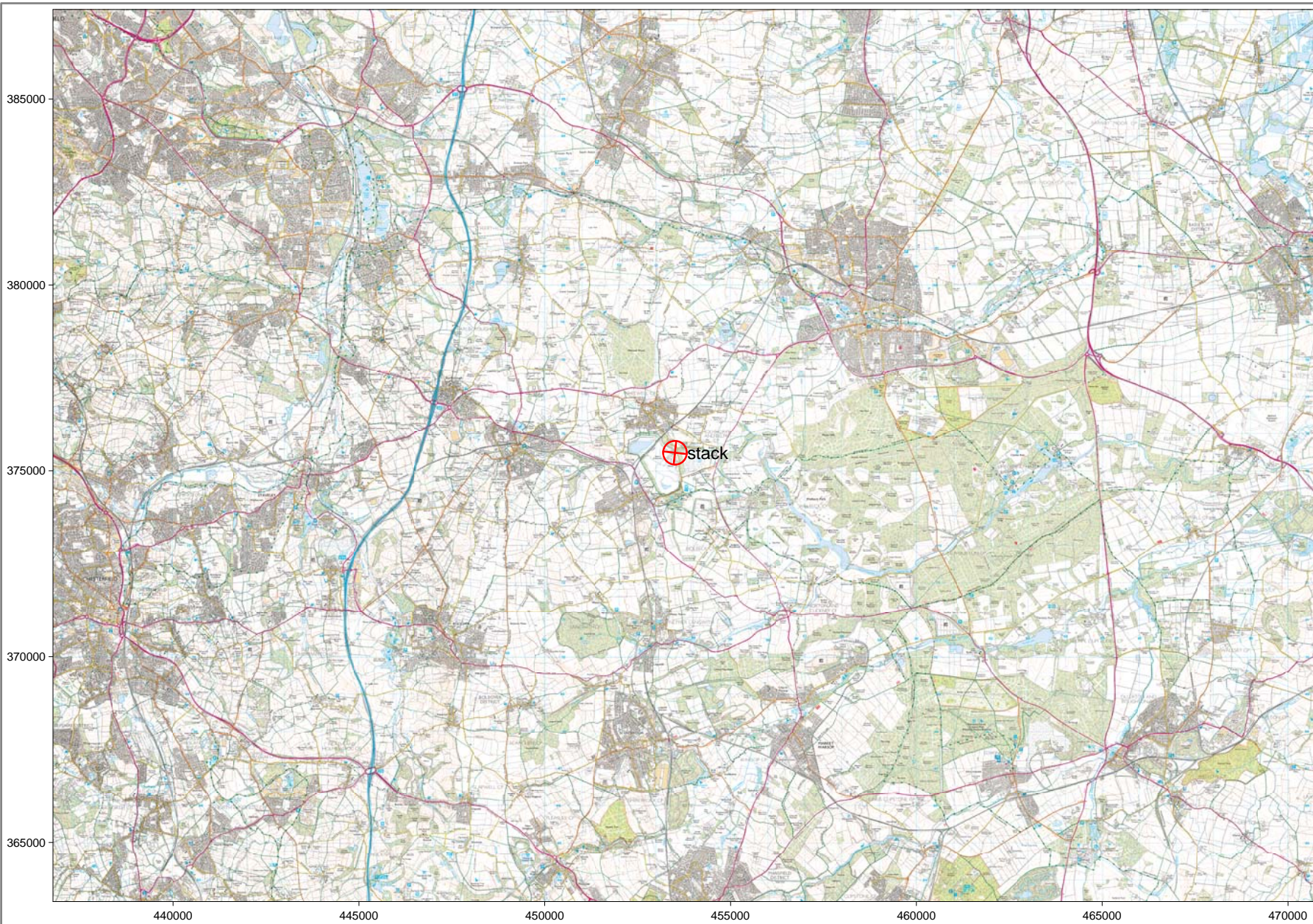
Assessment of metals based on EA Step 2 - Case specific screening

Group 3 metals assumed to be present in fractions as reported in Table A1

PM10 and PM2.5 fractions of total particles based on emission test results

Emissions based on Scenario 2

Figures



Site Location


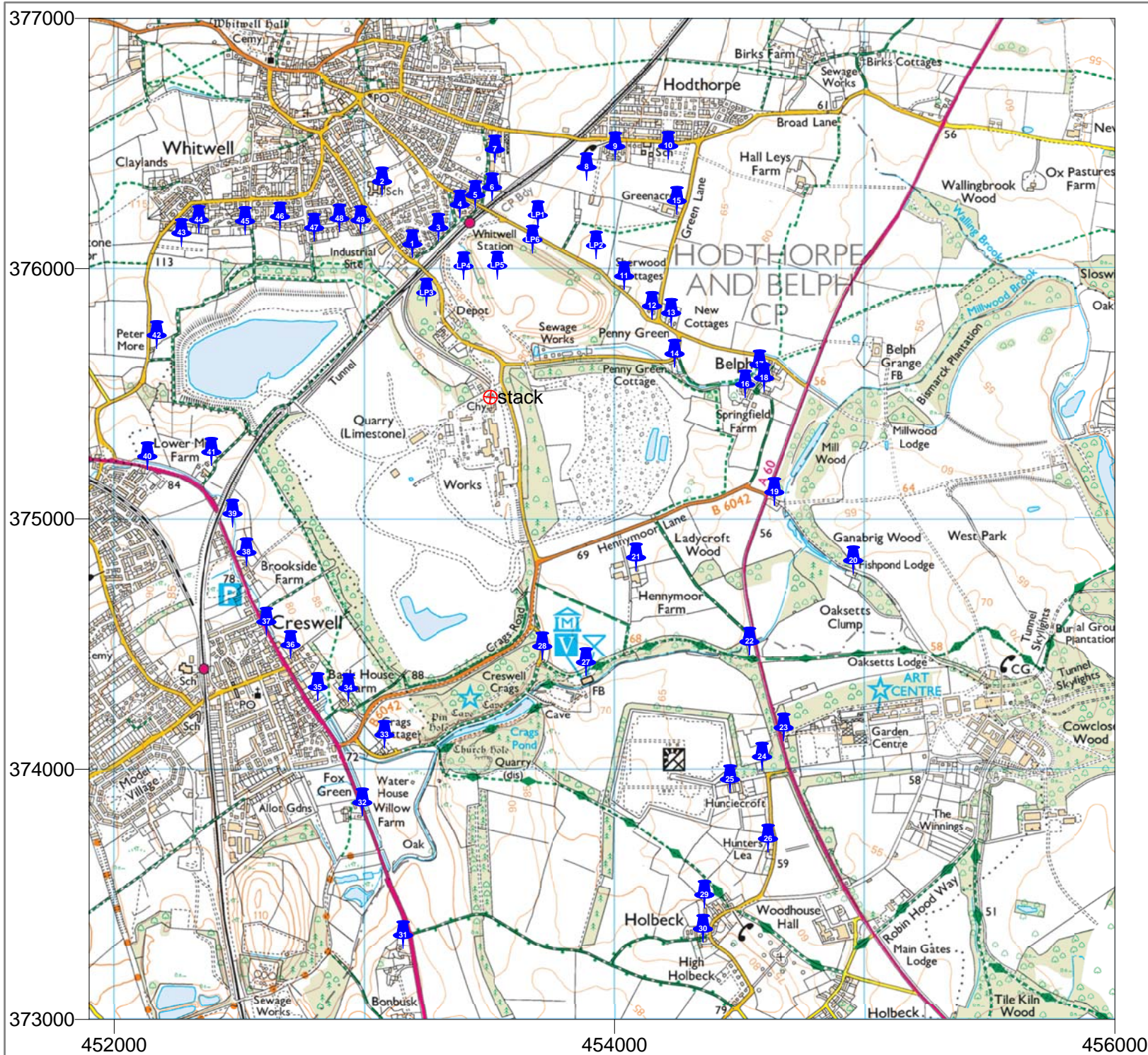
 Location of stack

Figure 1





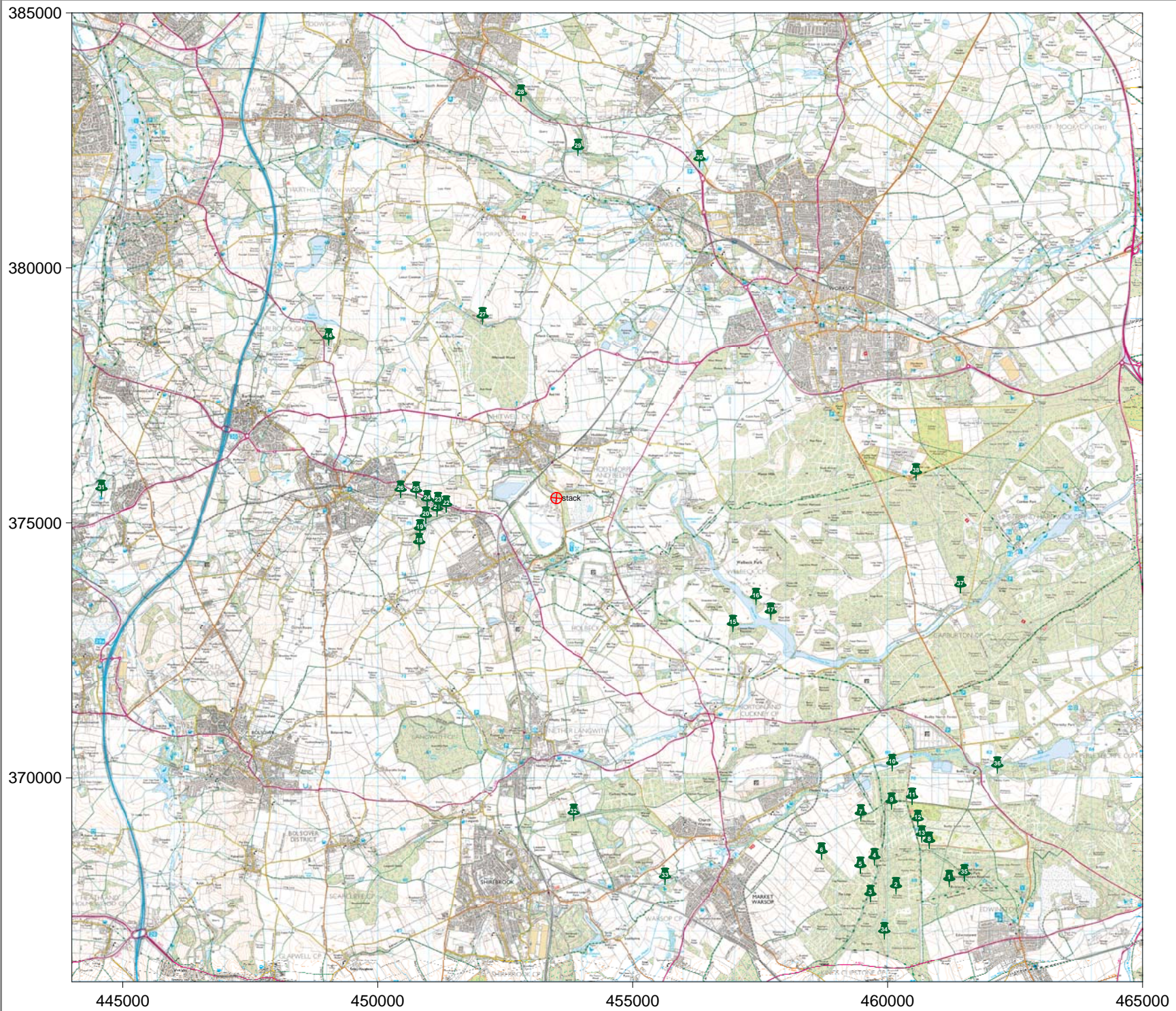
Site Location

- 📍 Human receptor considered in dispersion model

AS 0666 Whitwell AQIA 15 January 2019 : Crown copyright Ordnance Survey 0100031673

Figure 2





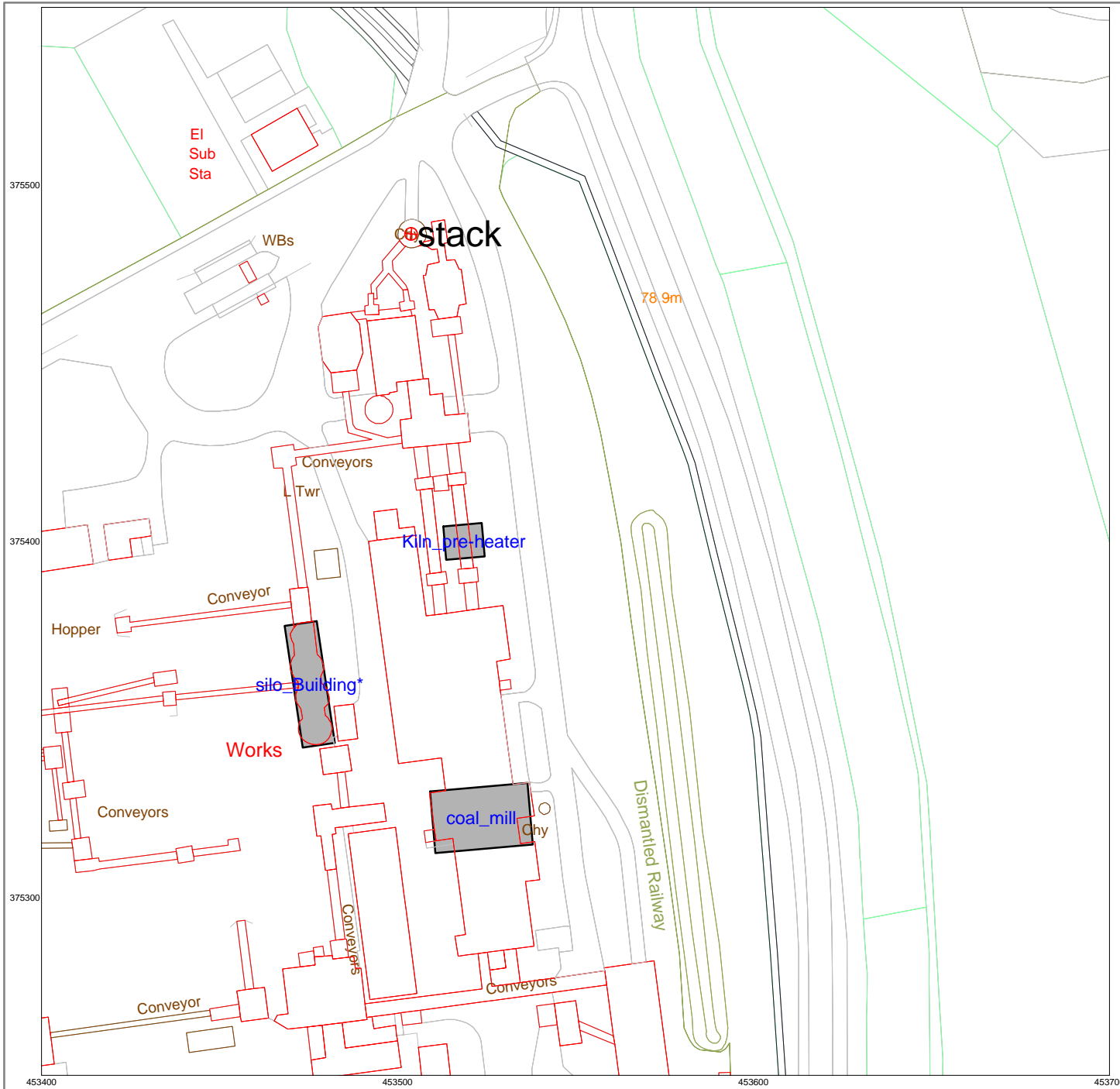
AS 0666 Whitehall AQIA, 15 January 2019 : Crown copyright Ordnance Survey 0100031673

Ecological Receptors

Designated ecological site considered in dispersion model

Figure 3





AS 0666 Whitehall AQIA 15 January 2019 - Crown copyright Ordnance Survey 0100031673



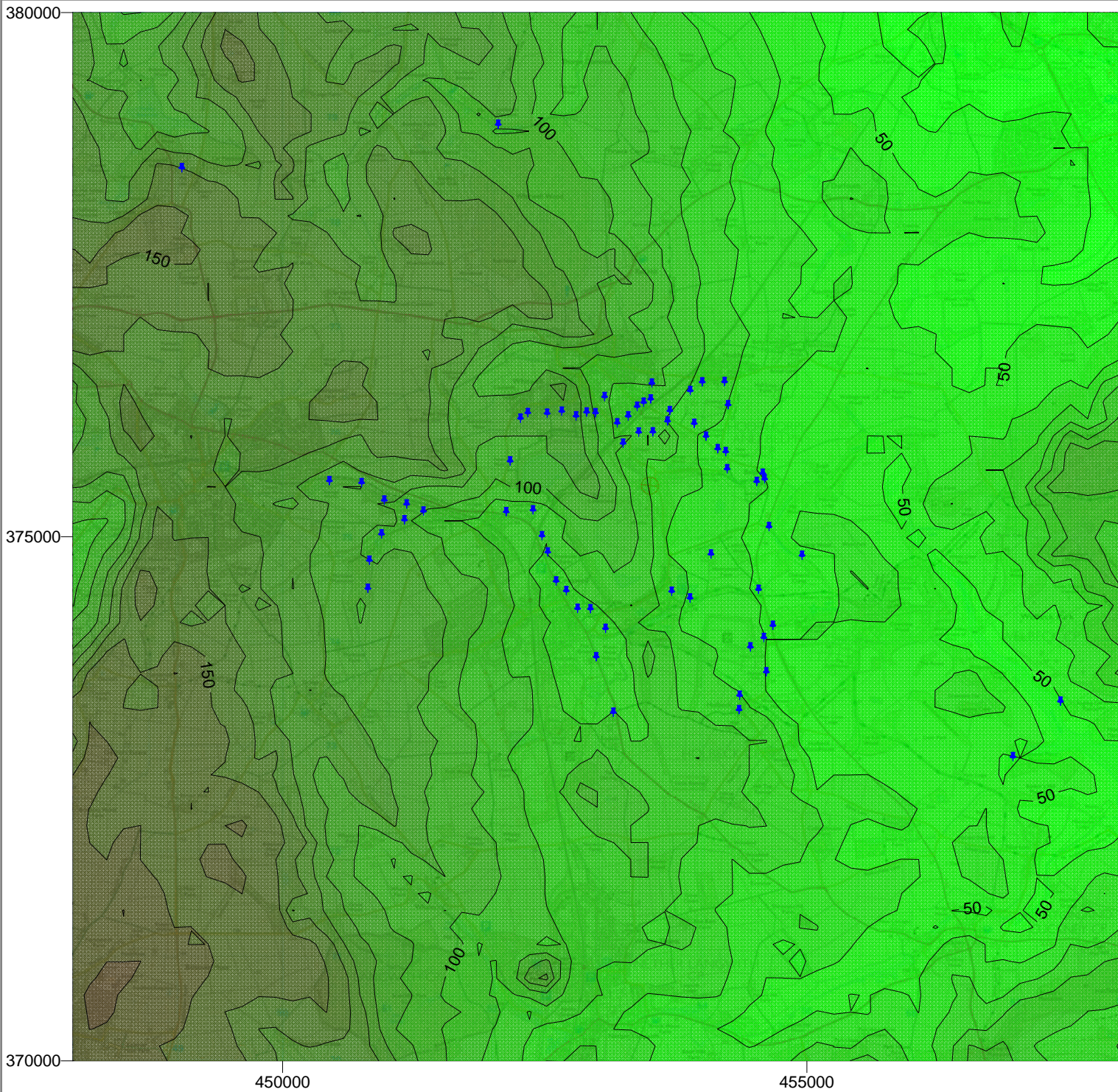
Model Layout

Legend for the Model Layout:

- ⊕ stack
- process building

Figure 4





AS 0666 Whitwell AQIA 15 January 2019 : Crown copyright Ordnance Survey, 0100031673

Terrain Effects Study Area

- ⊕ Location of stack
- 📍 Receptor considered in dispersion model for terrain effects

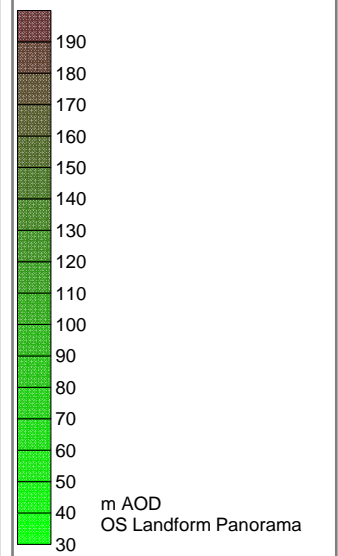
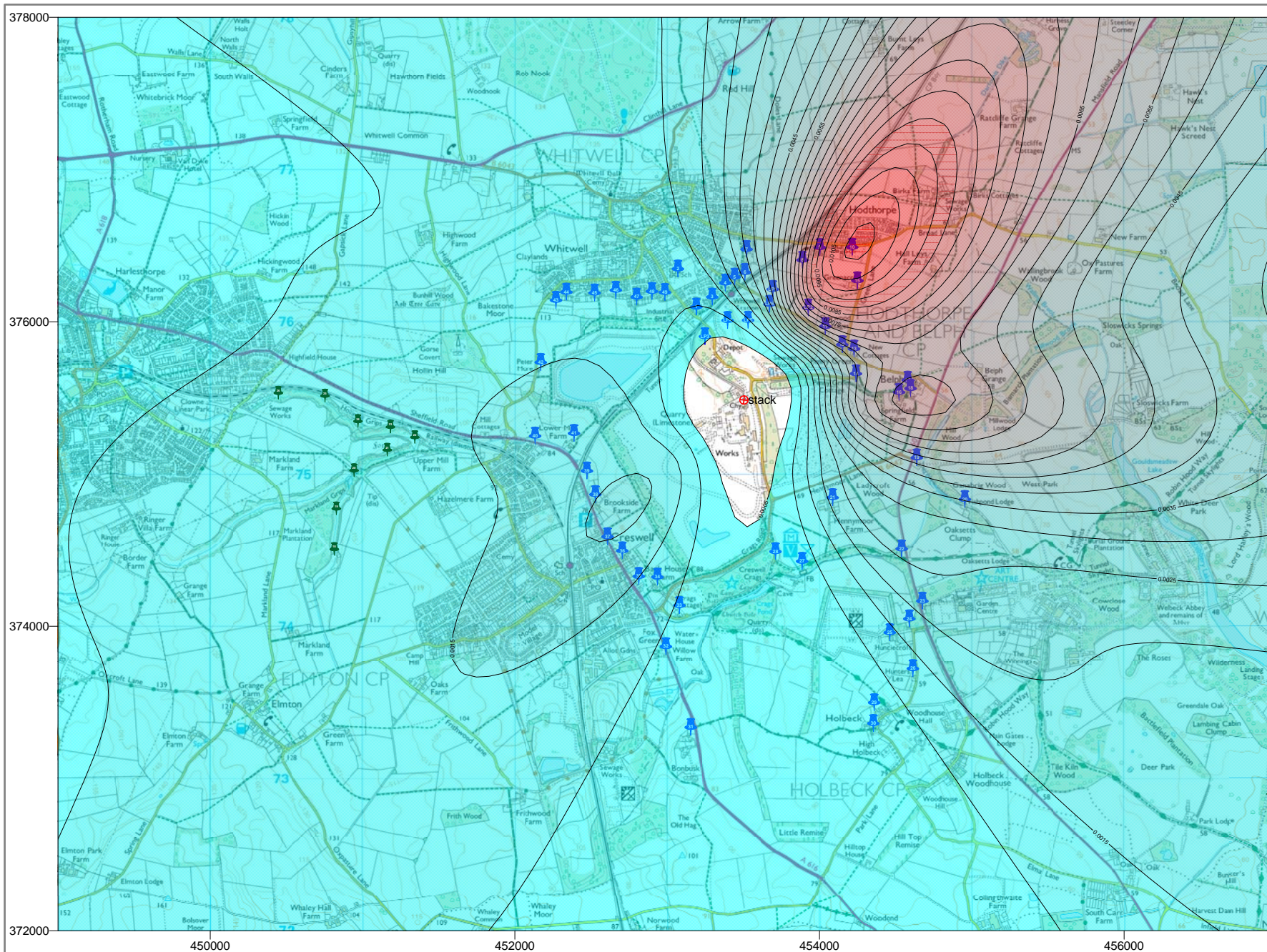


Figure 5





Annual Mean PM₁₀

Emission Scenario 2
 PM10 = 0.483 g/s
 efflux velocity 11.0 m/s
 Emission temperature 290 oC
 Prediction model ADMS 5.2
 PM10 = 0.200 of total particles
 model runs rev01
 Scenario 2.apl
 Met data Scampton 2015
 Surface roughness 0.5m
 Building Effects on
 Terrain effects off
 Prediction Grid ~100m
 Receptor Height 1.5m
 Averaging period 24hour

AQS = 40 ug/m3
 Units ug/m3 24 hour
 annual mean

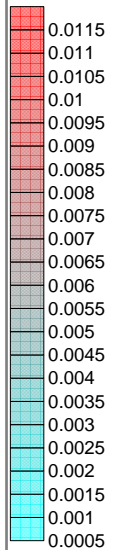
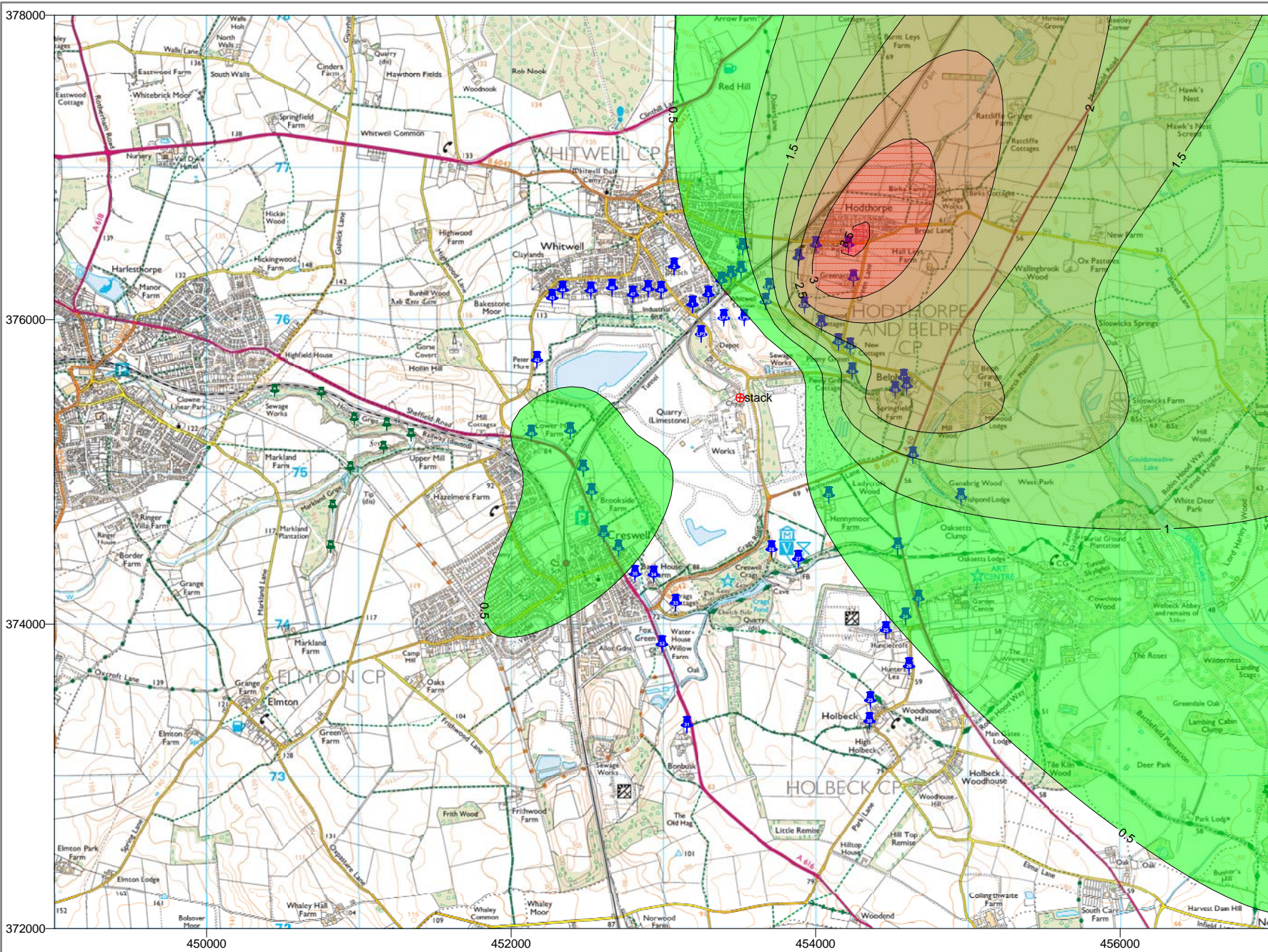


Figure 6





Annual Mean NO_x

Emission Scenario 2
 NO_x = 151.413 g/s
 efflux velocity 11.0 m/s
 Emission temperature 290 oC
 Prediction model ADMS 5.2
 No EA Chemistry model runs rev01
 Scenario 2.apl
 Met data Scampton 2015
 Surface roughness 0.5m
 Building Effects on
 Terrain effects off
 Prediction Grid ~100m
 Receptor Height 1.5m
 Averaging period 1 hour

AQS = 30 ug/m3 (ECO)
 Units ug/m3 1 hour
 annual mean

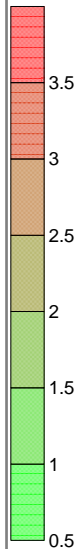
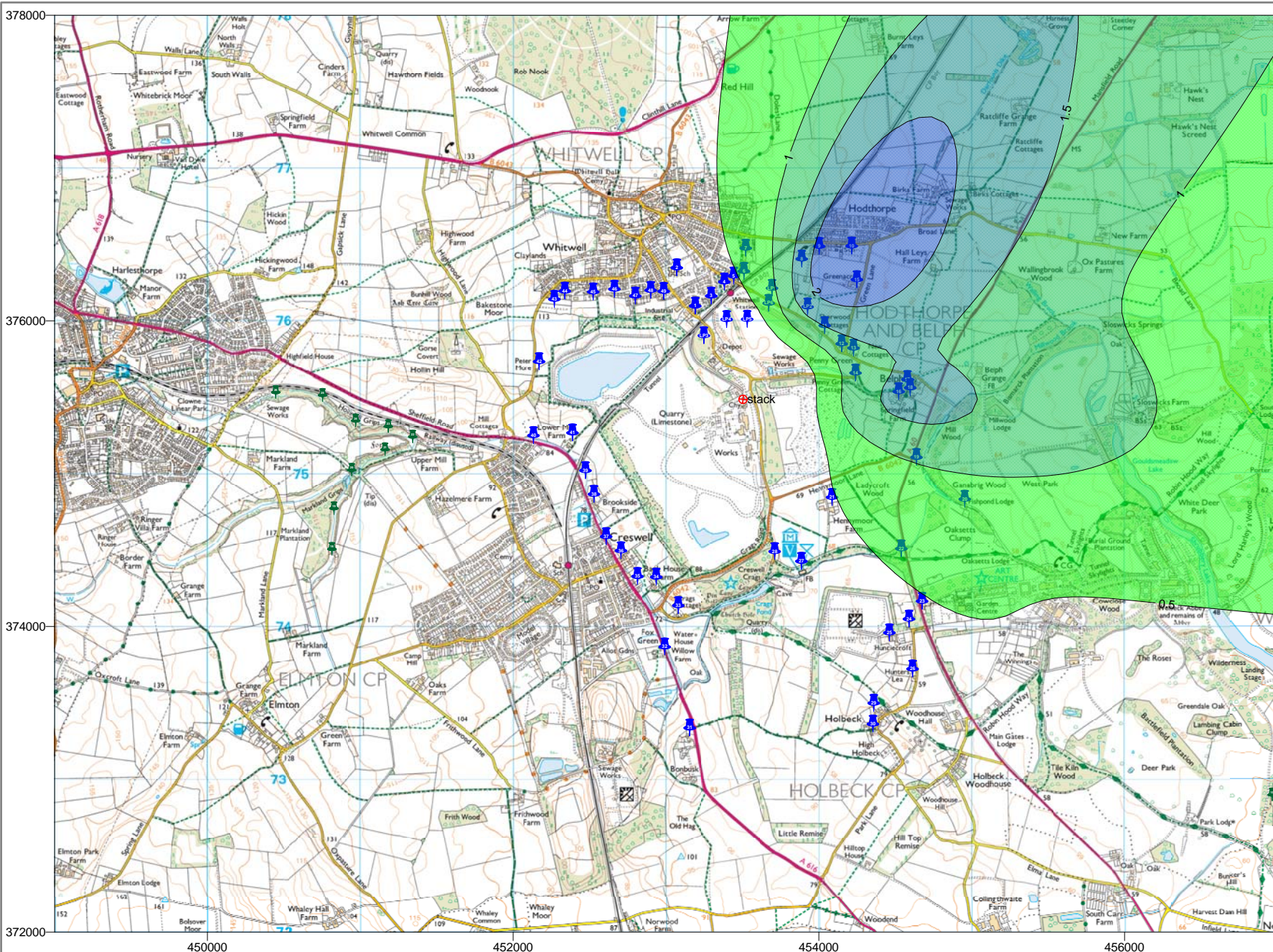


Figure 7





Annual Mean NO₂

Emission Scenario 2
 NOx = 151.413 g/s
 efflux velocity 11.0 m/s
 Emission temperature 290 oC
 Prediction model ADMS 5.2
 EA Chemistry model NO2 = NOx * 0.7
 model runs rev01
 Scenario 2.apl
 Met data Scampton 2015
 Surface roughness 0.5m
 Building Effects on
 Terrain effects off
 Prediction Grid ~100m
 Receptor Height 1.5m
 Averaging period 1 hour

AQS = 40 ug/m3
 Units ug/m3 1 hour
 annual mean

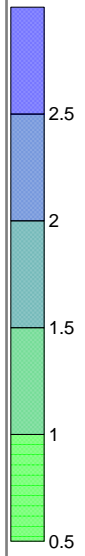
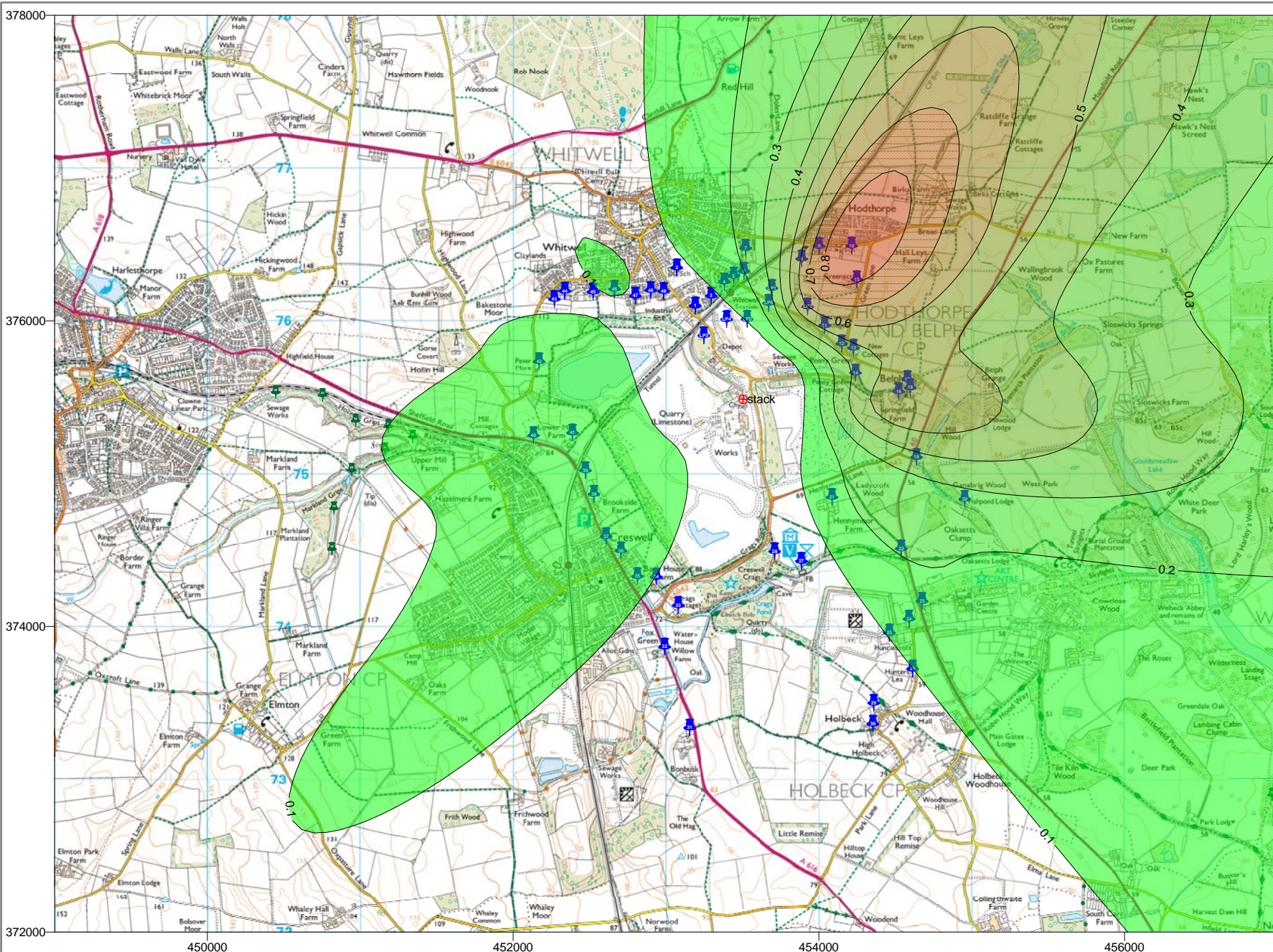


Figure 8





Annual Mean SO₂

Emission Scenario 2
 SO₂ = 36.800 g/s
 efflux velocity 11.0 m/s
 Emission temperature 290 oC
 Prediction model ADMS 5.2

model runs rev01
 Scenario 2.apl
 Met data Scampton 2015
 Surface roughness 0.5m
 Building Effects on
 Terrain effects off
 Prediction Grid ~100m
 Receptor Height 1.5m
 Averaging period 15 minutes

AQS = 20 ug/m3 (ECO)
 Units ug/m3
 annual mean

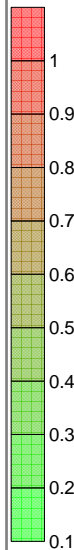
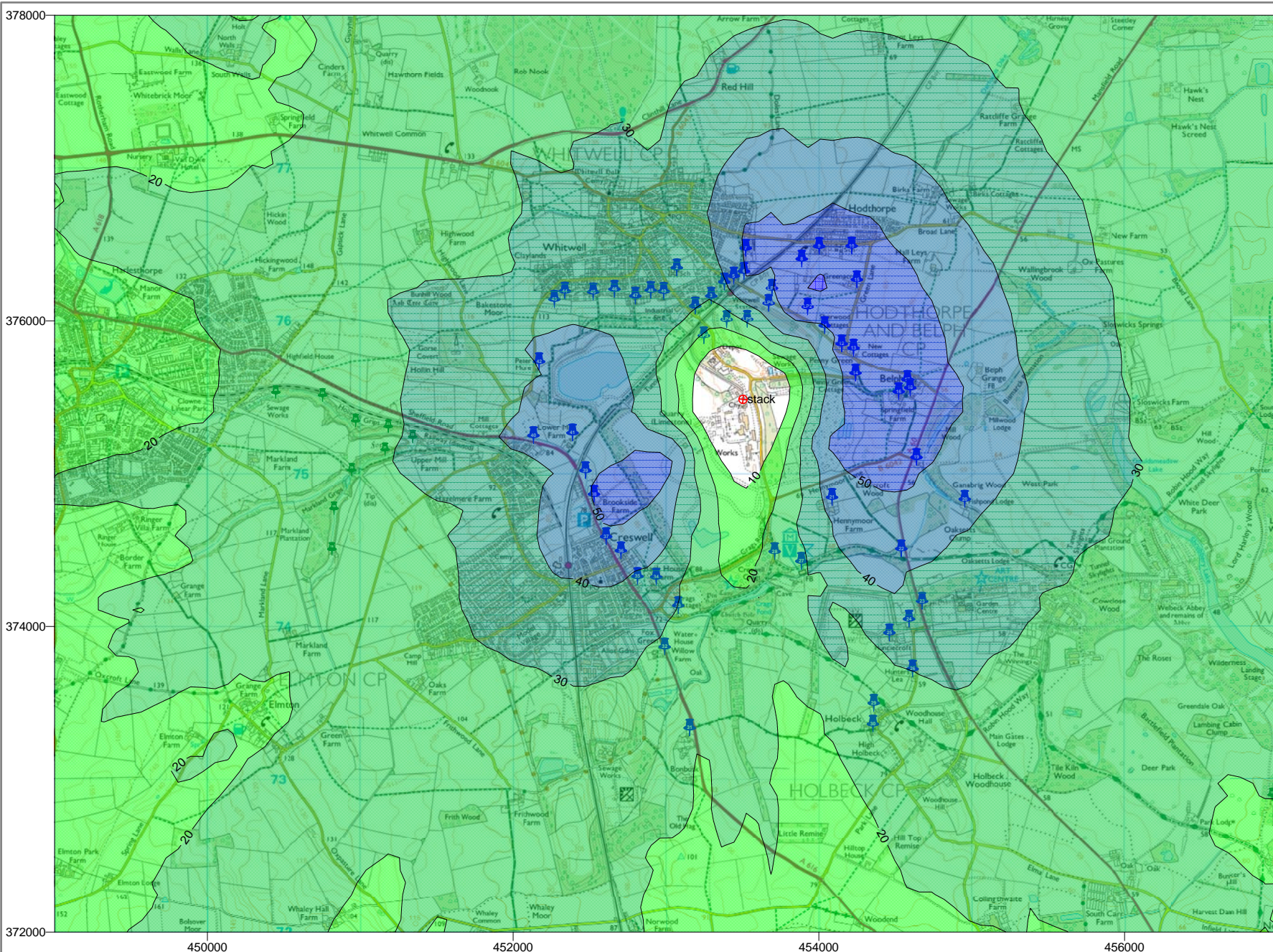


Figure 9





Short-term NO₂

Emission Scenario 2
 NO_x = 151.413 g/s
 efflux velocity 11.0 m/s
 Emission temperature 290 oC
 Prediction model ADMS 5.2
 EA Chemistry NO₂ = NO_x * 0.35
 model runs rev01
 Scenario 2.apl
 Met data Scampton 2015
 Surface roughness 0.5m
 Building Effects on
 Terrain effects off
 Prediction Grid ~100m
 Receptor Height 1.5m
 Averaging period 1 hour

AQS = 200 ug/m³ 99.79%ile
 Units ug/m³ short-term
 99.79% annual of 1 hour averages

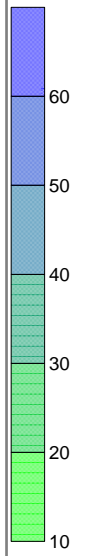
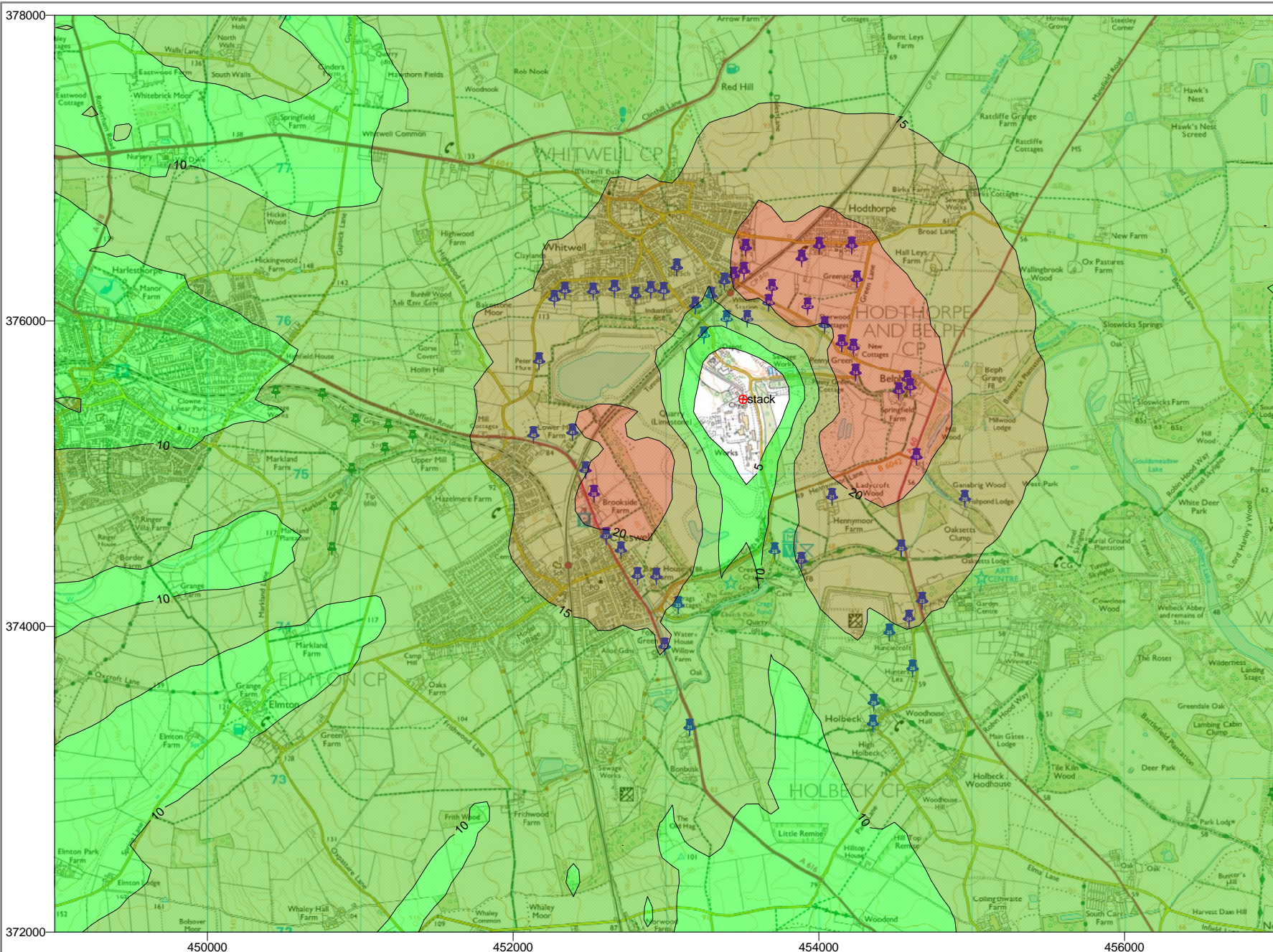


Figure 10





Short-term SO₂

Emission Scenario 2
 SO₂ = 36.800 g/s
 efflux velocity 11.0 m/s
 Emission temperature 290 oC
 Prediction model ADMS 5.2

model runs rev01
 Scenario 2.apl
 Met data Scampton 2015
 Surface roughness 0.5m
 Building Effects on
 Terrain effects off
 Prediction Grid ~100m
 Receptor Height 1.5m
 Averaging period 15 minutes

AQS = 266 ug/m³ 99.9%ile
 Units ug/m³ short-term
 99.9% annual of 15 minutes averages

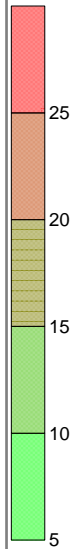


Figure 11



Appendix 1 – Emission Inventory

Emission Inventory
 Whitwell Dolomite Process
 Baseline Scenario - Measured Emissions ⁽¹⁾
 Combined emissions from Kilns W1 & W2

item	description	pollutant ⁽¹⁾	Test 1 g/s	Test 2 g/s	Test 3 g/s	Test 4 g/s	Max g/s	Scenario 1 Daily Emission Limits g/s	Scenario 1 short-term Emission Limits g/s	Scenario 2 Worst Case Measured Emissions g/s
1	combined emissions in main stack	Particulate	0.310	2.413	0.925	2.096	2.413	1.509	3.018	2.413
		PM10	0.093	0.075	0.483		0.483	-	-	0.483
		PM2.5	0.069	0.040	0.366		0.366	-	-	0.366
		HCl	1.625	2.136	5.908	0.748	5.908	8.911	17.821	5.908
		Cd & Tl	1.041E-03	5.251E-04	5.914E-04	5.172E-04	1.041E-03	0.004	-	0.001
		Sb,As,Pb,Cr,Co,Cu,Mn,Ni,V	3.064E-02	4.556E-02	2.857E-02	2.557E-02	4.556E-02	0.287	-	0.046
		Hg	4.182E-04	5.096E-04	2.576E-04	1.427E-04	5.096E-04	0.004	-	0.001
		Selenium	1.010E-04	3.098E-04	7.006E-05	5.866E-03	5.866E-03	-	-	0.006
		Dioxins & Furans WHO TEQ	3.172E-08	5.916E-10	8.720E-09	2.960E-09	3.172E-08	7.186E-09	-	3.172E-08
		PAH (DEFRA 16)	8.066E-04	7.124E-04	7.411E-04	3.711E-04	8.066E-04	-	-	0.001
		HF	0.010	1.051	0.035	0.010	1.051	7.186E-02	2.874E-01	1.051E+00
		Benzene	0.006	0.004	0.003	0.007	0.007	-	-	0.007
		1,3 Butadiene	0.037	0.023	0.019	0.059	0.059	-	-	0.059
		TOC	0.089	0.058	0.160	0.059	0.160	0.719	1.437	0.160
		NOx	109.525	128.866	131.950	151.413	151.413	172.454	344.909	151.413
		SO2	0.726	20.558	36.800	30.007	36.800	35.141	70.282	36.800
		CO	0.796	3.169	5.820	0.717	5.820	28.742	71.856	5.820
		Benzo(a)pyrene	1.202E-06	6.051E-06	1.369E-06	1.463E-06	6.051E-06	-	-	6.051E-06

Emission Inventory
Whitwell Dolomite Process
Baseline Scenario - Measured Emissions ⁽¹⁾
Combined emissions from Kilns W1 & W2

item	description	internal stack area ⁽²⁾ m ²	mean gas velocity in duct ⁽³⁾ m/s	Temperature in stack ⁽³⁾ °C	volume of release (actual) ⁽³⁾ m ³ /s	volume of release (reference) ⁽³⁾ m ³ /s	pollutant ⁽¹⁾	Kiln W1 g/s	Kiln W2 g/s	pollutant emission rate ⁽⁵⁾ g/s
1	combined emissions in main stack	15.03	8.7	283	130.8	58.1	Particulate	0.22	0.09	0.310
							PM10	0.06	0.03	0.093
							PM2.5	0.04	0.03	0.069
							HCl	1.14	0.49	1.625
							Cd & Tl	0.00	0.00	0.001
							Sb,As,Pb,Cr,Co,Cu,Mn,Ni,V	0.02	0.01	0.031
							Hg	0.00	0.00	0.000
							Selenium	3.68E-05	6.43E-05	1.01E-04
							Dioxins & Furans WHO TEQ	3.06E-08	1.14E-09	3.17E-08
							PAH (DEFRA 16)	1.07E-04	6.99E-04	0.001
							HF	0.01	0.00	0.010
							Benzene	0.00	0.00	0.006
							1,3 Butadiene	0.02	0.02	0.037
							TOC	0.05	0.04	0.089
							NOx	85.57	23.95	109.525
							SO2	0.59	0.14	0.726
							CO	0.37	0.43	0.796
							Benzo(a)pyrene	0.00	0.00	1.202E-06

Notes

1	Based on conditions reported by Exova Catalyst March & April 2017
2	based on sketch showing top of chimney
3	Based on combined flows
4	Emission rates are based on measured conditions and factored for measurement uncertainty.

Emission Inventory
Whitwell Dolomite Process
Baseline Scenario - Measured Emissions ⁽¹⁾
Combined emissions from Kilns W1 & W2

item	description	internal stack area ⁽²⁾ m ²	mean gas velocity in duct ⁽³⁾ m/s	Temperature in stack ⁽³⁾ °C	volume of release (actual) ⁽³⁾ m ³ /s	volume of release (reference) ⁽³⁾ m ³ /s	pollutant ⁽¹⁾	Kiln W1 g/s	Kiln W2 g/s	pollutant emission rate ⁽⁵⁾ g/s
1	combined emissions in main stack	15.03	9.1	266	137.1	60.1	Particulate	2.10	0.31	2.413
							PM10	0.00	0.08	0.075
							PM2.5	0.00	0.04	0.040
							HCl	1.70	0.44	2.136
							Cd & Tl	0.00	0.00	0.001
							Sb,As,Pb,Cr,Co,Cu,Mn,Ni,V	0.04	0.00	0.046
							Hg	0.00	0.00	0.001
							Selenium	2.45E-04	6.50E-05	3.10E-04
							Dioxins & Furans WHO TEQ	8.36E-11	5.08E-10	5.92E-10
							PAH (DEFRA 16)	1.01E-04	6.11E-04	7.12E-04
							HF	1.05	0.00	1.051
							Benzene	0.00	0.00	0.004
							1,3 Butadiene	0.01	0.02	0.023
							TOC	0.03	0.02	0.058
							NOx	54.87	73.99	128.866
							SO2	20.25	0.31	20.558
							CO	1.45	1.72	3.169
							Benzo(a)pyrene	0.00	0.00	6.051E-06

Notes

1	Based on conditions reported by Exova Catalyst January 2018 and November 2017
2	based on sketch showing top of chimney
3	Based on combined flows
4	Emission rates are based on measured conditions and factored for measurement uncertainty.

Emission Inventory
Whitwell Dolomite Process
Baseline Scenario - Measured Emissions ⁽¹⁾
Combined emissions from Kilns W1 & W2

item	description	internal stack area ⁽²⁾ m ²	mean gas velocity in duct ⁽³⁾ m/s	Temperature in stack ⁽³⁾ °C	volume of release (actual) ⁽³⁾ m ³ /s	volume of release (reference) ⁽³⁾ m ³ /s	pollutant ⁽¹⁾	Kiln W1 g/s	Kiln W2 g/s	pollutant emission rate ⁽⁵⁾ g/s
1	combined emissions in main stack	15.03	11.0	290	164.9	71.9	Particulate	0.58	0.35	0.925
							PM10	0.48	0.00	0.483
							PM2.5	0.37	0.00	0.366
							HCl	5.32	0.59	5.908
							Cd & Tl	0.00	0.00	0.001
							Sb,As,Pb,Cr,Co,Cu,Mn,Ni,V	0.02	0.00	0.029
							Hg	0.00	0.00	0.000
							Selenium	4.74E-05	2.26E-05	7.01E-05
							Dioxins & Furans WHO TEQ	2.17E-10	8.50E-09	8.72E-09
							PAH (DEFRA 16)	1.27E-04	6.14E-04	7.41E-04
							HF	0.03	0.00	0.035
							Benzene	0.00	0.00	0.003
							1,3 Butadiene	0.00	0.01	0.019
							TOC	0.09	0.07	0.160
							NOx	103.16	28.79	131.950
							SO2	36.47	0.33	36.800
							CO	4.91	0.91	5.820
							Benzo(a)pyrene	0.00	0.00	1.369E-06

Notes

1	Based on conditions reported by Exova Catalyst May 2018
2	based on sketch showing top of chimney
3	Based on combined flows
4	Emission rates are based on measured conditions and factored for measurement uncertainty.

Emission Inventory
Whitwell Dolomite Process
Baseline Scenario - Measured Emissions ⁽¹⁾
Combined emissions from Kilns W1 & W2

item	description	internal stack area ⁽²⁾ m ²	mean gas velocity in duct ⁽³⁾ m/s	Temperature in stack ⁽³⁾ °C	volume of release (actual) ⁽³⁾ m ³ /s	volume of release (reference) ⁽³⁾ m ³ /s	pollutant ⁽¹⁾	Kiln W1 g/s	Kiln W2 g/s	pollutant emission rate ⁽⁵⁾ g/s
1	combined emissions in main stack	15.03	9.3	269	139.3	59.6	Particulate	1.60	0.50	2.096
							PM10		0.02	
							PM2.5		0.01	
							HCl	0.74	0.01	0.748
							Cd & Tl	0.00	0.00	0.001
							Sb,As,Pb,Cr,Co,Cu,Mn,Ni,V	0.02	0.00	0.026
							Hg	0.00	0.00	0.000
							Selenium	5.81E-03	6.02E-05	5.87E-03
							Dioxins & Furans WHO TEQ	4.19E-10	2.54E-09	2.96E-09
							PAH (DEFRA 16)	1.60E-04	2.11E-04	3.71E-04
							HF	0.01	0.00	0.010
							Benzene	0.00	0.00	0.007
							1,3 Butadiene	0.02	0.04	0.059
							TOC	0.03	0.03	0.059
							NOx	109.27	42.14	151.413
							SO2	29.76	0.25	30.007
							CO	0.10	0.62	0.717
							Benzo(a)pyrene	0.00	0.00	1.463E-06

Notes

1	Based on conditions reported by Exova Catalyst September 2018
2	based on sketch showing top of chimney
3	Based on combined flows
4	Emission rates are based on measured conditions and factored for measurement uncertainty.

Emission Inventory
 Whitwell Dolomite Process
 Baseline Scenario - Measured Emissions ⁽¹⁾
Test 1

Item	description	internal stack area ⁽²⁾ m ²	mean gas velocity in duct ⁽¹⁾ m/s	Temperature in stack ⁽¹⁾ K	volume of release (actual) ⁽¹⁾ m ³ /s	pressure ⁽¹⁾ kPa	Moisture ⁽¹⁾ %	O ₂ actual ⁽¹⁾ %	correction for pressure	correction for temperature	correction for moisture	correction for O ₂	volume of release at 273K, dry, 11%O ₂ ⁽³⁾ m ³ /s	pollutant ⁽¹⁾	measured Pollutant Concentration (dry gas) ⁽⁴⁾ mg/m ³	measurement uncertainty ⁽¹⁾ factor	pollutant emission rate ⁽⁵⁾ q/s
1	duct before connection to main stack	3.48	25.3	619	88.0	101.5	6.48	11.8	1.00	0.44	0.94	0.92	33.4	Particulate	6.00	0.51	0.218
														PM10	0.67	1.10	0.059
														PM2.5	0.49	0.82	0.044
														HCl	31.30	2.70	1.136
														Cd & Tl	0.005	0.001	0.000
														Sb,As,Pb,Cr,Co,Cu,Mn,Ni,V	0.61	0.10	0.024
														Hg	0.009	0.001	3.341E-04
														Selenium	1.00E-03	0.000	3.675E-05
														Dioxins & Furans WHO TEQ	7.57E-07	1.580E-07	3.057E-08
														PAH (DEFRA 16)	2.65E-03	0.001	1.073E-04
														HF	0.23	0.02	0.008
														Benzene	0.05	0.010	0.002
														1,3 Butadiene	0.49	0.100	0.020
														TOC	1	0.51	0.050
														NOx	2451	110.00	85.571
														SO2	3	14.60	0.588
														CO	9.2	1.90	0.371
														Benzo(a)pyrene	0.000013	0.000003	5.346E-07

Notes

1	Based on conditions reported by Exova Catalyst March 2017
2	based on duct area as sampled
2	Actual flow corrected for O ₂ , moisture, pressure and temperature.
4	Based on Measured conditions.
5	Emission rates are based on measured conditions and factored for measurement uncertainty.

Emission Inventory
Whitwell Dolomite Process
Baseline Scenario - Measured Emissions ⁽¹⁾
Test 2

item	description	internal stack area ⁽²⁾ m ²	mean gas velocity in duct ⁽¹⁾ m/s	Temperature in stack ⁽¹⁾ K	volume of release (actual) ⁽¹⁾ m ³ /s	pressure ⁽¹⁾ kPa	Moisture ⁽¹⁾ %	O ₂ actual ⁽¹⁾ %	correction for pressure	correction for temperature	correction for moisture	correction for O ₂	volume of release at 273K, dry, 11%O ₂ ⁽³⁾ m ³ /s	pollutant ⁽¹⁾	measured Pollutant Concentration (dry gas) ⁽⁴⁾ mg/m ³	measurement uncertainty ⁽¹⁾ factor	pollutant emission rate ⁽⁵⁾ g/s
1	duct before connection to main stack	3.48	26.4	600	92.0	99.3	6.50	13.0	0.98	0.46	0.94	0.80	30.6	Particulate	63.00	5.60	2.099
														PM10			
														PM2.5			
														HCl	50.40	5.10	1.698
														Cd & Tl	0.014	0.002	0.000
														Sb, As, Pb, Cr, Co, Cu, Mn, Ni, V	1.22	0.24	0.045
														Hg	0.006	0.001	2.142E-04
														Selenium	7.00E-03	0.001	2.448E-04
														Dioxins			
														PAH (DEFRA 16)	2.72E-03	0.001	1.010E-04
														HF	31.2	3.10	1.050
														Benzene	0.06	0.010	0.002
														1,3 Butadiene	0.06	0.120	0.006
														TOC	0.67	0.46	0.035
														NOx	1708	85.20	54.874
														SO2	626	35.80	20.252
														CO	44.5	2.80	1.447
														Benzo(a)pyrene	0.00002	0.000004	7.344E-07

Notes

1	Based on conditions reported by Exova Catalyst 17 - 19 January 2018
2	based on duct area as sampled
2	Actual flow corrected for O ₂ , moisture pressure and temperature.
4	Based on Measured conditions
5	Emission rates are based on measured conditions and factored for measurement uncertainty.

Emission Inventory
 Whitwell Dolomite Process
 Baseline Scenario - Measured Emissions ⁽¹⁾
Test 3

Item	description	internal stack area ⁽²⁾ m ²	mean gas velocity in duct ⁽¹⁾ m/s	Temperature in stack ⁽¹⁾ K	volume of release (actual) ⁽¹⁾ m ³ /s	pressure ⁽¹⁾ kPa	Moisture ⁽¹⁾ %	O ₂ actual ⁽¹⁾ %	correction for pressure	correction for temperature	correction for moisture	correction for O ₂	volume of release at 273K, dry, 11%O ₂ ⁽³⁾ m ³ /s	pollutant ⁽¹⁾	measured Pollutant Concentration (dry gas) ⁽⁴⁾ mg/m ³	measurement uncertainty ⁽¹⁾ factor	pollutant emission rate ⁽⁵⁾ q/s
1	duct before connection to main stack	3.48	32.8	627	114.3	100.2	7.53	12.3	0.99	0.44	0.92	0.87	39.5	Particulate	13.40	1.27	0.580
														PM10	10.50	1.71	0.483
														PM2.5	7.76	1.51	0.366
														HCl	123.00	11.50	5.316
														Cd & Tl	0.010	0.003	0.001
														Sb,As,Pb,Cr,Co,Cu,Mn,Ni,V	0.51	0.09	0.024
														Hg	0.005	0.001	2.253E-04
														Selenium	1.00E-03	0.000	4.743E-05
														Dioxins & Furans WHO TEQ	4.40E-09	0.000	2.174E-10
														PAH (DEFRA 16)	2.65E-03	0.001	1.269E-04
														HF	0.78	0.07	0.034
														Benzene	0.03	0.007	0.001
														1,3 Butadiene	0.034	0.070	0.004
														TOC	0.98	1.29	0.090
														NOx	2494	116.00	103.164
														SO2	881	41.60	36.467
														CO	117	7.27	4.912
														Benzo(a)pyrene	0.00002	0.000004	9.486E-07

Notes

1	Based on conditions reported by Exova Catalyst May 2018
2	based on duct area as sampled
2	Actual flow corrected for O ₂ , moisture, pressure and temperature.
4	Based on Measured conditions.
5	Emission rates are based on measured conditions and factored for measurement uncertainty.

Emission Inventory
 Whitwell Dolomite Process
 Baseline Scenario - Measured Emissions ⁽¹⁾
Test 4

Item	description	internal stack area ⁽²⁾ m ²	mean gas velocity in duct ⁽¹⁾ m/s	Temperature in stack ⁽¹⁾ K	volume of release (actual) ⁽¹⁾ m ³ /s	pressure ⁽¹⁾ kPa	Moisture ⁽¹⁾ %	O ₂ actual ⁽¹⁾ %	correction for pressure	correction for temperature	correction for moisture	correction for O ₂	volume of release at 273K, dry, 11%O ₂ ⁽³⁾ m ³ /s	pollutant ⁽¹⁾	measured Pollutant Concentration (dry gas) ⁽⁴⁾ mg/m ³	measurement uncertainty ⁽¹⁾ factor	pollutant emission rate ⁽⁵⁾ q/s
1	duct before connection to main stack	3.48	26.3	602	91.5	100.0	4.94	12.7	0.99	0.45	0.95	0.83	32.3	Particulate	45.10	4.50	1.600
														PM10			
														PM2.5			
														HCl	20.70	2.30	0.742
														Cd & Tl	0.010	0.004	0.000
														Sb,As,Pb,Cr,Co,Cu,Mn,Ni,V	0.57	0.20	0.025
														Hg	0.001	0.000	3.870E-05
														Selenium	1.50E-01	0.030	5.806E-03
														Dioxins & Furans WHO TEQ	1.00E-08	0.000	4.193E-10
														PAH (DEFRA 16)	4.10E-03	0.001	1.603E-04
														HF	0.26	0.02	0.009
														Benzene	0.06	0.010	0.002
														1,3 Butadiene	0.44	0.090	0.017
														TOC	0.51	0.52	0.033
														NOx	3225	163.00	109.274
														SO2	881	41.60	29.757
														CO	0.29	2.70	0.096
														Benzo(a)pyrene	0.00002	0.000005	8.063E-07

Notes

1	Based on conditions reported by Exova Catalyst September 2018
2	based on duct area as sampled
2	Actual flow corrected for O ₂ , moisture, pressure and temperature.
4	Based on Measured conditions.
5	Emission rates are based on measured conditions and factored for measurement uncertainty.

Emission Inventory
 Whitwell Dolomite Process
 Baseline Scenario - Measured Emissions ⁽¹⁾
Test 1

Item	description	internal stack area ⁽²⁾ m ²	mean gas velocity in duct ⁽¹⁾ m/s	Temperature in stack ⁽¹⁾ K	volume of release (actual) ⁽¹⁾ m ³ /s	pressure ⁽¹⁾ kPa	Moisture ⁽¹⁾ %	O ₂ actual ⁽¹⁾ %	correction for pressure	correction for temperature	correction for moisture	correction for O ₂	volume of release at 273K, dry, 11%O ₂ ⁽³⁾ m ³ /s	pollutant ⁽¹⁾	measured Pollutant Concentration (dry gas) ⁽⁴⁾ mg/m ³	measurement uncertainty ⁽¹⁾ factor	pollutant emission rate ⁽⁵⁾ q/s
1	duct before connection to main stack	3.60	11.9	428	42.8	98.5	5.95	11.1	0.97	0.64	0.94	0.99	24.7	Particulate	3.40	0.34	0.092
														PM10	0.46	0.90	0.034
														PM2.5	0.34	0.68	0.025
														HCl	18.30	1.50	0.489
														Cd & Tl	0.030	0.004	0.001
														Sb,As,Pb,Cr,Co,Cu,Mn,Ni,V	0.24	0.04	0.007
														Hg	0.003	0.000	8.402E-05
														Selenium	2.00E-03	0.001	6.425E-05
														Dioxins & Furans WHO TEQ			
														PAH (DEFRA 16)	2.34E-02	0.005	6.994E-04
														HF	0.05	0.00	0.001
														Benzene	0.11	0.040	0.004
														1,3 Butadiene	0.49	0.200	0.017
														TOC	0.34	1.20	0.038
														NOx	930	39.30	23.954
														SO2	2.2	3.40	0.138
														CO	15.7	1.50	0.425
														Benzo(a)pyrene	0.000022	0.000005	6.673E-07

Notes

1	Based on conditions reported by Exova Catalyst April 2017
2	based on duct area as sampled
2	Actual flow corrected for O ₂ , moisture, pressure and temperature.
4	Based on Measured conditions.
5	Emission rates are based on measured conditions and factored for measurement uncertainty.

Emission Inventory
 Whitwell Dolomite Process
 Baseline Scenario - Measured Emissions ⁽¹⁾
Test 2

Item	description	internal stack area ⁽²⁾ m ²	mean gas velocity in duct ⁽¹⁾ m/s	Temperature in stack ⁽¹⁾ K	volume of release (actual) ⁽¹⁾ m ³ /s	pressure ⁽¹⁾ kPa	Moisture ⁽¹⁾ %	O ₂ actual ⁽¹⁾ %	correction for pressure	correction for temperature	correction for moisture	correction for O ₂	volume of release at 273K, dry, 11%O ₂ ⁽³⁾ m ³ /s	pollutant ⁽¹⁾	measured Pollutant Concentration (dry gas) ⁽⁴⁾ mg/m ³	measurement uncertainty ⁽¹⁾ factor	pollutant emission rate ⁽⁵⁾ q/s
1	duct before connection to main stack	3.60	12.5	416	45.1	98.1	8.43	9.8	0.97	0.66	0.92	1.13	29.5	Particulate	9.90	0.73	0.314
														PM10	1.70	0.84	0.075
														PM2.5	0.74	0.62	0.040
														HCl	13.70	1.10	0.437
														Cd & Tl	0.001	0.000	0.000
														Sb,As,Pb,Cr,Co,Cu,Mn,Ni,V	0.03	0.00	0.001
														Hg	0.009	0.001	2.954E-04
														Selenium	2.00E-03	0.000	6.498E-05
														Dioxins & Furans WHO TEQ			
														PAH (DEFRA 16)	1.71E-02	0.004	6.114E-04
														HF	0.04	0.00	0.001
														Benzene	0.05	0.010	0.002
														1,3 Butadiene	0.49	0.100	0.017
														TOC	0.41	0.38	0.023
														NOx	2373	132.00	73.993
														SO2	0.68	9.70	0.307
														CO	55	3.30	1.722
														Benzo(a)pyrene	0.00015	0.00003	5.317E-06

Notes

1	Based on conditions reported by Exova Catalyst November 2017
2	based on duct area as sampled
2	Actual flow corrected for O ₂ , moisture, pressure and temperature.
4	Based on Measured conditions.
5	Emission rates are based on measured conditions and factored for measurement uncertainty.

Emission Inventory
 Whitwell Dolomite Process
 Baseline Scenario - Measured Emissions ⁽¹⁾
Test 3

Item	description	internal stack area ⁽²⁾ m ²	mean gas velocity in duct ⁽¹⁾ m/s	Temperature in stack ⁽¹⁾ K	volume of release (actual) ⁽¹⁾ m ³ /s	pressure ⁽¹⁾ kPa	Moisture ⁽¹⁾ %	O ₂ actual ⁽¹⁾ %	correction for pressure	correction for temperature	correction for moisture	correction for O ₂	volume of release at 273K, dry, 11%O ₂ ⁽³⁾ m ³ /s	pollutant ⁽¹⁾	measured Pollutant Concentration (dry gas) ⁽⁴⁾ mg/m ³	measurement uncertainty ⁽¹⁾ factor	pollutant emission rate ⁽⁵⁾ q/s
1	duct before connection to main stack	3.60	14.1	419	50.7	98.5	5.91	10.3	0.97	0.65	0.94	1.07	32.3	Particulate	9.90	0.78	0.345
														PM10			
														PM2.5			
														HCl	16.90	1.40	0.592
														Cd & Tl	0.002	0.000	0.000
														Sb,As,Pb,Cr,Co,Cu,Mn,Ni,V	0.13	0.02	0.005
														Hg	0.001	0.000	3.233E-05
														Selenium	6.00E-04	0.000	2.263E-05
														Dioxins & Furans WHO TEQ	2.18E-07	0.000	8.503E-09
														PAH (DEFRA 16)	1.57E-02	0.003	6.143E-04
														HF	0.05	0.00	0.002
														Benzene	0.04	0.010	0.002
														1,3 Butadiene	0.38	0.080	0.015
														TOC	1.4	0.77	0.070
														NOx	853	37.40	28.786
														SO2	1.7	8.60	0.333
														CO	26.4	1.70	0.908
														Benzo(a)pyrene	0.00001	0.000003	4.203E-07

Notes

1	Based on conditions reported by Exova Catalyst May 2018
2	based on duct area as sampled
2	Actual flow corrected for O ₂ , moisture, pressure and temperature.
4	Based on Measured conditions.
5	Emission rates are based on measured conditions and factored for measurement uncertainty.

Emission Inventory
 Whitwell Dolomite Process
 Baseline Scenario - Measured Emissions ⁽¹⁾
Test 4

Item	description	internal stack area ⁽²⁾ m ²	mean gas velocity in duct ⁽¹⁾ m/s	Temperature in stack ⁽¹⁾ K	volume of release (actual) ⁽¹⁾ m ³ /s	pressure ⁽¹⁾ kPa	Moisture ⁽¹⁾ %	O ₂ actual ⁽¹⁾ %	correction for pressure	correction for temperature	correction for moisture	correction for O ₂	volume of release at 273K, dry, 11%O ₂ ⁽³⁾ m ³ /s	pollutant ⁽¹⁾	measured Pollutant Concentration (dry gas) ⁽⁴⁾ mg/m ³	measurement uncertainty ⁽¹⁾ factor	pollutant emission rate ⁽⁵⁾ q/s
1	duct before connection to main stack	3.60	13.3	426	47.8	99.1	8.59	11.0	0.98	0.64	0.91	1.00	27.4	Particulate	16.80	1.33	0.496
														PM10	0.27	0.39	0.018
														PM2.5	0.21	0.31	0.014
														HCl	0.22	0.02	0.007
														Cd & Tl	0.002	0.000	0.000
														Sb,As,Pb,Cr,Co,Cu,Mn,Ni,V	0.02	0.01	0.001
														Hg	0.003	0.001	1.040E-04
														Selenium	2.00E-03	0.000	6.022E-05
														Dioxins & Furans WHO TEQ			
														PAH (DEFRA 16)	6.37E-03	0.001	2.108E-04
														HF	0.04	0.00	0.001
														Benzene	0.13	0.030	0.004
														1,3 Butadiene	1.27	0.250	0.042
														TOC	0.38	0.57	0.026
														NOx	1478	61.30	42.138
														SO2	3.9	5.24	0.250
														CO	21.1	1.57	0.621
														Benzo(a)pyrene	0.00002	0.000004	6.570E-07

Notes

1	Based on conditions reported by Exova Catalyst September 2018
2	based on duct area as sampled
2	Actual flow corrected for O ₂ , moisture pressure and temperature.
4	Based on Measured conditions.
5	Emission rates are based on measured conditions and factored for measurement uncertainty.

Emission Inventory
Whitwell Dolomite Process
Baseline Scenario - Measured Emissions ⁽¹⁾
Based on test 3

Item	description	internal stack area ⁽¹⁾ m ²	mean gas velocity in duct ⁽¹⁾ m/s	Temperature in stack ⁽¹⁾ K	volume of release (actual) ⁽¹⁾ m ³ /s	pressure ⁽¹⁾ kPa	Moisture ⁽¹⁾ %	O ₂ actual ⁽¹⁾ %	correction for pressure	correction for temperature	correction for moisture	correction for O ₂	volume of release at 273K, dry, 11%O ₂ ⁽¹⁾ m ³ /s	pollutant ⁽¹⁾	Emission Limit Concentration (dry gas) ⁽²⁾ mg/m ³	Emission Limit Concentration (dry gas) ⁽³⁾ factor	pollutant emission rate ⁽²⁾ g/s	pollutant emission rate ⁽³⁾ g/s
1	duct before connection to main stack	3.48	32.8	627	114.3	100.2	7.53	12.3	0.99	0.44	0.92	0.87	39.5	Particulate	30	60	1,186	2,372
														PM10			-	-
														PM2.5			-	-
														HCl	160	320	6,324	12,648
														Cd & Tl	0.05	-	0.002	-
														Sb,As,Pb,Cr,Co,Cu,Mn,Ni,V	4	-	0.158	-
														Hg	0.05	-	0.002	-
														Selenium	-	-	-	-
														Dioxins & Furans WHO TEO	1.00E-07	-	3.953E-09	-
														PAH (DEFRA 16)	-	-	-	-
														HF	1	4	0.040	0.158
														Benzene	-	-	-	-
														1,3 Butadiene	-	-	-	-
														TOC	10	20	0.395	0.791
														NOx	2400	4800	94,863	189,727
														SO2	750	1500	29,645	59,290
														CO	400	1000	15,811	39,526
														Benzo(a)pyrene	-	-	-	-

Notes

- 1 Based on conditions reported by Exova Catalyst May 2018
- 2 Based on daily or 8 hour averages for Dolomet ULCG production with WDF
- 3 Based on half hour averages for Dolomet ULCG production with WDF

Emission Inventory
 Whitwell Dolomite Process
 Baseline Scenario - Measured Emissions ⁽¹⁾
Based on test 3

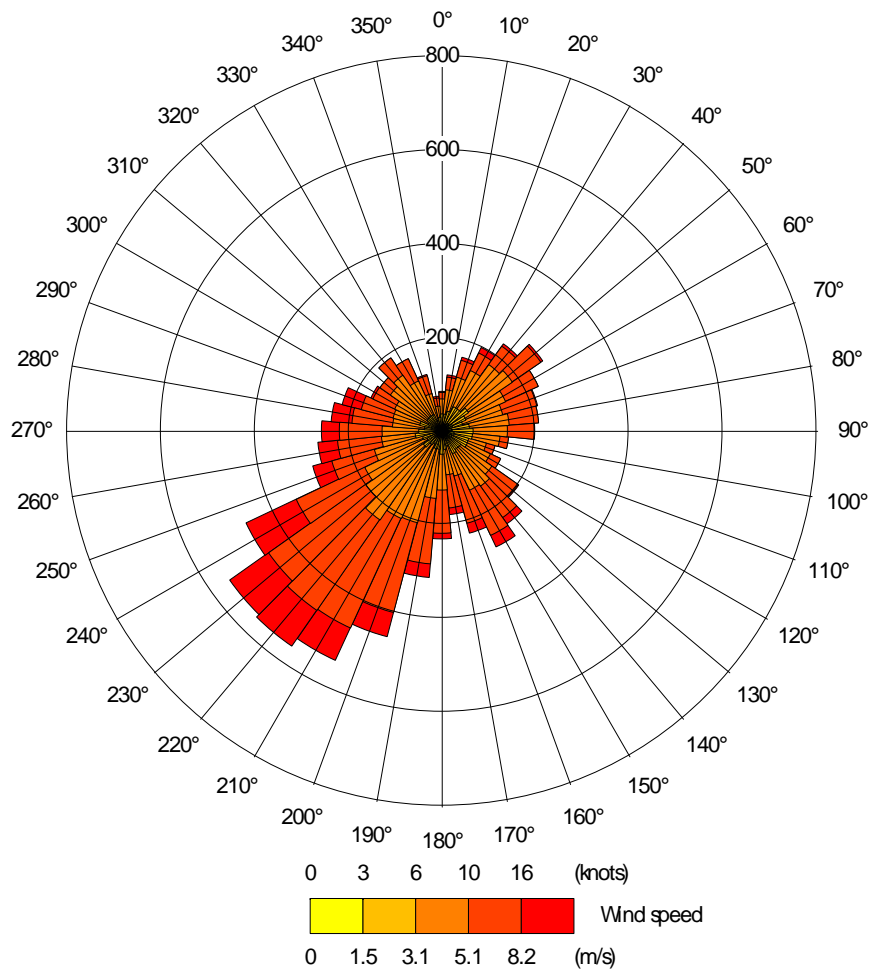
Item	description	internal stack area ⁽¹⁾ m ²	mean gas velocity in duct ⁽¹⁾ m/s	Temperature in stack ⁽¹⁾ K	volume of release (actual) ⁽¹⁾ m ³ /s	pressure ⁽¹⁾ kPa	Moisture ⁽¹⁾ %	O ₂ actual ⁽¹⁾ %	correction for pressure	correction for temperature	correction for moisture	correction for O ₂	volume of release at 273K, dry, 11%O ₂ ⁽¹⁾ m ³ /s	pollutant ⁽¹⁾	Emission Limit Concentration (dry gas) ⁽²⁾ mg/m ³	Emission Limit Concentration (dry gas) ⁽³⁾ factor	pollutant emission rate ⁽²⁾ g/s	pollutant emission rate ⁽³⁾ g/s
1	duct before connection to main stack	3.60	14.1	419	50.7	98.5	5.91	10.3	0.97	0.65	0.94	1.07	32.3	Particulate	10	20	0.323	0.647
														PM10			-	-
														PM2.5			-	-
														HCl	80	160	2.586	5.173
														Cd & Tl	0.05	-	0.002	-
														Sb,As,Pb,Cr,Co,Cu,Mn,Ni,V	4	-	0.129	-
														Hg	0.05	-	0.002	-
														Selenium	-	-	-	-
														Dioxins & Furans WHO TEO	1.00E-07	-	3.233E-09	-
														PAH (DEFRA 16)	-	-	-	-
														HF	1	4	0.032	0.129
														Benzene	-	-	-	-
														1,3 Butadiene	-	-	-	-
														TOC	10	20	0.323	0.647
														NOx	2400	4800	77.591	155.182
														SO2	170	340	5.496	10.992
														CO	400	1000	12.932	32.330
														Benzo(a)pyrene	-	-	-	-

Notes

- 1 Based on conditions reported by Exova Catalyst May 2018
- 2 Based on daily or 8 hour averages for Dolomet ULCG production with WDF
- 3 Based on half hour averages for Dolomet ULCG production with WDF

Appendix 2 – Model Inputs

y:\met data\scampton\scampadms14.met



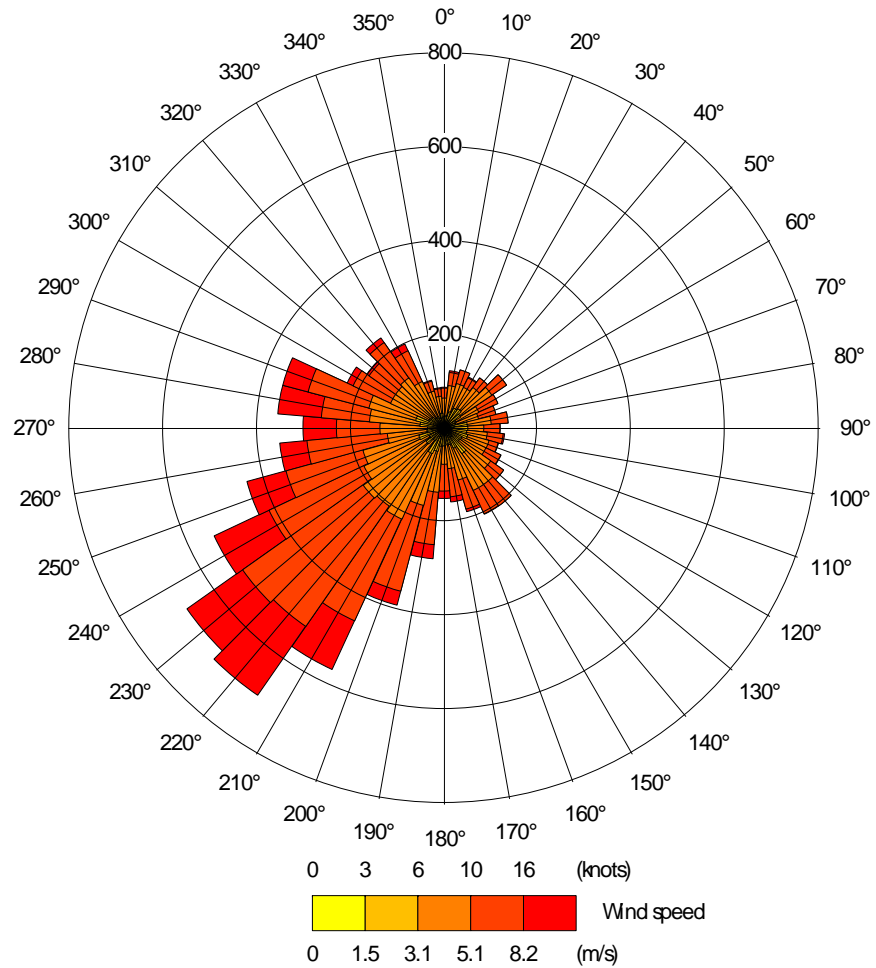
Met Data

Appendix 2



Met Data

y:\met data\scampton\scampadms15.met

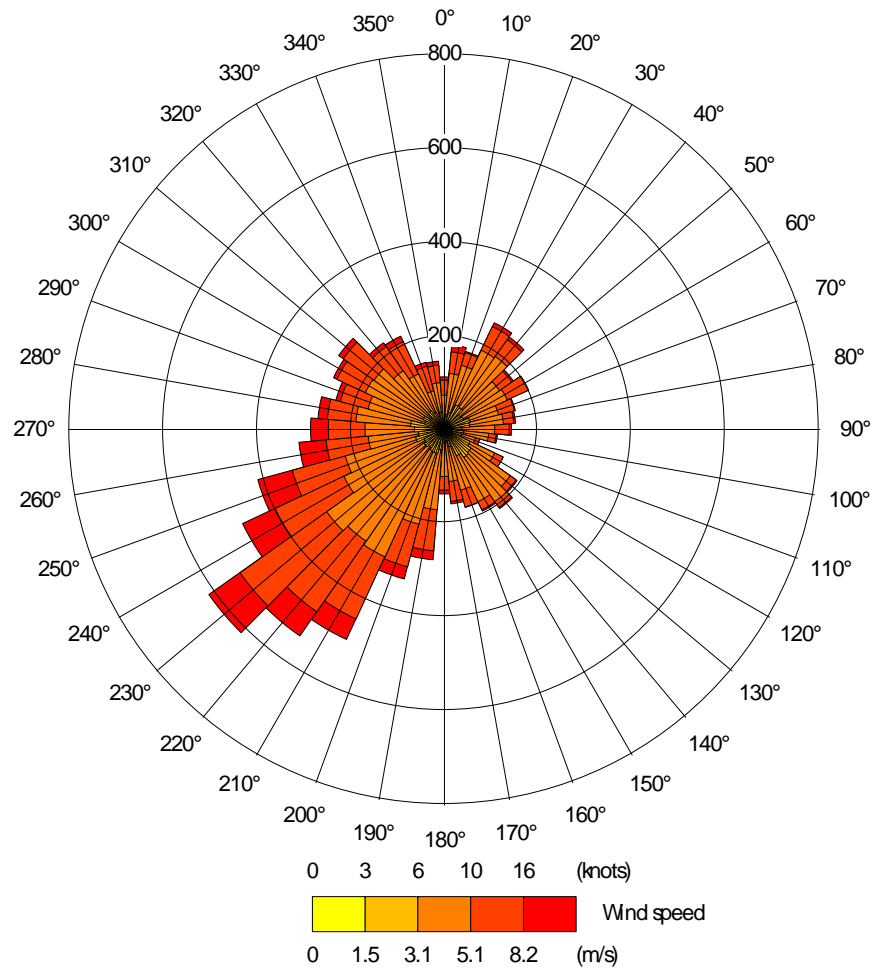


Appendix 2



Met Data

y:\met data\scampton\scampadms16.met

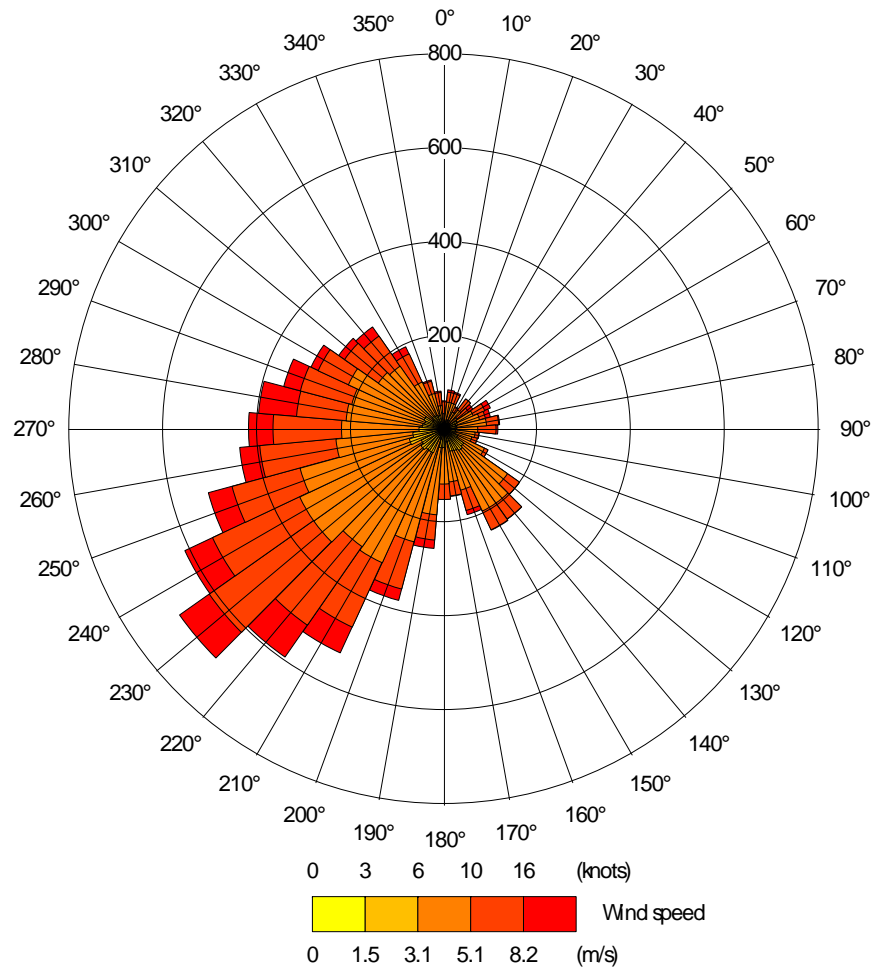


Appendix 2



Met Data

y:\met data\scampton\scampadms17.met

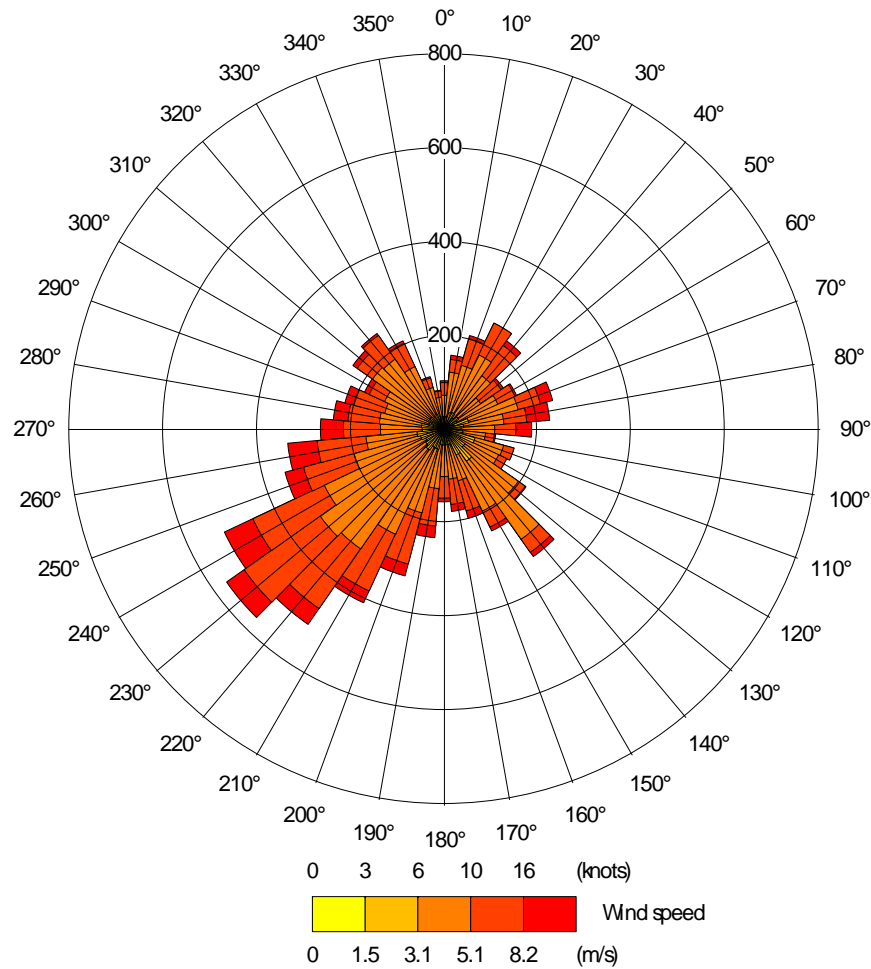


Appendix 2



Met Data

y:\met data\scampton\scampadms18.met

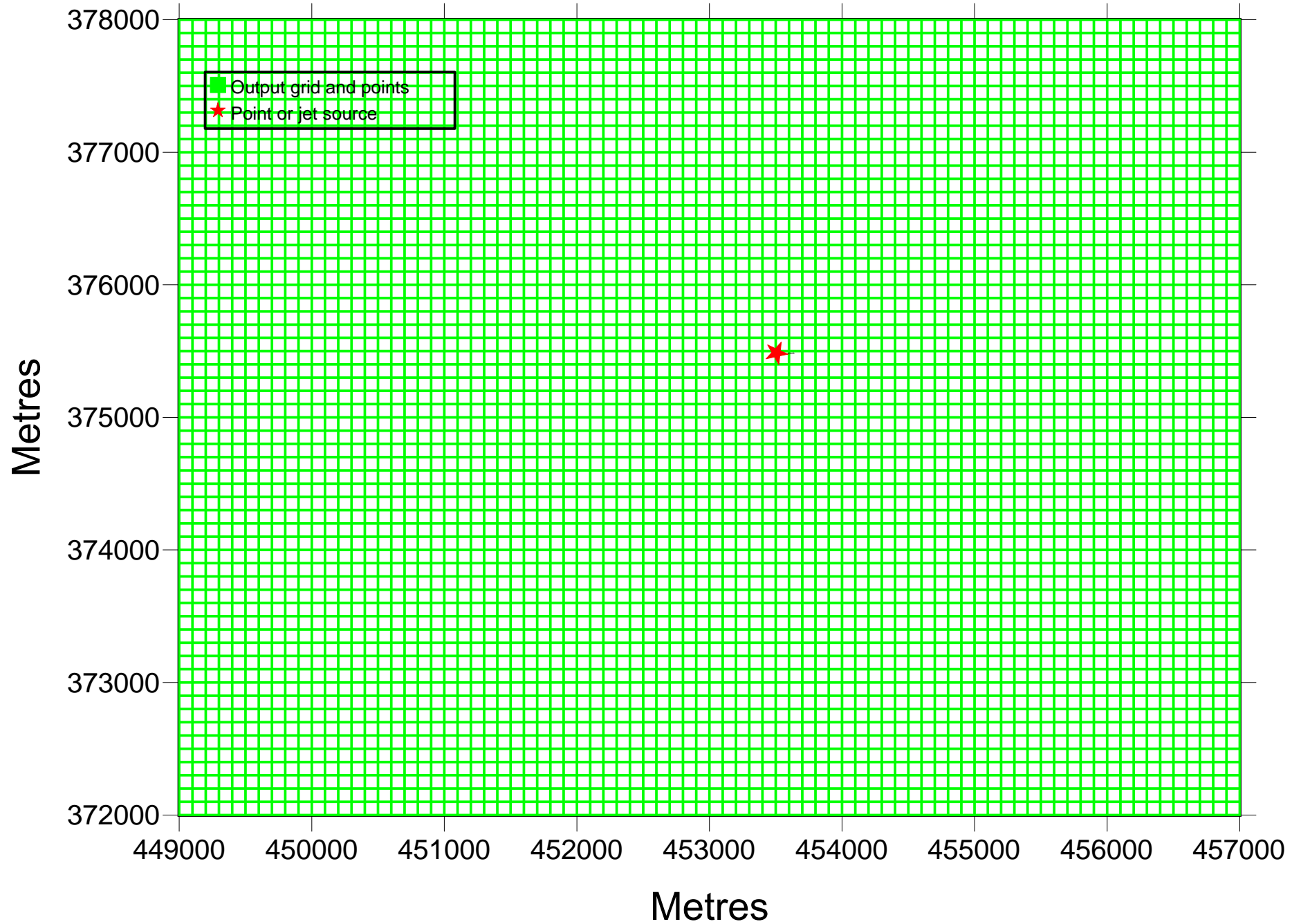


Appendix 2



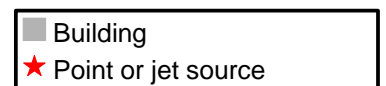
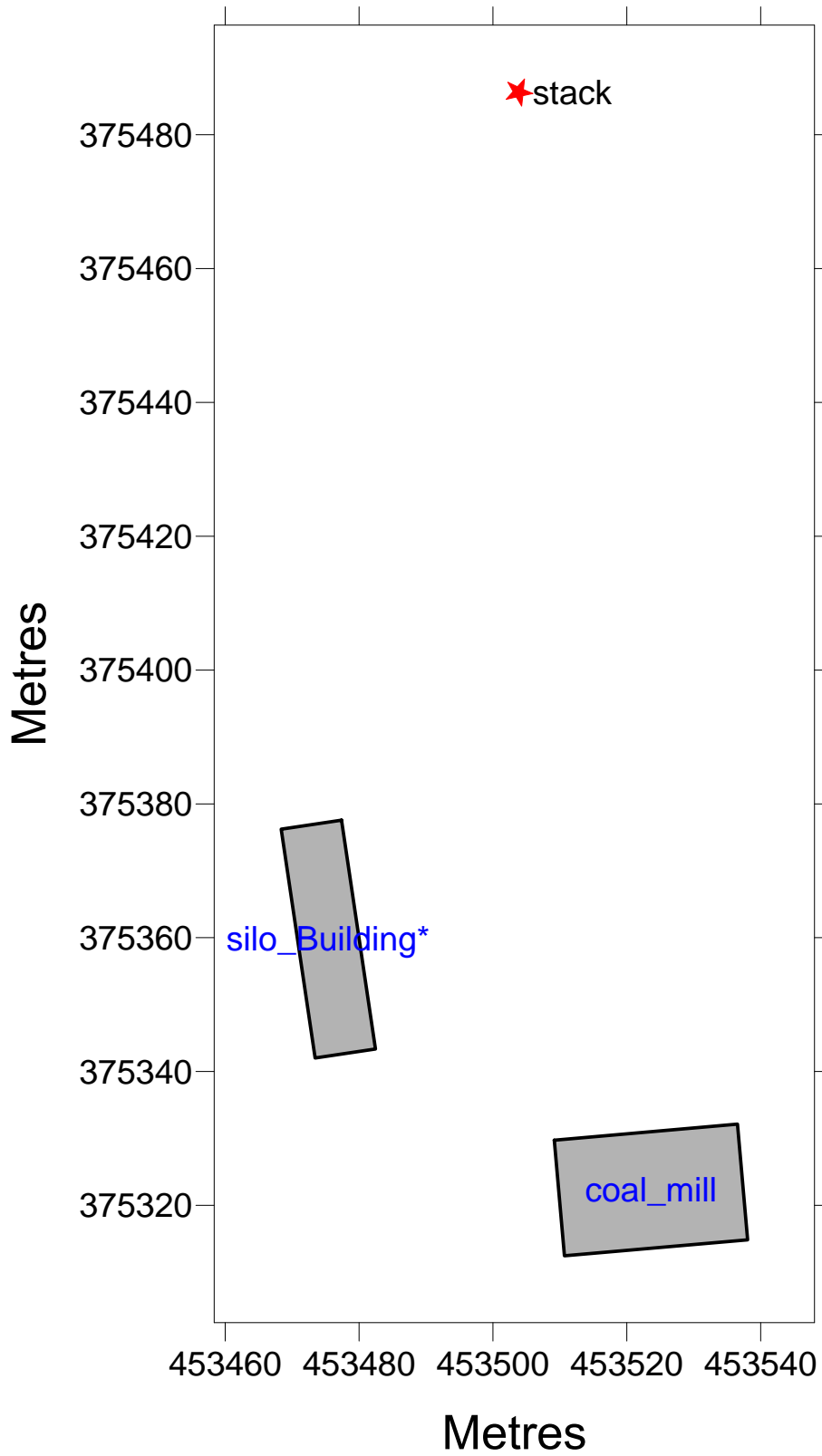
Visualisation of ADMS input

P:\AS 0666 Whitwell AQIA\model runs rev01\Scenario 2.APL



Visualisation of ADMS input

P:\AS 0666 Whitwell AQIA\model runs rev01\Scenario 2.APL



Appendix 3 – Model Outputs

No.	Receptor name	X(m)	Y(m)	Z(m)	LCConc (ug/m ³)particulate (stack) - 24hrs	P_90.41 (ug/m ³)particulate (stack) - 24hrs	LCConc (ug/m ³)NOx (stack) - 1hr	P_90.79 (ug/m ³)NOx (stack) - 1hr	LCConc (ug/m ³)SO2 (stack) - 1hr	P_90.79 (ug/m ³)SO2 (stack) - 1hr	LCConc (ug/m ³)CO (stack) - 8hrs	P100.00 (ug/m ³)CO (stack) - 8hrs	LCConc (ug/m ³)VOC (stack) - 24hrs	LCConc (ug/m ³)HCl (stack) - 1hr	P100.00 (ug/m ³)HCl (stack) - 1hr	LCConc (ug/m ³)HF (stack) - 1hr	P100.00 (ug/m ³)HF (stack) - 1hr	LCConc (ug/m ³)group 1 metals (stack) - 1hr	P100.00 (ug/m ³)group 1 metals (stack) - 1hr	LCConc (ug/m ³)group 2 metals (stack) - 1hr	P100.00 (ug/m ³)group 2 metals (stack) - 1hr	LCConc (ug/m ³)dioxins (stack) - 1hr	P100.00 (ug/m ³)dioxins (stack) - 1hr		
R1	Southfield Lane	453192	376043	1.5	2.58E-03	2.61E-03	2.97E-01	4.02E+01	6.12E-02	1.28E+01	4.95E-02	1.13E+01	1.23E-03	1.54E-02	6.40E+00	1.24E+01	5.16E+01	6.19E-06	2.58E-03	4.95E-04	2.06E-01	1.24E-11	1.24E-11	1.24E-11	
R2	Whitwell PS	453071	376294	1.5	4.16E-03	5.91E-03	4.79E-01	5.81E+01	9.83E-02	1.66E+01	7.94E-02	1.06E+01	1.98E-03	2.48E-02	5.99E+00	2.00E+01	4.83E+01	9.98E-06	2.42E-03	7.98E-04	1.93E-01	2.00E-11	2.00E-11	2.00E-11	
R3	Middlegate	453296	376109	1.5	2.72E-03	4.00E-03	3.13E-01	4.03E+01	6.24E-02	1.30E+01	5.22E-02	6.35E+00	1.30E-03	1.61E-02	5.24E+00	1.87E+01	4.23E+01	5.61E-06	2.11E-03	5.21E-04	1.69E-01	1.30E-11	1.30E-11	1.30E-11	
R4	Loxley Lane	453382	376201	1.5	3.91E-03	7.89E-03	4.49E-01	5.43E+01	9.05E-02	1.55E+01	7.48E-02	9.43E+00	1.86E-03	2.32E-02	5.04E+00	1.87E+01	4.06E+01	9.26E-06	2.03E-03	7.49E-04	1.63E-01	1.87E-11	1.87E-11	1.87E-11	
R5	Station Rd	453443	376240	1.5	4.99E-03	1.23E-02	5.74E-01	6.85E+01	1.17E-01	1.74E+01	9.54E-02	1.18E+01	2.37E-03	2.96E-02	5.56E+00	2.93E+01	4.48E+01	1.30E-05	2.24E-03	9.56E-04	1.79E-01	2.39E-11	2.39E-11	2.39E-11	
R6	Allotments	453511	376271	1.5	6.39E-03	1.43E-02	7.36E-01	6.82E+01	1.51E-01	1.92E+01	1.22E-01	1.27E+01	3.04E-03	3.80E-02	5.70E+00	3.07E+01	4.60E+01	1.53E-05	2.30E-03	1.23E-03	1.84E-01	3.07E-11	3.07E-11	3.07E-11	
R7	Parkway	453522	376242	1.5	7.74E-03	1.84E-02	8.92E-01	7.34E+01	1.83E-01	1.95E+01	1.48E+01	1.33E+01	3.69E-03	4.61E-02	5.66E+00	3.72E+01	4.56E+01	1.86E-05	2.86E-03	1.49E-03	1.82E-01	3.72E-11	3.72E-11	3.72E-11	
R8	Allotments	453588	376351	1.5	1.54E-02	5.68E-02	1.79E+00	8.28E+01	3.66E-01	1.95E+01	2.95E-01	1.24E+01	7.36E-03	9.19E-02	3.81E+00	7.41E-01	4.69E+01	3.71E-05	2.34E-03	2.96E-03	1.87E-01	1.41E-11	1.41E-11	1.41E-11	
R9	Queens Gardens	454003	376434	1.5	1.81E-02	6.51E-02	2.08E+00	8.53E+01	4.30E-01	2.09E+01	3.45E-01	1.32E+01	8.62E-03	1.08E-01	5.50E+00	8.68E+01	4.43E+01	4.34E-05	2.72E-03	3.47E-03	1.77E-01	6.86E-11	6.86E-11	6.86E-11	
R10	Allotments	454215	376436	1.5	2.05E-02	7.63E-02	2.36E+00	8.63E+01	4.89E-01	2.01E+01	3.92E-01	1.35E+01	9.77E-03	1.22E-01	5.14E+00	9.84E+01	4.15E+01	4.92E-05	2.07E-03	3.94E-03	1.66E-01	9.84E-11	9.84E-11	9.84E-11	
R11	Sherwood Cottage	454039	375916	1.5	1.02E-02	3.46E-02	1.16E+00	6.30E+01	2.39E-01	1.74E+01	1.94E-01	8.53E+00	4.84E-03	6.00E-02	6.60E+00	4.84E-01	5.32E+01	2.42E-05	2.66E-03	1.94E-03	2.13E-01	4.84E-11	4.84E-11	4.84E-11	
R12	Penny Green	454150	375796	1.5	8.66E-03	3.22E-02	9.83E-01	6.35E+01	2.00E-01	1.69E+01	1.58E+01	1.18E+01	5.08E-02	6.11E-02	4.09E+01	4.92E+01	2.05E+01	2.46E-03	1.64E-03	1.97E-01	4.09E-11	4.09E-11	4.09E-11		
R13	New Cottages	454227	375769	1.5	9.36E-03	2.87E-02	1.06E+00	7.76E+01	2.17E-01	1.88E+01	1.78E+01	1.20E+01	4.46E-03	5.49E-02	5.52E+00	4.42E+01	4.45E+01	2.21E-05	2.23E-03	1.77E-03	1.78E-01	4.42E-11	4.42E-11	4.42E-11	
R14	Penny Green Cottages	454240	375606	1.5	8.55E-03	2.65E-02	9.70E-01	6.70E+01	1.99E-01	1.88E+01	1.63E+01	1.07E+01	5.01E-02	5.56E+00	4.04E+01	4.48E+01	2.02E-05	2.24E-03	1.62E-03	1.79E-01	4.04E-11	4.04E-11	4.04E-11		
R15	Greenacres	454249	376216	1.5	1.89E-02	6.74E-02	2.17E+00	8.43E+01	4.46E-01	1.98E+01	3.60E+01	1.01E+01	8.99E-03	1.12E-01	5.53E+00	9.03E+01	4.46E+01	4.52E-05	2.23E-03	3.61E-03	1.78E-01	9.03E-11	9.03E-11	9.03E-11	
R16	Sprinfield Farm	454522	374844	1.5	1.14E-02	4.16E-02	1.29E+00	7.77E+01	2.66E-01	1.84E+01	2.17E-01	9.78E+00	5.41E-03	6.69E-02	5.07E+00	5.39E-01	4.09E+01	2.70E-05	2.04E-03	1.63E-03	1.63E-01	3.99E-11	3.99E-11	3.99E-11	
R17	Willowside	454579	375563	1.5	1.18E-02	4.03E-02	1.35E+00	7.89E+01	2.77E-01	1.86E+01	2.25E-01	1.04E+01	5.64E-03	6.97E-02	5.01E+00	5.62E-01	4.04E+01	2.81E-05	2.02E-03	2.25E-03	1.62E-01	6.62E-11	6.62E-11	6.62E-11	
R18	Belph	454598	375509	1.5	1.18E-02	4.14E-02	1.35E+00	7.82E+01	2.77E-01	1.81E+01	2.25E-01	9.82E+00	5.63E-03	6.96E-02	4.95E+00	5.61E-01	3.99E+01	2.81E-05	2.00E-03	2.25E-03	1.60E-01	6.51E-11	6.51E-11	6.51E-11	
R19	Gansburg Lodge	454639	375053	1.5	8.68E-03	2.88E-02	9.88E-01	7.36E+01	2.02E-01	1.82E+01	1.66E+01	8.00E+00	4.31E-03	5.11E-02	4.83E+00	4.12E+01	3.89E+01	2.06E-05	1.95E-03	1.65E-03	1.56E-01	4.12E-11	4.12E-11	4.12E-11	
R20	Fishpond Lodge	454692	374783	1.5	7.48E-03	1.88E-02	8.51E-01	6.34E+01	1.73E-01	1.68E+01	1.43E-01	9.74E-02	7.59E-03	2.43E-02	3.03E-02	3.57E+00	2.45E-01	2.88E+01	1.22E-05	1.44E-03	9.78E-04	1.15E-01	2.45E-11	2.45E-11	2.45E-11
R21	Hennywood Farm	454806	374792	1.5	6.35E-03	8.79E-03	7.27E-01	7.48E+01	1.52E-01	1.92E+01	1.21E-01	9.50E+00	3.76E-03	5.65E-02	3.03E+00	3.67E+01	4.55E+01	1.52E-05	2.28E-03	1.21E-03	1.85E-01	3.03E-11	3.03E-11	3.03E-11	
R22	Nursery Lodge	454540	374455	1.5	6.67E-03	1.18E-02	7.62E-01	6.63E+01	1.58E-01	1.65E+01	1.27E-01	8.28E+00	1.27E-03	1.37E-02	3.94E+00	4.24E+00	3.18E-01	3.42E+01	1.59E-05	1.71E-03	1.27E-03	1.37E-01	3.18E-11	3.18E-11	3.18E-11
R23	Gasworks Lodge	454676	374112	1.5	5.95E-03	1.14E-02	6.80E-01	5.91E+01	1.42E-01	1.47E+01	1.14E-01	8.12E+00	2.83E-03	3.51E-02	4.25E+00	2.83E-01	3.42E+01	1.42E-05	1.71E-03	1.13E-03	1.37E-01	2.83E-11	2.83E-11	2.83E-11	
R24	Hunccroft Lodge	454590	373995	1.5	5.49E-03	1.18E-02	6.29E-01	6.00E+01	1.31E-01	1.48E+01	1.05E-01	8.83E+00	2.62E-03	3.25E-02	3.67E+00	2.62E-01	2.96E+01	1.17E-05	1.48E-03	1.05E-03	1.18E-01	2.62E-11	2.62E-11	2.62E-11	
R25	Hunccroft	454461	373905	1.5	4.88E-03	1.25E-02	5.59E-01	5.61E+01	1.15E-01	1.45E+01	1.05E+01	8.31E+00	2.33E-03	2.89E-02	3.60E+00	2.33E-01	2.90E+01	1.31E-05	1.45E-03	9.32E-04	1.16E-01	2.33E-11	2.33E-11	2.33E-11	
R26	Hunteslea	454614	373668	1.5	4.60E-03	1.23E-02	5.27E-01	5.22E+01	1.08E-01	1.25E+01	8.79E-02	7.55E+00	2.19E-03	2.72E-02	3.16E+00	2.20E-01	2.55E+01	1.10E-05	1.27E-03	8.79E-04	1.02E-01	2.20E-11	2.20E-11	2.20E-11	
R27	Creswell Crag	453886	374373	1.5	3.49E-03	4.61E-03	4.02E-01	4.99E+01	1.99E-01	1.49E+01	6.66E-02	9.60E+00	1.66E-03	2.08E-02	5.03E+00	1.68E+01	4.06E+01	3.89E-05	2.03E-03	6.75E-04	1.62E-01	1.68E-11	1.68E-11	1.68E-11	
R28	Craggs Lodge	453711	374437	1.5	2.73E-03	4.79E-03	3.15E-01	4.83E+01	6.15E-02	1.22E+01	5.20E-02	9.53E+00	1.30E-03	1.63E-02	5.33E+00	1.31E-01	4.30E+01	6.55E-06	2.15E-03	6.24E-04	1.72E-01	1.31E-11	1.31E-11	1.31E-11	
R29	Holbeck	454359	374344	1.5	3.35E-03	7.82E-03	3.84E-01	4.31E+01	7.14E-02	1.12E+01	6.39E-02	6.46E+00	1.59E-03	1.98E-02	3.26E+00	1.60E-01	2.63E+01	8.00E-05	1.31E-03	5.40E-04	1.05E-01	1.60E-11	1.60E-11	1.60E-11	
R30	Sabroon Cottage	454354	373308	1.5	3.08E-03	6.74E-03	3.53E-01	4.20E+01	7.07E-02	1.07E+01	5.87E-02	6.29E+00	1.46E-03	1.82E-02	3.32E+00	1.47E-01	2.68E+01	7.35E-06	1.34E-03	5.88E-04	1.07E-01	1.47E-11	1.47E-11	1.47E-11	
R31	Badgers Copse	454355	373282	1.5	3.76E-03	5.49E-03	4.31E-01	4.57E+01	8.55E-02	1.17E+01	7.17E-02	6.29E+00	1.79E-03	2.23E-02	2.99E+00	1.80E-01	2.41E+01	8.99E-06	1.20E-03	7.19E-04	9.64E-02	1.80E-11	1.80E-11	1.80E-11	
R32	Willow Farm	453992	373813	1.5	5.11E-03	8.39E-03	5.87E-01	5.42E+01	1.20E-01	1.39E+01	9.74E-02	7.59E-03	2.43E-02	3.03E-02	3.57E+00	2.45E-01	2.88E+01	1.22E-05	1.44E-03	9.78E-04	1.15E-01	2.45E-11	2.45E-11	2.45E-11	
R33	Craggs Cottages	453681	374083	1.5	3.30E-03	9.18E-03	6.09E-01	5.77E+01	1.25E-01	1.47E+01	1.01E-01	8.85E+00	2.53E-03	3.15E-02	4.07E+00	2.54E-01	3.28E+01	1.27E-05	1.64E-03	1.01E-03	3.11E-01	2.54E-11	2.54E-11	2.54E-11	
R34	Bank House Farm	452936	374270	1.5	6.48E-03	1.02E-02	6.45E-01	6.51E+01	1.54E-01	1.58E+01	1.24E-01	9.77E+00	3.09E-03	3.85E-02	4.66E+00	3.10E-01	3.76E+01	1.55E-05	1.88E-03	1.24E-03	1.50E-01	3.10E-11	3.10E-11	3.10E-11	
R35	Mansefield Rd	452814	374274	1.5	6.92E-03	1.25E-02	7.95E-01	6.68E+01	1.65E-01	1.66E+01	1.32E-01	8.03E+00	3.00E-03	4.11E-02	4.33E+00	3.31E-01	3.49E+01	1.66E-05	1.74E-03	1.33E-03	1.39E-01	3.31E-11	3.31E-11	3.31E-11	
R36	Sheffield Rd	452706	374442	1.5	7.47E-03	1.78E-02	8.57E-01	7.62E+01	1.78E-01	1.88E+01	1.45E+01	1.11E+01	3.56E-03	4.43E-02	4.75E+00	3.57E-01	3.83E+01	1.79E-05	1.91E-03	1.43E-03	1.53E-01	3.57E-11	3.57E-11	3.57E-11	
R37	Sheffield Rd	452609	374535	1.5	7.55E-03	2.00E-02	8.65E-01	7.71E-01	1.78E-01	1.88E+01	1.44E-01	1.07E+01	3.60E-03	4.47E-02	4.70E+00	3.61E-01	3.79E+01	1.80E-05	1.90E-03	1.44E-03	1.52E-01	3.61E-11	3.61E-11	3.61E-11	
R38	Brookside Farm	452529	374812	1.5	7.51E-03	2.06E-02	8.60E-01	7.00E+01	1.75E-01	1.76E+01	1.44E-01</														

No.	Receptor name	X(m)	Y(m)	Z(m)	LTConc ug/m3 particulate stack 24hrs	P.99.41 ug/m3 particulate stack 24hrs	LTConc ug/m3 NOx stack 1hr	P.99.79 ug/m3 NOx stack 1hr	LTConc ug/m3 SO2 stack 1900s	P.99.90 ug/m3 SO2 stack 1900s	LTConc ug/m3 CO stack 8hrs	P.00.00 ug/m3 CO stack 8hrs	LTConc ug/m3 VOC stack 24hrs	LTConc ug/m3 HCl stack 1hr	P.00.00 ug/m3 HCl stack 1hr	LTConc ug/m3 HF stack 1hr	P.00.00 ug/m3 HF stack 1hr	LTConc ug/m3 group 1 metals stack 1hr	P.00.00 ug/m3 group 1 metals stack 1hr	LTConc ug/m3 group 2 metals stack 1hr	P.00.00 ug/m3 group 2 metals stack 1hr	LTConc ug/m3 dioxins stack 1hr	P.00.00 ug/m3 dioxins stack 1hr	
R1	Southfield Lane	453192	376043	1.5	2.32E-03	1.05E-03	2.64E-01	3.97E+01	5.41E-02	1.25E-01	4.43E-02	7.47E+00	1.10E-03	1.36E-02	5.17E+00	1.10E-01	4.17E+01	5.50E-06	2.09E-03	4.40E-04	1.67E-01	1.10E-11	1.10E-11	
R2	Whitwell PS	453071	376294	1.5	3.25E-03	2.77E-03	3.71E-01	5.83E+01	7.55E-02	1.64E-01	6.20E-02	8.86E+00	1.55E-03	1.92E-02	4.89E+00	1.55E-01	3.94E+01	7.73E-06	1.97E-03	6.18E-04	1.58E-01	1.55E-11	1.55E-11	
R3	Middlegate	453296	376109	1.5	2.56E-03	2.51E-03	2.90E-01	4.09E+01	5.85E-02	1.18E-01	4.87E-02	7.54E+00	1.22E-03	1.50E-02	3.97E+00	1.21E-01	6.04E+01	6.04E-06	1.60E-03	4.83E-04	1.28E-01	1.21E-11	1.21E-11	
R4	Loxley Lane	453382	376201	1.5	3.70E-03	6.15E-03	4.16E-01	4.83E+01	8.37E-02	1.36E-01	6.97E-02	7.71E+00	1.76E-03	2.15E-02	5.44E+00	1.74E-01	4.38E+01	8.68E-06	2.19E-03	6.94E-04	1.75E-01	1.74E-11	1.74E-11	
R5	Station Rd	453443	376240	1.5	4.69E-03	7.25E-03	5.27E-01	5.34E+01	1.07E-01	1.81E-01	8.80E-02	8.77E+00	2.23E-03	2.72E-02	6.02E+00	2.20E-01	4.86E+01	1.10E-05	2.43E-03	8.78E-04	1.94E-01	2.20E-11	2.20E-11	
R6	Allotments	453511	376271	1.5	5.92E-03	1.22E-02	6.66E-01	6.84E+01	1.37E-01	1.99E-01	1.11E-01	1.12E+01	2.82E-03	3.44E-02	5.79E+00	2.78E-01	4.67E+01	1.39E-05	2.34E-03	5.71E-04	1.87E-01	2.78E-11	2.78E-11	
R7	Parway	453522	376422	1.5	7.15E-03	1.50E-02	8.07E-01	7.75E+01	1.65E-01	1.99E-01	1.34E-01	1.22E+01	3.41E-03	4.17E-02	5.59E+00	3.36E-01	4.51E+01	1.68E-05	2.25E-03	1.34E-03	1.80E-01	3.36E-11	3.36E-11	
R8	Allotments	453588	374781	1.5	1.93E-03	3.48E-03	1.14E-01	6.97E+01	2.23E-01	1.64E-01	1.89E-01	9.88E+00	1.71E-03	5.97E-02	4.25E+00	1.14E-01	5.61E+00	9.16E-01	4.53E-01	4.58E-03	2.26E-03	1.81E-01	9.16E-11	9.16E-11
R9	Queens Gardens	454003	376434	1.5	2.45E-03	9.62E-02	2.20E+00	8.92E+01	4.53E-01	2.11E-01	4.65E-01	1.17E+01	1.17E-02	1.45E-01	5.55E+00	1.17E+00	4.47E+01	5.86E-05	2.24E-03	4.69E-03	1.79E-01	1.17E-10	1.17E-10	
R10	Allotments	454215	376436	1.5	2.98E-02	1.12E-01	3.43E+00	9.00E+01	7.16E-01	2.14E-01	5.68E-01	1.22E+01	1.42E-02	1.77E-01	5.26E+00	1.43E+00	4.24E+01	7.15E-05	2.12E-03	5.72E-03	1.70E-01	1.43E-10	1.43E-10	
R11	Sherwood Cottage	454039	375916	1.5	1.47E-02	5.57E-02	1.68E+00	6.71E+01	3.46E-01	1.66E-01	2.79E-01	1.17E+01	6.89E-03	8.71E-02	5.60E+00	7.02E-01	4.52E+01	3.51E-05	2.26E-03	2.81E-03	1.81E-01	7.02E-11	7.02E-11	
R12	Penny Green	454150	375796	1.5	1.33E-02	4.40E-02	1.52E+00	7.84E+01	3.12E-01	1.97E-01	2.52E-01	1.61E+00	6.31E-03	7.87E-02	6.02E+00	6.35E-01	4.86E+01	3.17E-05	2.43E-03	2.54E-03	1.94E-01	6.35E-11	6.35E-11	
R13	New Cottages	454227	375769	1.5	1.43E-02	4.88E-02	1.65E+00	8.16E+01	3.36E-01	2.06E-01	2.73E-01	1.06E+01	6.83E-03	8.51E-02	6.05E+00	6.86E-01	4.88E+01	3.43E-05	2.44E-03	2.75E-03	1.95E-01	6.86E-11	6.86E-11	
R14	Penny Green Cottages	454240	375606	1.5	1.36E-02	5.00E-02	1.56E+00	7.90E+01	3.18E-01	2.03E-01	2.59E-01	1.03E+01	6.47E-03	8.06E-02	6.09E+00	6.50E-01	4.91E+01	3.25E-05	2.45E-03	2.60E-03	1.96E-01	6.50E-11	6.50E-11	
R15	Greenacres	454249	376216	1.5	2.68E-02	9.39E-02	3.08E+00	8.83E+01	6.33E-01	2.03E-01	5.10E-01	1.19E+01	1.28E-02	1.59E-01	5.19E+00	1.28E+00	4.18E+01	6.42E-05	2.09E-03	5.31E-03	1.67E-01	1.28E-10	1.28E-10	
R16	Sprinfield Farm	454522	375484	1.5	1.94E-02	7.10E-02	2.23E+00	9.51E+01	4.61E-01	2.16E-01	3.69E-01	1.30E+01	9.23E-03	1.15E-01	5.53E+00	9.28E-01	4.46E+01	6.42E-05	2.23E-03	3.71E-03	1.78E-01	9.28E-10	9.28E-10	
R17	Willowside	454579	375563	1.5	1.94E-02	6.38E-02	2.23E+00	9.08E+01	4.57E-01	2.14E-01	3.69E-01	1.22E+01	9.23E-03	1.15E-01	5.53E+00	9.28E-01	4.31E+01	6.44E-05	2.16E-03	3.71E-03	1.73E-01	9.28E-10	9.28E-10	
R18	Belph	454598	375909	1.5	1.98E-02	7.36E-02	2.28E+00	9.22E+01	4.70E-01	2.14E-01	3.77E-01	1.30E+01	9.43E-03	1.18E-01	5.33E+00	9.48E-01	4.31E+01	6.44E-05	2.15E-03	3.79E-03	1.72E-01	9.48E-10	9.48E-10	
R19	Ganabrig Lodge	454639	375053	1.5	1.29E-02	4.28E-02	1.48E+00	8.16E+01	3.01E-01	1.98E-01	2.45E-01	1.18E+01	6.12E-03	7.63E-02	5.21E+00	6.15E-01	4.20E+01	3.08E-05	2.10E-03	2.44E-03	1.68E-01	6.15E-11	6.15E-11	
R20	Fishpond Lane	454692	374781	1.5	9.89E-03	3.48E-02	1.14E+00	6.97E+01	2.23E-01	1.64E-01	1.89E-01	9.88E+00	1.71E-03	5.97E-02	4.25E+00	1.14E-01	5.61E+00	9.16E-01	4.53E-01	4.58E-03	2.26E-03	1.81E-01	9.16E-11	
R21	Henny Moor Farm	454086	374792	1.5	5.93E-03	1.54E-02	6.80E-01	6.81E+01	1.41E-01	1.70E-01	1.13E-01	1.14E+01	2.26E-03	2.51E-02	5.84E+00	2.83E-01	4.71E+01	1.42E-05	2.60E-03	1.13E-03	1.89E-01	2.83E-11	2.83E-11	
R22	Nursery Lodge	454540	374415	1.5	7.44E-03	1.75E-02	8.55E-01	6.82E+01	1.78E-01	1.60E-01	1.42E-01	9.54E+00	3.54E-03	4.42E-02	5.15E+00	3.55E-01	4.15E+01	1.78E-05	2.07E-03	1.42E-03	1.66E-01	3.55E-11	3.55E-11	
R23	Gasworks Lodge	454676	374512	1.5	6.34E-03	1.71E-02	7.28E-01	5.88E+01	1.52E-01	1.49E-01	1.21E-01	7.93E+00	3.02E-03	3.76E-02	5.16E+00	3.03E-01	4.16E+01	1.52E-05	2.08E-03	1.21E-03	1.66E-01	3.03E-11	3.03E-11	
R24	Hunccroft Lodge	454590	373995	1.5	5.34E-03	9.69E-03	6.12E-01	6.00E+01	1.27E-01	1.48E-01	1.02E-01	6.69E+00	2.54E-03	3.16E-02	5.04E+00	2.55E-01	4.06E+01	1.28E-05	2.03E-03	1.02E-03	1.62E-01	2.55E-11	2.55E-11	
R25	Hunccroft	454461	373905	1.5	4.12E-03	8.87E-03	4.72E-01	5.32E+01	9.48E-02	1.35E-01	1.57E-01	7.83E-02	4.96E-03	2.44E-02	5.01E+00	1.97E-01	4.04E+01	9.88E-06	2.02E-03	7.86E-04	1.62E-01	1.97E-11	1.97E-11	
R26	Hunteslea	454614	373668	1.5	3.96E-03	9.31E-03	4.53E-01	4.90E+01	9.12E-02	1.27E-01	7.52E-02	5.23E+00	1.88E-03	2.34E-02	5.13E+00	1.89E-01	4.13E+01	9.94E-06	2.07E-03	7.55E-04	1.65E-01	1.89E-11	1.89E-11	
R27	Creswell Crags	453886	374373	1.5	2.35E-03	2.57E-03	2.68E-01	4.37E-01	5.34E-02	1.52E-01	4.45E-02	5.29E+00	1.12E-03	1.38E-02	4.49E+00	1.12E-01	3.61E+01	1.56E-05	1.81E-03	4.64E-04	1.45E-01	1.12E-11	1.12E-11	
R28	Crags Lodge	453711	374437	1.5	1.78E-03	1.10E-03	2.02E-01	4.02E+01	4.03E-02	1.06E-01	3.36E-02	4.25E+00	8.46E-04	1.05E-02	3.32E+00	8.43E-02	6.28E+01	4.27E-06	1.34E-03	3.37E-04	1.07E-01	8.43E-12	8.43E-12	
R29	Holbeck	454359	373444	1.5	2.39E-03	4.20E-03	2.72E-01	4.13E+01	5.33E-02	1.24E-01	4.53E-02	5.39E+00	1.14E-03	1.41E-02	3.98E+00	1.13E-01	3.21E+01	6.62E-06	1.60E-03	4.33E-04	1.28E-01	1.13E-11	1.13E-11	
R30	Sabraon Cottage	454354	373308	1.5	2.20E-03	3.09E-03	2.51E-01	4.11E+01	4.93E-02	1.11E-01	4.18E-02	5.24E+00	1.05E-03	1.30E-02	3.59E+00	1.05E-01	2.90E+01	5.23E-06	1.45E-03	4.18E-04	1.16E-01	1.05E-11	1.05E-11	
R31	Badgers Copse	454355	373281	1.5	1.88E-03	1.59E-03	2.12E-01	2.92E+01	4.25E-02	1.08E-01	3.57E-02	4.28E+00	9.95E-04	1.09E-02	3.67E+00	8.83E-02	2.96E+01	4.41E-06	1.48E-03	3.53E-04	1.18E-01	8.83E-12	8.83E-12	
R32	Willow Farm	453992	373813	1.5	2.39E-03	1.05E-03	2.70E-01	3.49E+01	5.52E-02	1.30E-01	4.53E-02	4.83E+00	1.14E-03	1.40E-02	3.91E+00	1.13E-01	3.15E+01	6.83E-06	1.58E-03	4.53E-04	1.26E-01	1.13E-11	1.13E-11	
R33	Crags Cottages	453681	374083	1.5	3.25E-03	2.11E-03	2.70E-01	4.93E+01	7.85E-02	1.17E-01	4.51E-02	5.37E+00	1.19E-03	1.39E-02	4.35E+00	1.12E-01	3.51E+01	5.62E-06	1.75E-03	4.49E-04	1.40E-01	1.17E-11	1.17E-11	
R34	Bank House Farm	452936	374270	1.5	3.25E-03	2.11E-03	2.70E-01	4.93E+01	7.85E-02	1.17E-01	4.51E-02	5.37E+00	1.19E-03	1.39E-02	4.35E+00	1.12E-01	3.51E+01	5.62E-06	1.75E-03	4.49E-04	1.40E-01	1.17E-11	1.17E-11	
R35	Mansfield Rd	452814	374274	1.5	3.80E-03	4.37E-03	4.33E-01	5.87E+01	8.81E-02	1.52E-01	7.20E-02	9.42E+00	1.81E-03	2.24E-02	4.41E+00	1.80E-01	3.56E+01	9.02E-06	1.78E-03	9.21E-04	1.42E-01	1.80E-11	1.80E-11	
R36	Sheffield Rd	452706	374442	1.5	4.87E-03	4.37E-03	5.56E-01	6.77E+01	1.15E-01	1.76E-01	9.24E-02	1.09E+01	2.32E-02	2.87E-02	4.87E+00	2.32E-01	3.92E+01	1.16E-05	1.96E-03	6.26E-04	1.57E-01	2.32E-11	2.32E-11	
R37	Sheffield Rd	452609	374535	1.5	5.54E-03	5.31E-03</																		

Table with 32 columns: No., Receptor name, X(m), Y(m), Z(m), and 28 pollutant concentration columns (e.g., TConc, P.90.41, etc.). Rows list various receptors like Southfield Lane, Whitwell PS, Middlegate, etc., with their coordinates and corresponding pollutant levels.

met data variability
Scampton 2016
surface roughness at met site = 0.005m
surface roughness 0.3m
terrain effects off
main building - silo building

No.	Receptor name	X(m)	Y(m)	Z(m)	LC(Conc) ug/m3 particulate stack 24hrs	P. 90.41 ug/m3 particulate stack 1hr	LC(Conc) ug/m3 NOx stack 1hr	P. 90.79 ug/m3 NOx stack 1hr	LC(Conc) ug/m3 SO2 stack 1900s	P. 99.90 ug/m3 SO2 stack 1900s	LC(Conc) ug/m3 CO stack 8hrs	P. 100.00 ug/m3 CO stack 8hrs	LC(Conc) ug/m3 VOC stack 24hrs	LC(Conc) ug/m3 HCl stack 1hr	P. 100.00 ug/m3 HCl stack 1hr	LC(Conc) ug/m3 HF stack 1hr	P. 100.00 ug/m3 HF stack 1hr	LC(Conc) ug/m3 group 2 metals stack 1hr	P. 100.00 ug/m3 group 2 metals stack 1hr	LC(Conc) ug/m3 group 2 metals stack 1hr	P. 100.00 ug/m3 group 2 metals stack 1hr	LC(Conc) ug/m3 dioxins stack 1hr	P. 100.00 ug/m3 dioxins stack 1hr	
R1	Southfield Lane	453192	376043	1.5	2.25E-03	5.12E-04	2.59E-01	3.74E+01	5.38E-02	1.28E+01	4.30E-02	7.75E+00	1.07E-03	1.34E-02	4.69E+00	1.08E-01	3.78E+01	5.40E-06	1.89E-03	4.32E-04	1.51E-01	1.08E-11		
R2	Whitwell PS	453071	376294	1.5	3.38E-03	2.37E-03	3.88E-01	6.33E+01	8.08E-02	1.74E+01	6.44E-02	1.05E+01	1.61E-03	2.00E-02	5.28E+00	1.62E-01	4.26E+01	8.08E-06	2.33E-03	6.47E-04	1.70E-01	1.62E-11		
R3	Middlegate	453296	376109	1.5	2.28E-03	1.48E-03	2.62E-01	3.70E+01	5.25E-02	1.26E+01	4.35E-02	9.20E+00	1.09E-03	1.35E-02	4.95E+00	1.09E-01	3.99E+01	5.45E-06	1.99E-03	4.36E-04	1.60E-01	1.09E-11		
R4	Loxley Lane	453382	376201	1.5	3.05E-03	5.38E-03	3.50E-01	4.16E+01	6.86E-02	1.38E+01	5.83E-02	7.69E+00	1.45E-03	1.81E-02	5.52E+00	1.46E-01	4.45E+01	7.28E-06	2.23E-03	5.83E-04	1.78E-01	1.46E-11		
R5	Station Rd	453443	376240	1.5	4.03E-03	8.40E-03	4.62E-01	4.90E+01	9.20E-02	1.41E+01	7.69E-02	6.83E+00	1.92E-03	2.39E-02	6.10E+00	1.93E-01	4.92E+01	6.98E-06	2.46E-03	7.70E-04	1.97E-01	1.93E-11		
R6	Allotments	453511	376271	1.5	5.46E-03	1.26E-02	6.27E-01	6.31E+01	1.28E-01	1.74E+01	1.04E-01	8.86E+00	2.60E-03	3.24E-02	6.27E+00	2.61E-01	5.06E+01	1.31E-05	2.53E-03	1.04E-03	2.02E-01	2.61E-11		
R7	Parkway	453522	376242	1.5	6.52E-03	1.86E-02	7.49E-01	6.87E+01	1.53E-01	1.85E+01	1.24E-01	9.36E+00	3.11E-03	3.87E-02	5.73E+00	3.12E-01	4.62E+01	1.56E-05	2.31E-03	1.25E-03	1.85E-01	3.12E-11		
R8	Allotments	453588	376351	1.5	1.46E-03	6.18E-02	1.67E+00	8.29E+01	3.44E-01	1.97E+01	2.77E-01	1.33E-01	6.94E-02	8.64E-02	3.72E+00	6.96E-01	4.62E+01	3.48E-05	2.31E-03	2.79E-03	1.85E-01	6.96E-11		
R9	Queens Gardens	454003	376434	1.5	1.73E-03	7.09E-02	1.99E+00	8.29E+01	4.10E-01	1.97E+01	3.20E-01	1.18E-01	8.28E-02	1.03E-01	5.21E+00	8.29E-01	4.20E+01	4.14E-05	2.10E-03	3.31E-03	1.68E-01	8.29E-11		
R10	Allotments	454215	376436	1.5	2.05E-02	7.29E-02	2.35E+00	8.54E+01	4.86E-01	2.10E+01	3.90E-01	1.17E+01	9.76E-03	1.21E-01	5.32E+00	9.79E-01	4.89E+01	4.89E-05	2.14E-03	3.92E-03	1.71E-01	9.79E-11		
R11	Sherwood Cottage	454039	375916	1.5	1.19E-02	4.07E-02	1.37E+00	7.50E+01	2.81E-01	1.95E+01	2.27E-01	1.14E+01	5.68E-03	7.06E-02	6.34E+00	5.69E-01	5.11E+01	2.85E-05	2.55E-03	2.28E-03	2.04E-01	5.69E-11		
R12	Penny Green	454150	375796	1.5	1.32E-02	4.63E-02	1.51E+00	7.99E+01	3.11E-01	2.01E+01	2.51E-01	1.09E+01	6.27E-02	7.78E-02	6.29E+00	6.27E-01	5.07E+01	3.14E-05	2.53E-03	2.51E-03	2.03E-01	6.27E-11		
R13	New Cottages	454227	375769	1.5	1.48E-02	5.38E-02	1.69E+00	8.34E+01	3.49E-01	2.14E+01	2.82E-01	1.17E+01	7.03E-03	8.74E-02	5.99E+00	7.05E-01	4.83E+01	3.52E-05	2.41E-03	2.82E-03	1.93E-01	7.05E-11		
R14	Penny Green Cottages	454240	375606	1.5	1.41E-02	5.28E-02	1.61E+00	7.94E+01	3.31E-01	1.94E+01	2.68E-01	1.16E+01	6.69E-03	8.32E-02	6.16E+00	6.71E-01	4.96E+01	3.25E-05	2.48E-03	2.68E-03	1.99E-01	6.71E-11		
R15	Greenacres	454249	376216	1.5	1.97E-02	7.80E-02	2.25E+00	8.62E+01	4.63E-01	2.06E+01	3.74E-01	1.14E-01	9.37E-03	1.16E-01	5.51E+00	9.39E-01	4.44E+01	4.69E-05	2.22E-03	3.75E-03	1.78E-01	9.39E-11		
R16	Sprinfield Farm	454522	375484	1.5	1.85E-02	7.03E-02	2.12E+00	9.04E+01	4.39E-01	2.01E+01	3.54E-01	1.26E-01	8.83E-03	1.10E-01	5.19E+00	8.85E-01	4.49E+01	4.43E-05	2.09E-03	3.54E-03	1.67E-01	8.85E-11		
R17	Willowside	454579	375563	1.5	1.93E-02	6.78E-02	2.21E+00	8.76E+01	4.54E-01	2.04E+01	3.68E-01	1.27E-01	9.17E-03	1.14E-01	5.16E+00	9.20E-01	4.16E+01	4.60E-05	2.08E-03	3.68E-03	1.66E-01	9.20E-11		
R18	Belph	454583	375509	1.5	1.92E-02	6.95E-02	2.20E+00	8.81E+01	4.54E-01	2.04E+01	3.67E-01	1.22E-01	9.15E-03	1.14E-01	5.05E+00	9.18E-01	4.59E+01	4.59E-05	2.04E-03	3.67E-03	1.63E-01	9.18E-11		
R19	Ganabrig Lodge	454639	375053	1.5	1.14E-02	4.05E-02	1.30E+00	7.53E+01	2.65E-01	1.89E+01	2.17E-01	1.14E-01	5.41E-03	6.73E-02	5.05E+00	5.42E-01	4.07E+01	2.71E-05	2.04E-03	2.17E-03	1.63E-01	5.42E-11		
R20	Fishpond Lodge	454692	374783	1.5	1.84E-03	2.58E-02	1.01E+00	6.33E+01	3.20E-01	1.55E+01	1.69E-01	8.34E-02	1.18E-03	1.46E-02	4.08E+00	4.22E-01	3.29E+01	1.50E-05	1.69E-03	1.32E-03	1.23E-01	4.22E-11		
R21	Henny Moor Farm	454806	374792	1.5	4.86E-03	8.81E-03	5.56E-01	5.81E+01	1.15E-01	1.99E+01	2.79E+00	2.32E-02	2.87E-02	4.95E+00	5.23E-01	4.00E+01	1.16E-05	2.00E-03	9.27E-04	1.60E-03	2.32E-01	1.60E-11		
R22	Nursery Lodge	454540	374455	1.5	6.59E-03	1.42E-02	7.55E-01	6.35E+01	1.57E-01	1.60E+01	1.26E-01	9.35E+00	3.14E-03	3.90E-02	4.17E+00	3.14E-01	3.37E+01	1.57E-05	1.68E-03	1.26E-03	1.35E-01	3.14E-11		
R23	Gasworks Lodge	454676	374112	1.5	5.91E-03	1.50E-02	6.76E-01	5.41E+01	1.41E-01	1.40E+01	1.13E-01	7.67E+00	2.81E-03	3.49E-02	3.56E+00	2.82E-01	2.87E+01	1.44E-05	1.42E-03	1.13E-03	1.15E-01	2.82E-11		
R24	Hunccroft Lodge	454590	373995	1.5	5.05E-03	1.11E-02	5.78E-01	5.39E+01	1.19E-01	1.42E+01	9.65E-02	7.17E+00	2.40E-03	2.99E-02	3.46E+00	2.41E-01	2.79E+01	1.20E-05	1.40E-03	9.63E-04	1.12E-01	2.41E-11		
R25	Hunccroft	454461	373905	1.5	3.99E-03	9.14E-03	4.56E-01	4.57E+01	9.16E-02	1.26E+01	7.63E-02	6.55E+00	1.90E-03	2.36E-02	3.51E+00	1.90E-01	2.83E+01	5.91E-05	1.42E-03	7.61E-04	1.13E-01	1.90E-11		
R26	Hunteslea	454614	373668	1.5	3.90E-03	9.13E-03	4.46E-01	4.49E+01	8.97E-02	1.19E+01	7.46E-02	5.80E+00	1.86E-03	2.30E-02	3.30E+00	1.86E-01	2.66E+01	6.29E-05	1.33E-03	7.43E-04	1.06E-01	1.86E-11		
R27	Creswell Crags	453886	374373	1.5	2.65E-03	2.34E-03	3.04E-01	3.73E+01	6.06E-02	1.34E+01	5.07E-02	5.70E+00	1.26E-03	1.57E-02	5.01E+00	1.27E-01	4.04E+01	6.30E-05	2.02E-03	5.07E-04	1.61E-01	1.27E-11		
R28	Crags Lodge	453711	374437	1.5	2.61E-03	5.25E-04	3.00E-01	4.31E+01	6.10E-02	1.35E+01	4.98E-02	5.78E+00	1.24E-03	1.55E-02	4.87E+00	1.25E-01	3.93E+01	6.24E-05	1.96E-03	4.99E-04	1.57E-01	1.25E-11		
R29	Holbeck	454359	374444	1.5	2.60E-03	5.01E-03	2.97E-01	3.62E+01	5.80E-02	1.09E+01	4.57E-02	4.64E+00	1.24E-03	1.53E-02	3.14E+00	1.24E-01	3.53E+01	6.28E-05	1.27E-03	4.95E-04	1.01E-01	1.24E-11		
R30	Sabroon Cottage	454534	373308	1.5	2.46E-03	4.51E-03	2.81E-01	3.51E+01	5.49E-02	1.07E+01	4.71E-02	4.06E+00	1.17E-03	1.45E-02	3.21E+00	1.17E-01	2.59E+01	5.86E-05	1.30E-03	4.68E-04	1.04E-01	1.17E-11		
R31	Badgers Copse	454355	373282	1.5	2.47E-03	4.94E-04	2.84E-01	4.38E+01	6.03E-02	1.18E+01	4.71E-02	8.23E+00	1.18E-03	1.47E-02	3.17E+00	1.18E-01	2.56E+01	5.91E-05	1.28E-03	4.73E-04	1.02E-01	1.18E-11		
R32	Willow Farm	453992	373813	1.5	2.47E-03	4.04E-04	2.83E-01	4.07E+01	5.80E-02	1.35E+01	4.72E-02	8.33E+00	1.18E-03	1.46E-02	3.73E+00	1.18E-01	3.01E+01	5.91E-05	1.50E-03	4.72E-04	1.20E-01	1.18E-11		
R33	Henny Moor Farm	453081	374083	1.5	2.65E-03	2.13E-04	3.04E-01	4.44E+01	6.23E-02	1.49E+01	5.06E-02	9.93E+00	1.26E-03	1.57E-02	4.22E+00	1.27E-01	3.41E+01	6.33E-05	1.70E-03	3.66E-04	1.36E-01	1.27E-11		
R34	Bank House Farm	452936	374270	1.5	2.42E-03	4.05E-04	2.76E-01	3.48E+01	5.51E-02	1.16E+01	4.61E-02	8.31E+00	1.15E-03	1.43E-02	4.89E+00	1.15E-01	3.94E+01	5.75E-05	1.97E-03	4.60E-04	1.58E-01	1.15E-11		
R35	Mansefield Rd	452814	374274	1.5	2.40E-03	2.82E-04	2.74E-01	4.21E+01	5.47E-02	1.36E+01	4.59E-02	7.79E+00	1.14E-03	1.42E-02	4.60E+00	1.14E-01	3.71E+01	5.71E-05	1.85E-03	4.57E-04	1.48E-01	1.14E-11		
R36	Sheffield Rd	452706	374442	1.5	2.86E-03	1.11E-04	3.26E-01	5.19E+01	6.56E-02	1.40E+01	5.47E-02	1.01E+01	1.36E-03	1.69E-02	4.57E+00	1.36E-01	3.69E+01	6.79E-05	1.84E-03	5.44E-04	1.47E-01	1.36E-11		
R37	Sheffield Rd	452609	374535	1.5	3.40E-03	7.62E-05	3.88E-01	5.77E+01	8.01E-02	1.70E+01	6.50E-02	1.04E-01	1.62E-03	2.00E-02	4.88E+00	1.62E-01								

No.	Receptor name	X(m)	Y(m)	Z(m)	Concentration (ug/m ³)																	
					LC(Conc) (ug/m ³) (particulate) (stack) - 1 hr	P.90.41 (ug/m ³) (particulate) (stack) - 1 hr	LC(Conc) (ug/m ³) (NOx) (stack) - 1 hr	P.90.79 (ug/m ³) (NOx) (stack) - 1 hr	LC(Conc) (ug/m ³) (SO2) (stack) - 1 hr	P.90.90 (ug/m ³) (SO2) (stack) - 1 hr	LC(Conc) (ug/m ³) (CO) (stack) (R) - 8hrs	P.0.00.00 (ug/m ³) (CO) (stack) (R) - 8hrs	LC(Conc) (ug/m ³) (VOC) (stack) - 1 hr	P.0.00.00 (ug/m ³) (VOC) (stack) - 1 hr	LC(Conc) (ug/m ³) (HCl) (stack) - 1 hr	P.0.00.00 (ug/m ³) (HCl) (stack) - 1 hr	LC(Conc) (ug/m ³) (HF) (stack) - 1 hr	P.0.00.00 (ug/m ³) (HF) (stack) - 1 hr	LC(Conc) (ug/m ³) (group 1 metals) (stack) - 1 hr	P.0.00.00 (ug/m ³) (group 1 metals) (stack) - 1 hr	LC(Conc) (ug/m ³) (group 2 metals) (stack) - 1 hr	P.0.00.00 (ug/m ³) (group 2 metals) (stack) - 1 hr
R1	Southfield Lane	453192	376043	1.5	1.34E-03	6.88E-05	1.53E-01	2.57E+01	3.18E-02	9.01E+00	2.54E-02	4.63E+00	6.36E-04	7.91E-03	5.75E+00	6.38E-02	4.64E+01	3.19E-06	2.32E-03	2.55E-04	1.85E-01	6.38E-12
R2	Whitwell PS	453071	376294	1.5	2.08E-03	2.16E-04	2.38E-01	4.42E+01	4.93E-02	1.35E+01	3.95E-02	6.78E+00	9.88E-04	1.23E-02	5.17E+00	9.92E-02	4.17E+01	4.96E-06	2.09E-03	3.97E-04	1.67E-01	9.92E-12
R3	Middlegate	453296	376109	1.5	1.26E-03	1.78E-04	1.44E-01	2.29E+01	2.94E-02	8.57E+00	2.39E-02	4.82E+00	5.98E-04	7.43E-03	4.24E+00	5.99E-02	2.99E-06	1.71E-03	2.40E-04	1.37E-01	5.99E-12	
R4	Loxley Lane	453432	376201	1.5	1.42E-03	4.13E-04	1.62E-01	2.51E+01	3.20E-02	8.92E+00	2.70E-02	4.88E+00	6.78E-04	8.37E-03	3.51E+00	6.75E-02	2.83E+01	3.38E-06	1.41E-03	2.70E-04	1.13E-01	6.75E-12
R5	Station Rd	453443	376240	1.5	1.69E-03	8.12E-04	1.91E-01	2.77E+01	3.76E-02	8.72E+00	3.18E-02	5.27E+00	8.03E-04	9.86E-03	4.07E+00	7.95E-02	3.28E+01	3.97E-06	1.64E-03	3.18E-04	1.31E-01	7.95E-12
R6	Allotments	453511	376271	1.5	2.16E-03	1.53E-03	2.43E-01	3.74E+01	4.86E-02	1.04E+01	4.04E-02	5.88E+00	1.03E-03	1.25E-02	5.03E+00	1.01E-01	4.05E+01	5.05E-06	2.03E-03	4.04E-04	1.62E-01	1.01E-11
R7	Parkway	453522	376242	1.5	2.65E-03	2.85E-03	2.98E-01	4.00E+01	5.98E-02	1.30E+01	4.97E-02	6.35E+00	1.26E-03	1.54E-02	5.39E+00	1.24E-01	4.34E+01	6.22E-06	2.17E-03	4.97E-04	1.74E-01	1.24E-11
R8	Allotments	453588	376351	1.5	1.53E-03	1.35E-02	6.70E-01	6.79E+01	1.36E-01	1.74E+01	1.11E-01	8.63E-02	3.22E-03	3.46E-02	5.97E+00	2.79E-01	4.81E+01	1.44E-03	2.41E-03	1.12E-03	1.93E-01	1.79E-11
R9	Queens Gardens	454003	376434	1.5	7.89E-03	2.35E-02	8.98E-01	6.66E+01	1.81E-01	1.96E+01	1.49E-01	8.35E+00	3.76E-03	4.64E-02	5.53E+00	3.74E-01	4.46E+01	1.87E-03	2.23E-03	1.50E-03	1.78E-01	3.74E-11
R10	Allotments	454215	376436	1.5	1.29E-02	4.53E-02	1.48E+00	7.75E+00	3.08E-01	1.80E+01	2.45E-01	1.08E+01	1.64E-03	7.63E-02	5.48E+00	6.15E-01	4.42E+01	3.08E-03	2.21E-03	2.46E-03	1.77E-01	6.15E-11
R11	Sherwood Cottage	454039	375916	1.5	5.39E-03	1.38E-02	6.18E-01	5.42E+01	1.28E-01	1.48E+01	1.03E-01	9.38E+00	2.57E-03	3.19E-02	4.87E+00	2.57E-01	3.93E+01	1.12E-05	1.97E-03	1.03E-03	1.57E-01	2.57E-11
R12	Penny Farm	454150	375796	1.5	4.90E-03	1.27E-02	5.61E-01	4.43E+01	1.14E-01	1.46E+01	9.31E-02	2.33E-02	2.90E-02	5.43E+00	2.34E-01	4.38E+01	1.27E-05	1.93E-03	1.95E-04	1.75E-01	2.34E-11	
R13	New Cottages	454227	375769	1.5	5.65E-03	1.57E-02	6.48E-01	5.21E+01	1.32E-01	1.56E+01	1.07E-01	8.99E+00	2.69E-03	3.35E-02	5.93E+00	2.70E-01	4.78E+01	1.35E-05	2.39E-03	1.08E-03	1.91E-01	2.70E-11
R14	Penny Green Cottages	454240	375606	1.5	5.09E-03	1.37E-02	5.82E-01	4.71E+01	1.19E-01	1.46E+01	9.67E-02	7.13E+00	2.42E-03	3.01E-02	6.65E+00	2.42E-01	5.37E+01	1.21E-05	2.68E-03	6.99E-04	2.15E-01	2.42E-11
R15	Greenacres	454249	376216	1.5	1.22E-02	3.92E-02	1.39E+00	8.06E+01	2.90E-01	2.13E+01	2.31E-01	1.15E-01	5.79E-03	7.21E-02	5.80E+00	5.81E-01	4.67E+01	2.91E-05	2.34E-03	2.32E-03	1.87E-01	5.81E-11
R16	Sprinfeld Farm	454522	375484	1.5	9.06E-03	3.13E-02	1.04E+00	7.13E+01	2.10E-01	1.71E+01	1.72E-01	6.66E+00	4.31E-03	5.36E-02	5.53E+00	4.32E-01	4.46E+01	2.16E-05	2.23E-03	1.73E-03	1.78E-01	4.32E-11
R17	Willowside	454579	375563	1.5	9.20E-03	3.07E-02	1.05E+00	7.27E+01	2.13E-01	1.87E+01	1.75E-01	9.12E+00	4.38E-03	5.44E-02	5.74E+00	4.39E-01	4.63E+01	2.19E-05	2.31E-03	1.75E-03	1.85E-01	4.39E-11
R18	Belph	454598	375509	1.5	9.60E-03	3.30E-02	1.10E+00	7.19E+01	2.22E-01	1.86E+01	1.83E-01	8.28E+00	4.57E-03	5.68E-02	5.69E+00	4.58E-01	4.59E+01	2.29E-05	2.29E-03	1.83E-03	1.84E-01	4.58E-11
R19	Ganabrig Lodge	454639	375953	1.5	9.46E-03	3.53E-02	1.08E+00	7.55E+01	2.23E-01	1.86E+01	1.80E-01	1.09E+01	4.51E-03	5.60E-02	5.25E+00	4.52E-01	4.24E+01	2.26E-05	2.12E-03	1.81E-03	1.69E-01	4.52E-11
R20	Fishpond Lodge	454692	374781	1.5	8.58E-03	2.72E-02	9.84E-01	6.93E+01	2.01E-01	1.71E+01	1.63E-01	8.09E+00	3.11E-03	4.98E-02	6.09E+00	4.91E-02	3.02E+01	2.46E-06	1.51E-03	1.96E-04	1.21E-01	4.91E-11
R21	Hennywood Farm	454806	374702	1.5	4.23E-03	5.58E-03	4.84E-01	5.75E+00	9.98E-02	1.60E+01	8.04E-02	1.19E-01	2.01E-02	2.50E-02	6.49E+00	2.02E-01	5.23E+01	1.00E-05	2.62E-03	8.07E-04	2.09E-01	2.02E-11
R22	Nursery Lodge	454540	374455	1.5	5.68E-03	9.31E-03	6.51E-01	6.58E+00	1.34E-01	1.80E+01	1.08E-01	1.00E+01	2.70E-03	3.36E-02	4.81E+00	2.71E-01	3.88E+01	1.35E-05	1.94E-03	1.08E-03	1.55E-01	2.71E-11
R23	Gasworks Lodge	454676	374112	1.5	5.25E-03	9.89E-03	6.02E-01	5.85E+00	1.24E-01	1.55E+01	9.99E-02	1.41E+00	2.50E-03	3.11E-02	5.11E+00	2.51E-01	4.12E+01	1.26E-05	2.06E-03	1.00E-03	1.65E-01	2.51E-11
R24	Hunccroft Lodge	454590	373995	1.5	4.82E-03	7.70E-03	5.53E-01	5.68E+00	1.15E-01	1.46E+01	9.18E-02	7.23E+00	2.30E-03	2.86E-02	5.28E+00	2.30E-01	4.26E+01	1.15E-05	2.13E-03	9.21E-04	1.70E-01	2.30E-11
R25	Hunccroft	454641	373905	1.5	4.11E-03	6.90E-03	4.71E-01	5.42E+00	1.08E-01	1.46E+01	7.82E-02	6.59E+00	1.96E-03	2.43E-02	5.19E+00	1.96E-01	4.91E+01	1.26E-05	2.09E-03	7.85E-04	1.67E-01	1.96E-11
R26	Hunteslea	454614	373668	1.5	4.03E-03	7.85E-03	4.62E-01	5.13E+00	9.65E-02	1.38E+01	7.67E-02	5.87E+00	1.92E-03	2.39E-02	4.85E+00	1.93E-01	6.83E+00	1.96E-05	1.90E-03	7.70E-04	1.57E-01	1.93E-11
R27	Creswell Crags	453886	374373	1.5	2.02E-03	2.15E-03	2.31E-01	3.46E+01	4.59E-02	1.18E+01	3.83E-02	5.25E+00	9.64E-04	1.19E-02	5.37E+00	9.62E-02	3.91E+01	9.61E-06	1.16E-03	8.50E-04	1.73E-01	9.62E-11
R28	Crags Lodge	453711	374437	1.5	1.38E-03	5.41E-04	1.57E-01	2.52E+01	3.17E-02	1.11E+01	2.60E-02	4.82E+00	6.56E-04	8.10E-03	4.11E+00	6.53E-02	3.31E-01	3.26E-06	1.66E-03	2.61E-04	1.32E-01	6.53E-11
R29	Holbeck	454359	373444	1.5	2.43E-03	5.59E-03	2.77E-01	3.87E+01	5.49E-02	1.17E+01	4.61E-02	4.44E+00	1.16E-03	1.43E-02	3.87E+00	1.16E-01	3.78E+00	1.56E-05	1.66E-04	6.62E-04	1.25E-01	1.16E-11
R30	Sabroon Cottage	454354	373308	1.5	2.20E-03	4.63E-03	2.51E-01	3.90E+01	4.95E-02	1.08E+01	4.17E-02	3.98E+00	1.05E-03	1.30E-02	3.51E+00	1.05E-01	2.83E+00	1.41E-05	1.49E-04	1.13E-01	1.05E-11	
R31	Badgers Copse	454339	373282	1.5	1.05E-03	2.85E-04	1.19E-01	1.78E+01	2.45E-02	9.53E+00	1.98E-02	5.00E+00	6.15E-03	4.12E+00	4.96E-02	2.32E+01	2.48E-06	1.66E-03	1.98E-04	1.33E-01	4.96E-11	
R32	Willow Farm	453992	373813	1.5	1.05E-03	2.85E-04	1.19E-01	1.78E+01	2.45E-02	9.53E+00	1.98E-02	5.00E+00	6.15E-03	4.12E+00	4.96E-02	2.32E+01	2.48E-06	1.66E-03	1.98E-04	1.33E-01	4.96E-11	
R33	Crags Cottages	453681	374083	1.5	9.67E-04	4.94E-04	1.09E-01	1.91E+01	2.31E-02	7.10E+00	1.96E-02	3.11E+00	4.98E-04	6.09E-03	3.75E+00	4.91E-02	3.02E+01	2.46E-06	1.51E-03	1.96E-04	1.21E-01	4.91E-11
R34	Bank House Farm	453936	374270	1.5	1.50E-03	2.06E-04	1.70E-01	2.71E+01	3.49E-02	1.03E+01	2.83E-02	4.53E+00	7.16E-04	8.80E-03	4.23E+00	7.10E-02	3.41E+01	3.55E-06	1.70E-03	2.84E-04	1.36E-01	7.10E-11
R35	Mansefield Rd	452814	374274	1.5	1.91E-03	2.14E-04	2.17E-01	3.54E+01	4.43E-02	1.22E+01	3.60E-02	9.99E+00	1.12E-02	4.78E+00	9.02E-02	3.85E+01	4.51E-06	1.93E-03	3.61E-04	1.54E-01	9.02E-11	
R36	Sheffield Rd	452706	374442	1.5	2.53E-03	1.13E-03	2.88E-01	4.62E+01	5.84E-02	1.26E+01	4.78E-02	6.16E+00	1.21E-03	1.49E-02	5.07E+00	1.20E-01	4.09E+01	6.00E-05	2.04E-03	4.80E-04	1.64E-01	1.20E-11
R37	Sheffield Rd	452609	374535	1.5	3.12E-03	1.26E-03	3.55E-01	4.70E+01	7.26E-02	1.62E+01	5.90E-02	1.08E+01	1.49E-03	1.84E-02	5.42E+00	1.48E-01	4.37E+01	7.40E-05	2.18E-03	5.92E-04	1.75E-01	1.48E-11
R38	Brookside Farm	452589	374821	1.5	4.27E-03	1.21E-03	4.88E-01	6.72														

No.	Receptor name	X(m)	Y(m)	Z(m)	L1Conc (ug/m3) [particulate] stack 24hrs	P.90.41 (ug/m3) [particulate] stack 24hrs	L1Conc (ug/m3) [NOx] stack 1hr	P.99.79 (ug/m3) [NOx] stack 1hr	L1Conc (ug/m3) [SO2] stack 900s	P.99.90 (ug/m3) [SO2] stack 900s	L1Conc (ug/m3) [CO] stack 8hrs	P100.00 (ug/m3) [CO] stack 8hrs	L1Conc (ug/m3) [VOC] stack 24hrs	L1Conc (ug/m3) [HCl] stack 1hr	P100.00 (ug/m3) [HCl] stack 1hr	L1Conc (ug/m3) [HF] stack 1hr	P100.00 (ug/m3) [HF] stack 1hr	L1Conc (ug/m3) [group 1 metals] stack 1hr	P100.00 (ug/m3) [group 1 metals] stack 1hr	L1Conc (ug/m3) [group 2 metals] stack 1hr	P100.00 (ug/m3) [group 2 metals] stack 1hr	L1Conc (ug/m3) [dioxins] stack 1hr	P100.00 (ug/m3) [dioxins] stack 1hr	
R1	Southfield Lane	453192	376043	1.5	1.75E-03	3.81E-04	2.01E-01	3.46E+01	4.16E-02	1.05E-01	3.34E-02	5.83E+00	8.35E-04	1.04E-02	5.45E+00	8.38E-02	4.39E+01	4.19E-06	2.20E-03	3.35E-04	1.76E-01	8.38E-12		
R2	Whitwell PS	453071	376294	1.5	2.59E-03	9.65E-04	2.97E-01	5.09E+01	6.10E-02	1.53E-01	4.92E-02	7.85E+00	1.23E-03	1.53E-02	5.34E+00	1.24E-01	4.31E+01	6.18E-06	2.15E-03	4.94E-04	1.72E-01	8.22E-12		
R3	Middlegate	453296	376109	1.5	1.73E-03	9.12E-04	1.97E-01	2.97E+01	3.98E-02	9.09E+00	3.28E-02	5.97E+00	8.22E-04	1.02E-02	3.97E+00	8.22E-02	3.20E+01	4.11E-06	1.60E-03	3.29E-04	1.28E-01	8.22E-12		
R4	Loxley Lane	453382	376201	1.5	2.26E-03	1.74E-03	2.56E-01	3.63E+01	5.09E-02	1.13E-01	4.26E-02	6.42E+00	1.08E-03	1.32E-02	4.51E+00	1.07E-01	3.64E+01	5.33E-06	1.82E-03	4.27E-04	1.46E-01	1.07E-11		
R5	Station Rd	453443	376240	1.5	2.84E-03	2.38E-03	3.20E-01	4.34E+01	6.42E-02	1.18E-01	5.32E-02	6.69E+00	1.35E-03	1.65E-02	5.16E+00	1.33E-01	4.61E+01	6.08E-06	2.08E-03	5.33E-04	1.66E-01	1.33E-11		
R6	Allotments	453511	376271	1.5	3.64E-03	3.93E-03	4.09E-01	4.91E+01	8.32E-02	1.67E-01	6.80E-02	7.60E+00	1.73E-03	2.11E-02	5.79E+00	1.70E-01	4.67E+01	8.52E-06	2.34E-03	6.81E-04	1.87E-01	1.70E-11		
R7	Parway	453522	376242	1.5	4.50E-03	6.73E-03	5.06E-01	5.29E+01	1.03E-01	1.73E-01	8.41E-02	8.97E+00	2.14E-03	2.61E-02	5.92E+00	2.11E-01	4.77E+01	1.05E-05	2.39E-03	8.43E-04	1.91E-01	2.11E-11		
R8	Allotments	453588	376351	1.5	1.10E-03	4.05E-03	1.26E+00	7.59E-01	2.55E-01	1.91E-01	2.08E-01	9.37E-00	5.24E-03	6.49E-02	5.63E-00	5.23E-01	4.54E-01	2.27E-03	2.27E-03	2.09E-03	1.82E-01	5.23E-11		
R9	Queens Gardens	454003	376434	1.5	1.51E-02	5.70E-02	1.73E+00	8.29E-01	3.54E-01	2.05E-01	2.86E-01	1.07E-01	7.19E-03	8.93E-02	5.36E+00	7.20E-01	3.60E-03	3.60E-03	2.16E-03	2.88E-03	1.73E-01	2.70E-11		
R10	Allotments	454215	376436	1.5	2.14E-02	7.86E-02	2.46E+00	8.57E-01	5.15E-01	2.07E-01	4.08E-01	1.22E-01	1.27E-01	5.27E+00	1.03E+00	4.25E-01	4.32E-01	5.23E-03	2.13E-03	4.10E-03	1.70E-01	1.03E-10		
R11	Sherwood Cottage	454039	375916	1.5	9.06E-03	3.26E-02	1.04E+00	6.11E-01	2.14E-01	1.56E-01	1.72E-01	1.04E-01	4.32E-03	5.37E-02	4.69E+00	4.33E-01	3.78E-01	2.17E-05	1.89E-03	1.73E-03	1.51E-01	4.33E-11		
R12	Penny Farm	454150	375796	1.5	8.42E-03	3.02E-02	9.66E-01	6.35E-01	1.98E-01	1.76E-01	1.60E-01	9.44E-01	4.01E-03	4.99E-02	5.81E+00	4.03E-01	4.68E-01	2.02E-05	2.34E-03	1.61E-03	1.87E-01	4.03E-11		
R13	New Cottages	454227	375769	1.5	9.47E-03	3.07E-02	1.09E+00	6.98E-01	2.23E-01	1.81E-01	1.80E-01	8.34E+00	4.51E-03	5.61E-02	5.92E+00	4.52E-01	4.77E-01	2.26E-05	2.39E-03	1.81E-03	1.91E-01	4.52E-11		
R14	Penny Green Cottages	454240	375606	1.5	8.63E-03	2.91E-02	9.88E-01	6.39E-01	2.01E-01	1.85E-01	1.64E-01	8.58E+00	4.11E-03	5.10E-02	6.36E+00	4.12E-01	5.13E-01	2.06E-05	2.05E-03	1.65E-03	2.05E-01	4.12E-11		
R15	Greenacres	454249	376216	1.5	1.92E-02	7.44E-02	2.20E+00	8.44E-01	4.55E-01	2.12E-01	3.65E-01	1.10E-01	9.14E-03	1.14E-01	5.49E+00	9.18E-01	4.42E-01	4.59E-05	2.21E-03	3.67E-03	1.77E-01	9.18E-11		
R16	Sprinfield Farm	454522	375484	1.5	1.42E-02	5.03E-02	1.63E+00	8.53E-01	3.35E-01	2.05E-01	2.71E-01	1.09E-01	6.77E-03	8.41E-02	5.35E+00	6.79E-01	4.32E-01	3.59E-05	2.16E-03	2.71E-03	1.73E-01	6.79E-11		
R17	Willowside	454579	375563	1.5	1.42E-02	5.18E-02	1.62E+00	8.27E-01	3.30E-01	1.96E-01	2.70E-01	1.06E-01	6.74E-03	8.38E-02	5.52E+00	6.76E-01	4.45E-01	3.38E-05	2.22E-03	2.70E-03	1.78E-01	6.76E-11		
R18	Belph	454598	375509	1.5	1.48E-02	5.27E-02	1.69E+00	8.26E-01	3.47E-01	2.06E-01	1.00E-01	1.00E-01	7.02E-03	8.73E-02	5.20E+00	7.04E-01	4.20E-01	3.82E-05	2.10E-03	2.82E-03	1.68E-01	7.04E-11		
R19	Ganabrig Lodge	454639	375053	1.5	1.14E-02	3.72E-02	1.30E+00	7.67E-01	2.66E-01	1.94E-01	2.17E-01	9.95E-00	5.41E-03	6.73E-02	5.14E+00	5.42E-01	4.44E-01	2.71E-05	2.07E-03	2.17E-03	1.66E-01	5.42E-11		
R20	Fishpond Lodge	454692	374783	1.5	9.30E-03	2.35E-02	1.05E+00	7.07E-01	2.14E-01	1.70E-01	1.77E-01	9.99E+00	4.43E-03	5.24E-02	3.89E+00	4.46E-01	3.52E-01	2.23E-05	1.63E-03	2.09E-03	1.82E-01	4.44E-11		
R21	Hennywood Farm	454086	374792	1.5	5.05E-03	7.98E-03	5.78E-01	6.32E-01	1.20E-01	1.74E-01	9.61E-02	1.92E+00	2.41E-03	2.99E-02	6.19E+00	2.41E-01	1.90E-01	1.20E-05	2.49E-03	6.64E-04	2.00E-01	2.41E-11		
R22	Nursery Lodge	454540	374455	1.5	6.59E-03	1.33E-02	7.55E-01	6.57E-01	1.56E-01	1.70E-01	1.25E-01	9.64E+00	3.14E-03	3.90E-02	4.98E+00	3.15E-01	4.01E-01	1.57E-05	2.01E-03	1.12E-03	1.60E-01	3.15E-11		
R23	Gasworks Lodge	454676	374112	1.5	5.90E-03	1.39E-02	6.76E-01	5.95E-01	1.40E-01	1.66E-01	1.12E-01	7.49E+00	2.81E-03	3.49E-02	5.22E+00	2.82E-01	4.21E-01	1.41E-05	2.10E-03	1.13E-03	1.68E-01	2.82E-11		
R24	Hunccroft Lodge	454590	373995	1.5	5.18E-03	9.91E-03	5.94E-01	5.87E-01	1.24E-01	1.44E-01	9.86E-02	7.07E+00	2.47E-03	3.07E-02	5.23E+00	2.47E-01	4.22E-01	1.24E-05	2.13E-03	9.90E-04	1.69E-01	2.47E-11		
R25	Hunccroft	454461	373905	1.5	4.14E-03	8.96E-03	4.74E-01	5.48E-01	9.71E-02	1.46E-01	7.87E-02	6.17E+00	1.97E-03	2.45E-02	5.00E+00	1.97E-01	4.03E-01	7.87E-05	2.01E-03	7.84E-04	1.61E-01	1.97E-11		
R26	Hunteslea	454614	373668	1.5	4.01E-03	9.34E-03	4.59E-01	5.03E-01	9.43E-02	1.39E-01	7.62E-02	5.52E+00	4.91E-03	2.37E-02	4.64E+00	1.91E-01	3.74E-01	9.55E-06	1.87E-03	7.64E-04	1.50E-01	1.91E-11		
R27	Creswell Crag	453886	374373	1.5	2.21E-03	2.39E-03	2.51E-01	4.35E-01	5.03E-02	1.30E-01	4.17E-02	5.45E+00	1.30E-02	5.02E+00	1.05E-01	4.05E-01	3.05E-02	2.02E-03	4.18E-04	1.62E-04	1.10E-01	1.05E-11		
R28	Craggs Lodge	453711	374437	1.5	1.55E-03	7.34E-04	1.76E-01	2.86E-01	3.54E-02	1.17E-01	2.93E-02	4.78E+00	7.39E-04	9.11E-03	3.66E+00	7.35E-02	2.95E-01	3.67E-06	1.48E-03	2.94E-04	1.18E-01	7.35E-12		
R29	Holbeck	454359	373444	1.5	2.39E-03	3.85E-03	2.72E-01	3.93E-01	5.35E-02	1.10E-01	4.52E-02	4.43E+00	1.14E-03	1.40E-02	5.33E+00	1.13E-01	2.85E-01	1.66E-06	1.42E-03	4.53E-04	1.14E-01	1.13E-11		
R30	Sabroon Cottage	454354	373308	1.5	2.19E-03	3.32E-03	2.49E-01	3.86E-01	4.92E-02	1.09E-01	4.14E-02	5.48E+00	1.04E-03	1.29E-02	3.17E+00	1.04E-01	2.56E-01	1.59E-06	1.28E-03	4.15E-04	1.02E-01	1.04E-11		
R31	Badgers Copse	454355	373287	1.5	1.41E-03	1.83E-03	1.60E-01	2.65E-01	3.22E-02	1.00E-01	2.67E-02	4.04E+00	6.74E-04	8.20E-03	3.92E+00	6.66E-02	3.16E-03	3.33E-06	1.58E-03	1.26E-04	1.26E-01	6.66E-12		
R32	Willow Farm	454392	373813	1.5	1.68E-03	1.33E-03	1.90E-01	2.93E-01	3.84E-02	9.69E-02	3.16E-02	3.98E+00	7.99E-04	9.80E-03	3.89E+00	7.90E-02	3.13E-03	3.95E-06	1.56E-03	3.16E-04	1.25E-01	7.90E-12		
R33	Crag Cottages	453681	374083	1.5	1.61E-03	8.41E-04	1.82E-01	2.77E-01	3.66E-02	1.09E-01	9.03E-02	6.32E+00	7.65E-04	9.40E-03	4.25E+00	7.58E-02	3.44E-03	3.79E-06	1.72E-03	1.03E-04	3.88E-01	7.58E-12		
R34	Bank House Farm	452936	374270	1.5	2.30E-03	5.07E-04	2.61E-01	4.00E-01	5.33E-02	1.34E-01	4.34E-02	3.92E+00	1.35E-03	1.35E-02	1.90E+00	1.09E-01	1.35E-02	4.54E-05	1.95E-03	1.48E-04	1.56E-01	1.09E-11		
R35	Mansefield Rd	452814	374274	1.5	2.77E-03	1.13E-03	3.15E-01	4.41E-01	6.40E-02	1.39E-01	5.23E-02	7.95E+00	1.32E-03	1.63E-02	4.62E+00	1.31E-01	3.73E-01	6.56E-06	1.86E-03	5.25E-04	1.49E-01	1.31E-11		
R36	Sheffield Rd	452706	374442	1.5	3.65E-03	2.28E-03	4.16E-01	5.75E-01	8.48E-02	1.64E-01	6.89E-02	1.06E-01	1.74E-03	2.15E-02	5.18E+00	1.73E-01	4.18E-01	6.86E-06	2.09E-03	6.93E-04	1.67E-01	1.73E-11		
R37	Sheffield Rd	452609	374535	1.5	4.36E-03	3.22E-03	4.99E-01	6.29E-01	1.03E-01	1.79E-01	8.27E-02	1.07E-01	2.08E-03	2.58E-02	4.88E+00	2.08E-								

No.	Receptor name	X(m)	Y(m)	Z(m)	LCConc (ug/m ³) particulate stack 24hrs	P.90.41 (ug/m ³) particulate stack 24hrs	LCConc (ug/m ³) NOx stack 1hr	P.90.79 (ug/m ³) NOx stack 1hr	LCConc (ug/m ³) SO2 stack 1900s	P.99.90 (ug/m ³) SO2 stack 1900s	LCConc (ug/m ³) SO2 stack 1900s	P.99.90 (ug/m ³) SO2 stack 1900s	LCConc (ug/m ³) CO stack 8hrs	P.100.00 (ug/m ³) CO stack 8hrs	LCConc (ug/m ³) VOC stack 24hrs	LCConc (ug/m ³) HCl stack 1hr	P.100.00 (ug/m ³) HCl stack 1hr	LCConc (ug/m ³) HF stack 1hr	P.100.00 (ug/m ³) HF stack 1hr	LCConc (ug/m ³) group 1 metals stack 1hr	P.100.00 (ug/m ³) group 1 metals stack 1hr	LCConc (ug/m ³) group 2 metals stack 1hr	P.100.00 (ug/m ³) group 2 metals stack 1hr	LCConc (ug/m ³) dioxins stack 1hr	P.100.00 (ug/m ³) dioxins stack 1hr
R1	Southfield Lane	453192	376043	1.5	2.78E-03	2.30E-03	3.16E-01	4.54E+01	6.44E-02	1.30E+01	5.25E-02	8.44E+00	1.32E-03	1.63E-02	5.00E+00	1.32E-01	4.04E+01	6.58E-06	2.02E-03	5.27E-04	1.61E-01	1.32E-11	1.32E-11	1.32E-11	1.32E-11
R2	Whitwell PS	453071	376294	1.5	3.79E-03	4.23E-03	4.32E-01	6.47E+01	8.73E-02	1.68E+01	7.14E-02	9.48E+00	1.80E-03	2.23E-02	4.91E+00	1.80E-01	3.96E+01	9.00E-06	1.98E-03	7.20E-04	1.58E-01	1.80E-11	1.80E-11	1.80E-11	1.80E-11
R3	Middlegate	453296	376109	1.5	3.35E-03	3.75E-03	3.73E-01	4.43E+01	7.49E-02	1.32E+01	6.21E-02	8.38E+00	1.59E-03	1.93E-02	4.75E+00	1.55E-01	3.83E+01	7.77E-06	1.92E-03	6.22E-04	1.53E-01	1.55E-11	1.55E-11	1.55E-11	1.55E-11
R4	Loxley Lane	453382	376201	1.5	5.00E-03	8.75E-03	5.51E-01	5.87E+01	1.11E-01	1.63E+01	9.16E-02	8.13E+00	2.38E-03	2.85E-02	5.94E+00	2.30E-01	4.79E+01	1.15E-05	2.47E-03	9.18E-04	1.92E-01	2.30E-11	2.30E-11	2.30E-11	2.30E-11
R5	Station Rd	453443	376240	1.5	6.33E-03	1.38E-02	6.97E-01	6.54E+01	1.42E-01	2.01E+01	1.16E-01	1.08E+01	3.01E-03	3.60E-02	6.12E+00	2.90E-01	4.93E+01	1.15E-05	2.40E-03	1.16E-03	1.97E-01	2.90E-11	2.90E-11	2.90E-11	2.90E-11
R6	Allotments	453511	376271	1.5	7.93E-03	1.61E-02	8.78E-01	7.96E+01	1.80E-01	2.12E+01	1.46E-01	1.26E+01	3.78E-03	4.54E-02	5.94E+00	3.66E-01	4.79E+01	1.83E-05	2.39E-03	1.46E-03	1.91E-01	3.66E-11	3.66E-11	3.66E-11	3.66E-11
R7	Parway	453522	376222	1.5	9.37E-03	2.06E-02	1.04E+01	8.31E+01	2.13E-01	2.11E+01	1.72E-01	1.52E+01	4.46E-03	5.39E-02	5.68E+00	4.34E-01	4.58E+01	2.17E-05	2.29E-03	1.74E-03	1.83E-01	4.34E-11	4.34E-11	4.34E-11	4.34E-11
R8	Allotments	453588	376351	1.5	2.51E-02	9.94E-02	2.89E+00	9.35E+01	5.99E-01	2.22E+01	4.74E-01	1.31E-01	1.20E-02	1.49E-01	3.74E+00	1.20E+00	4.63E+01	2.60E-05	3.23E-03	2.32E-03	1.85E-01	1.20E-11	1.20E-11	1.20E-11	1.20E-11
R9	Queens Gardens	454003	376434	1.5	3.05E-02	1.16E-01	3.52E+00	9.24E+01	7.35E-01	2.15E+01	5.75E-01	1.32E+01	1.45E-02	1.82E-01	5.48E+00	1.47E+00	4.42E+01	7.33E-05	2.21E-03	1.68E-03	5.86E-01	1.47E-11	1.47E-11	1.47E-11	1.47E-11
R10	Allotments	454153	376436	1.5	3.47E-02	1.28E-01	4.02E+00	9.21E+01	8.37E-01	2.11E+01	6.57E-01	1.27E+01	1.65E-02	2.08E-01	5.16E+00	1.68E+00	4.16E+01	8.38E-05	2.08E-03	1.57E-03	1.67E-01	1.68E-11	1.68E-11	1.68E-11	1.68E-11
R11	Sherwood Cottage	454039	375916	1.5	1.89E-02	6.85E-02	2.18E+00	7.68E+01	4.47E-01	1.83E+01	3.57E-01	1.20E+01	8.99E-03	1.13E-01	5.81E+00	9.08E-01	4.68E+01	4.54E-05	2.34E-03	3.63E-03	1.87E-01	9.08E-11	9.08E-11	9.08E-11	9.08E-11
R12	Penny Green	454150	375796	1.5	1.67E-02	5.46E-02	1.93E+00	8.72E+01	3.96E-01	2.09E+01	3.17E-01	1.09E+01	7.96E-03	9.99E-02	6.19E+00	8.06E-01	4.99E+01	4.03E-05	2.50E-03	3.22E-03	2.00E-01	8.06E-11	8.06E-11	8.06E-11	8.06E-11
R13	New Cottages	454227	375769	1.5	1.77E-02	6.03E-02	2.05E+00	8.87E+01	4.18E-01	2.16E+01	3.36E-01	1.20E+01	8.45E-03	1.06E-01	6.08E+00	8.56E-01	4.90E+01	4.28E-05	2.45E-03	3.42E-03	1.96E-01	8.56E-11	8.56E-11	8.56E-11	8.56E-11
R14	Penny Green Cottages	454240	375606	1.5	1.70E-02	6.04E-02	1.97E+00	8.96E+01	4.04E-01	2.08E+01	3.24E-01	1.12E+01	8.12E-03	1.02E-01	6.01E+00	8.23E-01	4.84E+01	4.11E-05	2.42E-03	3.29E-03	1.94E-01	8.23E-11	8.23E-11	8.23E-11	8.23E-11
R15	Greenacres	454249	376216	1.5	3.15E-02	1.08E-01	3.64E+00	9.05E+01	7.47E-01	2.08E+01	5.96E-01	1.22E+01	1.50E-02	1.88E-01	5.18E+00	1.52E+00	4.18E+01	7.59E-05	2.09E-03	6.07E-03	1.67E-01	1.52E-11	1.52E-11	1.52E-11	1.52E-11
R16	Sprinfeld Farm	454522	375484	1.5	2.23E-02	9.09E-02	2.59E+00	9.73E+01	5.36E-01	2.24E+01	4.24E-01	1.35E+01	1.06E-02	1.34E-01	5.65E+00	1.08E+00	5.59E+01	5.39E-05	2.28E-03	4.31E-03	1.82E-01	1.08E-11	1.08E-11	1.08E-11	1.08E-11
R17	Willowside	454579	375563	1.5	2.23E-02	7.58E-02	2.59E+00	9.42E+01	5.34E-01	2.19E+01	4.25E-01	1.33E+01	1.06E-02	1.34E-01	5.35E+00	1.08E+00	4.31E+01	5.41E-05	2.16E-03	4.32E-03	1.72E-01	1.08E-11	1.08E-11	1.08E-11	1.08E-11
R18	Belph	454579	375509	1.5	2.26E-02	8.66E-02	2.62E+00	9.48E+01	5.43E-01	2.17E+01	4.30E-01	1.35E+01	1.08E-02	1.36E-01	5.48E+00	1.09E+00	4.57E+01	5.47E-05	2.21E-03	4.37E-03	1.77E-01	1.09E-11	1.09E-11	1.09E-11	1.09E-11
R19	Ganabrig Lodge	454639	375053	1.5	1.37E-02	4.47E-02	1.58E+00	8.21E+01	3.22E-01	1.99E+00	2.60E-01	1.23E+01	6.51E-03	8.19E-02	5.03E+00	6.60E-01	4.06E+01	3.30E-05	2.03E-03	2.64E-03	1.62E-01	6.60E-11	6.60E-11	6.60E-11	6.60E-11
R20	Fishpond Lodge	454692	374782	1.5	1.01E-02	4.04E-02	1.19E+00	6.82E+01	2.47E-01	1.47E+00	5.41E-02	5.23E+00	1.37E-03	1.68E-02	3.97E+00	1.36E-01	3.20E+01	6.78E-06	1.60E-03	5.42E-04	1.28E-01	1.36E-11	1.36E-11	1.36E-11	1.36E-11
R21	Henny Moor Farm	454086	374792	1.5	6.47E-03	1.56E-02	7.43E-01	6.95E+01	1.54E-01	1.76E+01	1.22E-01	1.14E+01	3.08E-03	3.84E-02	5.58E+00	3.10E-01	4.50E+01	1.55E-05	2.25E-03	1.24E-03	1.80E-01	3.10E-11	3.10E-11	3.10E-11	3.10E-11
R22	Nursery Lodge	454540	374455	1.5	7.89E-03	2.01E-02	9.11E-01	6.71E+01	1.91E-01	1.63E+01	1.50E-01	1.01E+01	3.76E-03	4.71E-02	5.14E+00	3.80E-01	4.15E+01	1.90E-05	2.07E-03	1.52E-03	1.66E-01	3.80E-11	3.80E-11	3.80E-11	3.80E-11
R23	Gasworks Lodge	454676	374112	1.5	6.51E-03	1.48E-02	7.50E-01	6.11E+01	1.57E-01	1.45E-01	1.23E+01	7.96E-03	3.10E-03	3.88E-02	5.05E+00	3.13E-01	4.07E+01	1.56E-05	2.04E-03	1.25E-03	1.63E-01	3.13E-11	3.13E-11	3.13E-11	3.13E-11
R24	Hunccroft Lodge	454590	373995	1.5	5.38E-03	1.17E-02	6.17E-01	5.74E+01	1.27E-01	1.47E+01	1.02E-01	6.83E+00	2.56E-03	3.19E-02	4.90E+00	2.57E-01	3.96E+01	1.29E-05	1.98E-03	1.03E-03	1.58E-01	2.57E-11	2.57E-11	2.57E-11	2.57E-11
R25	Hunccroft	454461	373905	1.5	4.12E-03	8.75E-03	4.70E-01	5.26E+01	9.34E-02	1.32E+01	7.74E-02	5.44E+00	1.96E-03	2.43E-02	4.88E+00	1.96E-01	3.94E+01	1.97E-05	1.97E-03	7.48E-04	1.57E-01	1.96E-11	1.96E-11	1.96E-11	1.96E-11
R26	Hunteslea	454614	373668	1.5	3.94E-03	8.98E-03	4.50E-01	4.76E+01	8.93E-02	1.22E+01	7.42E-02	4.95E+00	1.88E-03	2.32E-02	4.96E+00	1.87E-01	3.97E+01	1.93E-05	2.00E-03	7.69E-04	1.60E-01	1.87E-11	1.87E-11	1.87E-11	1.87E-11
R27	Creswell Crag	453886	374733	1.5	2.50E-03	3.06E-03	2.81E-01	4.70E+01	5.56E-02	1.50E+01	4.63E-02	6.52E+00	1.19E-03	1.45E-02	4.14E+00	1.17E-01	3.34E+01	1.48E-05	1.67E-03	4.48E-04	1.33E-01	1.17E-11	1.17E-11	1.17E-11	1.17E-11
R28	Craggs Lodge	453711	374437	1.5	2.00E-03	1.24E-03	2.26E-01	3.81E+01	4.49E-02	1.19E+01	3.72E-02	4.72E+00	9.52E-04	1.17E-02	3.57E+00	9.41E-02	2.88E+01	4.70E-05	1.44E-03	3.67E-04	1.15E-01	9.41E-11	9.41E-11	9.41E-11	9.41E-11
R29	Holbeck	454359	373444	1.5	2.45E-03	3.78E-03	2.76E-01	4.30E+01	5.40E-02	1.16E+01	4.57E-02	6.72E+00	1.17E-03	1.43E-02	3.69E+00	1.15E-01	2.97E+01	1.56E-05	1.49E-03	7.61E-04	1.19E-01	1.15E-11	1.15E-11	1.15E-11	1.15E-11
R30	Sabraon Cottage	454354	373308	1.5	2.29E-03	4.12E-03	2.57E-01	4.29E+01	5.06E-02	1.13E+01	4.26E-02	5.40E+00	1.09E-03	1.33E-02	3.30E+00	1.07E-01	2.66E+01	1.56E-05	1.33E-03	4.29E-04	1.07E-01	1.07E-11	1.07E-11	1.07E-11	1.07E-11
R31	Badgers Copse	454355	373282	1.5	2.25E-03	2.15E-03	2.54E-01	3.52E+01	5.15E-02	1.04E+01	4.25E-02	4.47E+00	1.07E-03	1.31E-02	3.61E+00	1.06E-01	2.91E+01	1.52E-05	1.46E-03	4.23E-04	1.16E-01	1.06E-11	1.06E-11	1.06E-11	1.06E-11
R32	Willow Farm	453992	373813	1.5	2.88E-03	2.02E-03	3.25E-01	4.33E+01	6.64E-02	1.47E+01	5.41E-02	5.23E+00	1.37E-03	1.68E-02	3.97E+00	1.36E-01	3.20E+01	6.78E-06	1.60E-03	5.42E-04	1.28E-01	1.36E-11	1.36E-11	1.36E-11	1.36E-11
R33	Willow Farm	453981	374083	1.5	3.93E-03	4.76E-03	4.45E-01	5.69E+01	9.08E-02	1.68E+01	7.36E-02	9.01E+00	1.87E-03	2.30E-02	4.29E+00	1.85E-01	3.46E+01	6.28E-05	1.72E-03	7.42E-04	1.38E-01	1.85E-11			

No.	Receptor name	X(m)	Y(m)	Z(m)	TCont ug/m ³ particulate stack- 24hrs		P. 90.41 ug/m ³ particulate stack- 24hrs		TCont ug/m ³ NOx stack- 1hr		P. 90.79 ug/m ³ NOx stack- 1hr		TCont ug/m ³ SO2 stack- 1900s		P. 99.90 ug/m ³ SO2 stack- 900s		TCont ug/m ³ CO stack(R) 8hrs		P.100.00 ug/m ³ CO stack(R) 8hrs		TCont ug/m ³ VOC stack- 24hrs		P.100.00 ug/m ³ VOC stack- 1hr		TCont ug/m ³ HCl stack- 1hr		P.100.00 ug/m ³ HCl stack- 1hr		TCont ug/m ³ HF stack- 1hr		P.100.00 ug/m ³ HF stack- 1hr		TCont ug/m ³ group 1 metals stack- 1hr		P.100.00 ug/m ³ group 1 metals stack- 1hr		TCont ug/m ³ group 2 metals stack- 1hr		P.100.00 ug/m ³ group 2 metals stack- 1hr		TCont ug/m ³ diatoms stack- 1hr		P.100.00 ug/m ³ diatoms stack- 1hr																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230	1231	1232	1233	1234	1235	1236	1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248	1249	1250	1251	1252	1253	1254	1255	1256	1257	1258	1259	1260	1261	1262	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275	1276	1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296	1297	1298	1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319	1320	1321	1322	1323	1324	1325	1326	1327	1328	1329	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342	1343	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360	1361	1362	1363	1364	1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385	1386	1387	1388	1389	1390	1391	1392

Receptor name	X(m)	Y(m)	Z(m)	terrain																	
				LTConc (ug/m3) particle stack 24hrs	P.00.41 (ug/m3) particle stack 24hrs	LTConc (ug/m3) NOx stack 1hr	P.00.79 (ug/m3) NOx stack 1hr	LTConc (ug/m3) SO2 stack 900s	P.00.90 (ug/m3) SO2 stack 900s	LTConc (ug/m3) CO stack 8hrs	P.00.00 (ug/m3) CO stack 8hrs	LTConc (ug/m3) VOC stack 24hrs	LTConc (ug/m3) HCl stack 1hr	P.00.00 (ug/m3) HCl stack 1hr	LTConc (ug/m3) HF stack 1hr	P.00.00 (ug/m3) HF stack 1hr	LTConc (ug/m3) group 1 metals stack 1hr	P.00.00 (ug/m3) group 1 metals stack 1hr	LTConc (ug/m3) group 2 metals stack 1hr	P.00.00 (ug/m3) group 2 metals stack 1hr	LTConc (ug/m3) dibaux stack 1hr
R1 Southfield Lane	452192	376043.5	1.5	3.11E-03	2.52E-03	3.54E-01	4.87E+01	7.20E-02	1.43E+01	5.87E-02	9.12E+00	1.48E-03	1.83E-02	5.28E+00	1.47E-01	4.26E+01	7.37E-06	2.13E-03	5.89E-04	1.70E-01	1.47E-11
R2 Whitwell PS	453071	376293.7	1.5	4.17E-03	4.32E-03	4.75E-01	6.83E+01	9.56E-02	1.78E+01	7.86E-02	1.00E-01	1.99E-03	2.45E-02	5.13E+00	1.98E-01	4.14E+01	9.89E-06	2.07E-03	7.91E-04	1.65E-01	1.98E-11
R3 Middlegate	453296.2	376109.1	1.5	3.67E-03	4.40E-03	4.09E-01	4.86E+01	8.19E-02	1.40E+01	6.81E-02	9.04E+00	1.75E-03	2.11E-02	5.11E+00	1.70E-01	4.12E+01	8.51E-06	2.06E-03	6.81E-04	1.65E-01	1.70E-11
R4 Loxley Lane	453382	376201.4	1.5	5.47E-03	9.76E-03	6.03E-01	6.22E+01	1.21E-01	1.74E+01	1.00E-01	8.72E+00	2.61E-03	3.12E-02	6.31E+00	2.51E-01	5.09E+01	1.26E-05	2.55E-03	1.01E-03	2.04E-01	2.51E-11
R5 Station Rd	453443.3	376239.9	1.5	6.95E-03	1.54E-02	7.66E-01	7.17E+01	1.56E-01	2.11E+01	1.27E-01	1.16E+01	3.31E-03	3.96E-02	6.42E+00	3.19E-01	5.18E+01	1.60E-05	2.59E-03	1.28E-03	2.07E-01	3.19E-11
R6 Allotments	453510.6	376270.9	1.5	8.74E-03	1.88E-02	9.69E-01	8.34E+01	1.98E-01	2.26E+01	1.61E-01	1.35E+01	4.16E-03	5.01E-02	6.30E+00	4.04E-01	5.08E+01	2.02E-05	2.54E-03	1.61E-03	2.03E-01	4.04E-11
R7 Parkway	453522	376421.8	1.5	1.03E-02	2.30E-02	1.15E+00	8.85E+01	2.35E-01	2.20E+01	1.90E-01	1.40E+01	4.91E-03	5.93E-02	5.98E+00	4.78E-01	4.82E+01	2.39E-05	2.41E-03	1.91E-03	1.93E-01	4.78E-11
R8 Allotments	453888.4	376351.4	1.5	2.70E-02	1.04E-01	3.11E+00	9.60E+01	6.45E-01	2.27E+01	5.09E-01	1.34E+01	1.29E-02	1.61E-01	5.88E+00	1.30E+00	4.74E+01	6.48E-05	2.37E-03	5.18E-03	1.90E-01	1.30E-10
R9 Queens Gardens	454002.9	376434.1	1.5	3.27E-02	1.24E-01	3.78E+00	9.57E+01	7.89E-01	2.22E+01	6.18E-01	1.36E+01	1.56E-02	1.95E-01	5.55E+00	1.57E+00	4.47E+01	7.87E-05	2.24E-03	6.30E-03	1.79E-01	1.57E-10
R10 Allotments	454214.9	376436.3	1.5	3.65E-02	1.33E-01	4.23E+00	9.42E+01	8.78E-01	2.12E+01	6.91E-01	1.33E+01	1.74E-02	2.18E-01	5.21E+00	1.76E+00	4.20E+01	8.81E-05	2.10E-03	7.04E-03	1.68E-01	1.76E-10
R11 Sherwood Cottage	454038.7	375915.6	1.5	2.09E-02	7.71E-02	2.41E+00	8.07E+01	4.94E-01	1.93E+01	3.95E-01	1.25E+01	9.95E-03	1.25E-01	6.11E+00	1.01E+00	4.92E+01	5.03E-05	2.46E-03	4.02E-03	1.97E-01	1.01E-10
R12 Penny Green	454150	375796.3	1.5	1.82E-02	6.15E-02	2.11E+00	8.81E+01	4.31E-01	2.16E+01	3.45E-01	1.15E+01	8.67E-03	1.09E-01	6.32E+00	8.78E-01	5.10E+01	4.39E-05	2.55E-03	3.51E-03	2.04E-01	8.78E-11
R13 New Cottages	454226.8	375768.5	1.5	1.89E-02	6.28E-02	2.19E+00	9.27E+01	4.47E-01	2.12E+01	3.59E-01	1.24E+01	9.02E-03	1.13E-01	6.13E+00	9.14E-01	4.94E+01	4.57E-05	2.47E-03	3.66E-03	1.98E-01	9.14E-11
R14 Penny Green Cots	454240.1	375605.5	1.5	1.81E-02	6.37E-02	2.10E+00	9.20E+01	4.40E-01	2.16E+01	3.44E-01	1.18E+01	8.63E-03	1.08E-01	6.22E+00	8.75E-01	5.02E+01	4.37E-05	2.51E-03	3.50E-03	2.01E-01	8.75E-11
R15 Greenacres	454249.4	376216.4	1.5	3.28E-02	1.14E-01	3.80E+00	9.32E+01	7.80E-01	2.13E+01	6.22E-01	1.27E+01	1.56E-02	1.97E-01	5.30E+00	1.58E+00	4.28E+01	7.92E-05	2.14E-03	6.43E-03	1.71E-01	1.85E-10
R16 Springfield Fm	454522.4	375483.6	1.5	2.25E-02	9.06E-02	2.61E+00	9.86E+01	5.40E-01	2.25E+01	4.27E-01	1.38E+01	1.07E-02	1.35E-01	5.71E+00	1.09E+00	4.61E+01	5.44E-05	2.30E-03	4.35E-03	1.84E-01	1.09E-10
R17 Whinfield Cat	454579.3	375563.1	1.5	2.25E-02	7.70E-02	2.62E+00	9.51E+01	5.39E-01	2.21E+01	4.29E-01	1.36E+01	1.07E-02	1.35E-01	5.38E+00	1.09E+00	4.34E+01	5.44E-05	2.17E-03	4.36E-03	1.74E-01	1.09E-10
R18 Belph	454597.9	375508.8	1.5	2.27E-02	8.72E-02	2.63E+00	9.62E+01	5.44E-01	2.17E+01	4.31E-01	1.37E+01	1.08E-02	1.36E-01	5.51E+00	1.10E+00	4.44E+01	5.48E-05	2.22E-03	4.39E-03	1.78E-01	1.10E-10
R19 Ganarbig Lodge	454639	375052.9	1.5	3.11E-02	4.18E-02	1.52E+00	8.10E+01	3.09E-01	1.95E+01	2.50E-01	1.22E+01	6.26E-03	7.87E-02	4.99E+00	6.34E-01	4.02E+01	3.17E-05	2.01E-03	2.54E-03	1.61E-01	6.34E-11
R20 Fishpond Fm	454954.4	374779.9	1.5	1.09E-02	3.79E-02	1.16E+00	6.71E+01	2.33E-01	1.62E+01	1.90E-01	9.50E+00	4.77E-03	5.99E-02	4.15E+00	4.83E-01	3.34E+01	2.41E-05	1.67E-03	1.93E-03	1.34E-01	4.83E-11
R21 Hennymoor Fm	454888.4	374791.8	1.5	6.49E-02	1.61E-02	7.46E-01	7.08E+01	1.55E-01	1.74E+01	1.23E-01	1.13E-01	3.09E-03	3.85E-02	5.59E+00	3.11E-01	4.51E+01	5.55E-05	2.25E-03	1.24E-03	1.80E-01	3.11E-11
R22 Nursery Lodge	454539.6	374455.3	1.5	7.67E-03	1.97E-02	8.86E-01	6.64E+01	1.85E-01	1.67E+01	1.46E-01	1.03E+01	3.65E-03	4.58E-02	5.20E+00	3.69E-01	4.19E+01	1.85E-05	2.10E-03	1.48E-03	1.68E-01	3.69E-11
R23 Gasworks Lodge	454676.1	374112	1.5	6.40E-03	1.44E-02	7.37E-01	6.01E+01	1.54E-01	1.45E+01	1.21E-01	8.00E+00	3.05E-03	3.81E-02	5.09E+00	3.07E-01	4.11E+01	5.54E-05	2.05E-03	1.23E-03	1.64E-01	3.07E-11
R24 Huncecroft Lodge	454589.9	373995.4	1.5	5.34E-03	1.17E-02	6.13E-01	5.76E+01	1.27E-01	1.42E+01	1.01E-01	6.91E+00	2.54E-03	3.17E-02	4.93E+00	2.55E-01	3.98E+01	1.28E-05	1.99E-03	1.02E-03	1.59E-01	2.55E-11
R25 Huncroft	454461.4	373953.3	1.5	4.12E-03	9.36E-03	4.70E-01	5.16E+01	9.40E-01	1.26E+01	7.76E-02	5.35E+00	1.96E-03	2.43E-02	4.95E+00	1.96E-01	3.99E+01	9.79E-06	1.99E-03	7.82E-04	1.60E-01	1.96E-11
R26 Hunslet Lea	454613.8	373668.1	1.5	3.95E-03	1.04E-02	4.50E-01	4.67E+01	8.99E-02	1.20E+01	7.44E-02	4.93E+00	1.88E-03	2.33E-02	5.02E+00	1.88E-01	4.05E+01	9.88E-06	2.03E-03	7.51E-04	1.62E-01	1.88E-11
R27 Crewelles Crags	453886.3	374373.1	1.5	2.50E-03	3.19E-03	2.81E-01	4.68E+01	5.55E-02	1.47E+01	4.64E-02	6.41E+00	1.19E-03	1.45E-02	4.24E+00	1.17E-01	3.42E+01	5.86E-06	1.71E-03	4.68E-04	1.37E-01	1.17E-11
R28 Crags Lodge	453711.3	374436.7	1.5	2.06E-03	1.42E-03	2.32E-01	3.84E+01	4.59E-02	1.16E+01	3.83E-02	4.76E+00	9.79E-04	1.20E-02	3.78E+00	9.67E-02	3.05E+01	4.83E-06	1.53E-03	3.87E-04	1.22E-01	9.67E-12
R29 Holbeck	454359.4	374344.1	1.5	2.52E-03	4.50E-03	2.84E-01	4.31E+01	5.58E-02	1.15E+01	4.71E-02	5.56E+00	1.20E-03	1.47E-02	3.85E+00	1.18E-01	3.10E+01	5.92E-06	1.55E-03	4.73E-04	1.24E-01	1.18E-11
R30 Sabraon Cottage	454354.1	373707.7	1.5	2.38E-03	4.26E-03	2.69E-01	4.42E+01	5.31E-02	1.15E+01	4.46E-02	5.35E+00	1.14E-03	1.39E-02	3.47E+00	1.12E-01	2.80E+01	6.00E-06	1.40E-03	4.48E-04	1.12E-01	1.12E-11
R31 Badgers Copse	453154.8	37282.5	1.5	2.60E-03	6.06E-03	2.92E-01	3.47E+01	5.97E-02	1.06E+01	4.92E-02	5.05E+00	1.24E-03	1.51E-02	3.69E+00	1.22E-01	2.97E+01	5.68E-06	1.49E-03	4.86E-04	1.19E-01	1.22E-11
R32 Willow Farm	452991.8	373812.5	1.5	3.16E-03	4.21E-03	3.56E-01	4.31E+01	7.29E-02	1.42E+01	5.94E-02	5.22E+00	1.50E-03	1.84E-02	4.10E+00	1.48E-01	3.31E+01	7.41E-06	1.65E-03	5.93E-04	1.32E-01	1.48E-11
R33 Crags Cottages	453080.6	374082.9	1.5	3.15E-03	4.29E-03	3.56E-01	4.89E-01	7.25E-02	1.41E+01	5.93E-02	5.21E+00	1.50E-03	1.84E-02	4.39E+00	1.48E-01	3.54E+01	7.41E-06	1.77E-03	5.93E-04	1.42E-01	1.48E-11
R34 Bank House Fm	452936.1	374269.7	1.5	4.19E-03	6.44E-03	4.73E-01	5.67E+01	9.66E-02	1.66E+01	7.85E-02	8.94E+00	2.00E-03	2.45E-02	4.38E+00	1.97E-01	3.53E+01	9.86E-06	1.77E-03	7.89E-04	1.41E-01	1.97E-11
R35 Mansfield Rd	452814.2	374273.7	1.5	4.75E-03	8.64E-03	5.38E-01	6.28E+01	1.10E-01	1.62E+01	8.90E-02	9.87E+00	2.26E-03	2.78E-02	4.53E+00	2.24E-01	3.65E+01	1.12E-05	1.83E-03	8.96E-04	1.46E-01	2.24E-11
R36 Sheffield Rd	452705.6	374442	1.5	5.80E-03	7.35E-03	6.60E-01	7.18E+01	1.37E-01	1.77E+01	1.09E-01	1.16E+01	2.76E-03	3.41E-02	4.67E+00	2.75E-01	3.76E+01	1.38E-05	1.88E-03	1.10E-03	1.51E-01	2.75E-11
R37 Sheffield Rd	452608.8	374534.8	1.5	6.35E-03	6.89E-03	7.24E-01	7.41E+01	1.51E-01	1.82E+01	1.20E-01	1.20E+01	3.02E-03	3.74E-02	4.80E+00	3.02E-01	3.87E+01	1.51E-05	1.93E-03	1.21E-03	1.55E-01	3.02E-11
R38 Brookside Fm	452529.3	374811.7	1.5	6.66E-03	5.12E-03	7.38E-01	8.15E+01	1.39E-01	2.09E+01	1.22E-01	1.38E+01	3.07E-03	3.81E-02	5.34E+00	3.08E-01	4.31E+01	1.54E-05	2.15E-03	1.23E-03	1.72E-01	3.08E-11
R39 Allotments	452473.6	374866.8	1.5	6.00E-03	5.86E-03	6.83E-01	7.48E+01	1.53E-01	1.90E+01	1.13E-01	1.31E+01	2.86E-03	3.53E-02	5.03E+00	2.85E-01	4.06E+01	1.42E-05	2.03E-03	1.14E-03	1.62E-01	2.85E-11
R40 Bluebell Walk	452133.1	375196	1.5	5.50E-03	5.14E-03	6.18E-01	6.80E+01	1.27E-01	1.65E+01	1.04E-01	1.27E+01	2.62E-03	3.19E-02	4.40E+00	2.57E-01	3.55E+01	1.29E-05	1.77E-03	1.03E-03	1.42E-01	2.75E-11
R41 Lower Mill Fm	452388.8	375213.3	1.5	5.86E-03	5.96E-03	6.59E-01	6.87E+01	1.35E-01	1.88E+01	1.10E-01	1.42E+01	2.79E-03	3.41E-02	5.16E+00	2.75E-01	4.16E+01	1.37E-05	2.08E-03	1.10E-03	1.66E-01	2.57E-11
R42 Peter More	452170.2	375679.7	1.5	5.26E-03	3.42E-03	5.86E-01	6.74E+01	1.20E-01	1.66E+01	9.88E-02	9.02E+00	2.51E-03	3.03E-02	4.45E+00	2.44E-01	3.59E+01	1.22E-05	1.80E-03</			

No.	Receptor name	X(m)	Y(m)	Z(m)	met data variability - annual mean					met data variability - short-term				
					2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
					R1	Southfield Lane	453192	376043	1.5	0.30	0.26	0.22	0.26	0.43
R2	Whitwell PS	453071	376294	1.5	0.48	0.37	0.29	0.39	0.61	58	58	39	63	59
R3	Middlegate	453296	376109	1.5	0.31	0.29	0.27	0.26	0.37	40	41	41	37	43
R4	Loxley Lane	453382	376201	1.5	0.45	0.42	0.41	0.35	0.39	54	48	47	42	52
R5	Station Rd	453443	376240	1.5	0.57	0.53	0.52	0.46	0.42	68	53	54	49	48
R6	Allotments	453511	376271	1.5	0.74	0.67	0.64	0.63	0.49	68	68	66	63	52
R7	Parkway	453522	376422	1.5	0.89	0.81	0.78	0.75	0.59	73	77	72	69	62
R8	Allotments	453888	376351	1.5	1.78	2.20	1.33	1.67	1.33	83	87	76	83	75
R9	Queens Gardens	454003	376434	1.5	2.08	2.81	1.58	1.99	1.60	85	89	78	83	81
R10	Allotments	454215	376436	1.5	2.36	3.43	1.99	2.35	2.00	86	90	79	85	84
R11	Sherwood Cottage	454039	375916	1.5	1.16	1.68	1.22	1.37	1.28	63	67	67	75	70
R12	Penny Green	454150	375796	1.5	0.98	1.52	1.33	1.51	1.16	64	78	70	80	74
R13	New Cottages	454227	375769	1.5	1.06	1.65	1.45	1.69	1.24	78	82	77	83	76
R14	Penny Green Cottages	454240	375606	1.5	0.97	1.56	1.24	1.61	0.95	67	79	81	79	62
R15	Greenacres	454249	376216	1.5	2.17	3.08	2.03	2.25	2.09	84	88	83	86	87
R16	Sprinfeld Farm	454522	375484	1.5	1.29	2.23	1.42	2.12	1.13	78	95	81	90	72
R17	Willowside	454579	375563	1.5	1.35	2.23	1.56	2.21	1.24	79	91	86	88	73
R18	Belph	454598	375509	1.5	1.35	2.28	1.49	2.20	1.19	78	92	82	88	74
R19	Ganabrig Lodge	454639	375053	1.5	0.99	1.48	0.89	1.30	0.97	73	82	67	75	74
R20	Fishpond Lodge	454954	374780	1.5	0.85	1.14	0.79	1.01	0.87	63	70	60	63	63
R21	Hennymoor Farm	454086	374792	1.5	0.73	0.68	0.85	0.56	0.76	75	68	90	58	79
R22	Nursery Lodge	454540	374455	1.5	0.76	0.85	0.88	0.75	0.83	66	68	75	64	70
R23	Gasworks Lodge	454676	374112	1.5	0.68	0.73	0.83	0.68	0.71	59	59	66	54	60
R24	Huncecroft Lodge	454590	373995	1.5	0.63	0.61	0.79	0.58	0.63	60	60	64	54	56
R25	Huncecroft	454461	373905	1.5	0.56	0.47	0.72	0.46	0.51	56	53	64	46	52
R26	Hunterslea	454614	373668	1.5	0.53	0.45	0.66	0.45	0.48	52	49	57	45	48
R27	Creswell Crags	453886	374373	1.5	0.40	0.27	0.57	0.30	0.37	50	44	61	37	50
R28	Crags Lodge	453711	374437	1.5	0.31	0.20	0.48	0.30	0.41	48	40	57	43	54
R29	Holbeck	454359	373444	1.5	0.38	0.27	0.51	0.30	0.30	43	41	49	36	34
R30	Sabroan Cottage	454354	373308	1.5	0.35	0.25	0.48	0.28	0.28	42	41	45	35	34
R31	Badgers Copse	453155	373282	1.5	0.43	0.21	0.46	0.28	0.67	46	29	47	44	52
R32	Willow Farm	452992	373813	1.5	0.59	0.27	0.57	0.28	0.83	54	35	63	41	63
R33	Crags Cottages	453081	374083	1.5	0.61	0.27	0.61	0.30	0.88	58	37	69	44	70
R34	Bank House Farm	452936	374270	1.5	0.74	0.37	0.73	0.28	0.97	65	49	73	35	79
R35	Mansefield Rd	452814	374274	1.5	0.80	0.43	0.74	0.27	0.99	67	59	76	42	76
R36	Sheffield Rd	452706	374442	1.5	0.86	0.56	0.72	0.33	0.96	76	68	75	52	77
R37	Sheffield Rd	452609	374535	1.5	0.87	0.63	0.69	0.39	0.90	77	69	69	58	79
R38	Brookside Farm	452529	374812	1.5	0.86	0.68	0.62	0.44	0.96	70	80	68	63	83
R39	Allotments	452474	374967	1.5	0.87	0.62	0.61	0.41	1.08	77	79	70	66	82
R40	Bluebell Walk	452133	375196	1.5	0.71	0.55	0.63	0.37	0.96	67	64	70	59	70
R41	Lower Mill Farm	452389	375213	1.5	0.74	0.57	0.65	0.39	1.01	71	69	74	61	76
R42	Peter More	452170	375680	1.5	0.42	0.49	0.44	0.25	0.30	59	62	63	44	40
R43	Allotments	452270	376088	1.5	0.34	0.43	0.35	0.29	0.41	47	58	58	52	54
R44	New Street	452338	376141	1.5	0.34	0.42	0.35	0.32	0.47	48	56	51	53	62
R45	Vine Cottages	452524	376136	1.5	0.35	0.42	0.36	0.35	0.55	43	56	56	64	66
R46	Thorpe Avenue	452663	376154	1.5	0.39	0.41	0.35	0.37	0.63	47	55	54	58	74
R47	Franklin Avenue	452800	376109	1.5	0.39	0.40	0.34	0.35	0.64	46	53	53	55	76
R48	Franklin Crescent	452900	376146	1.5	0.44	0.38	0.31	0.35	0.66	55	58	49	49	79
R49	Longhurst View	452985	376140	1.5	0.44	0.36	0.29	0.34	0.63	57	57	43	52	76
E1	Birklands	461208	367858	0	0.31	0.35	0.40	0.44	0.38	22	20	20	21	22
E2	Fox Den	460165	367717	0	0.31	0.34	0.39	0.40	0.36	24	21	22	24	21
E3	Warsop Quarter	459663	367565	0	0.30	0.32	0.37	0.37	0.35	23	22	22	24	21
E4	Hanger Hill	459742	368286	0	0.33	0.36	0.41	0.43	0.39	23	23	24	25	21
E5	Jeruusalem Plant	459466	368120	0	0.32	0.35	0.40	0.40	0.37	24	22	23	24	23
E6	Sod Wall Plant	458705	368396	0	0.32	0.33	0.39	0.37	0.36	25	26	23	26	24
E7	Gleadthorpe	459475	369146	0	0.36	0.40	0.45	0.49	0.43	27	27	26	25	25
E8	Assarts Wood	460816	368608	0	0.33	0.37	0.42	0.48	0.40	24	23	24	23	25
E9	Boundary Plant	460078	369377	0	0.36	0.40	0.46	0.52	0.44	26	25	25	25	28
E10	Meadowbank	460089	370130	0	0.37	0.40	0.49	0.56	0.46	26	24	27	29	28
E11	Budby South	460481	369472	0	0.35	0.38	0.46	0.53	0.43	26	23	26	26	29
E12	Budby South	460592	369036	0	0.34	0.38	0.44	0.51	0.42	24	23	24	25	29
E13	Budby South	460671	368732	0	0.34	0.37	0.43	0.49	0.41	25	23	24	23	26
E14	Nitticahill	449040	378478	0	0.37	0.30	0.28	0.32	0.40	32	28	25	30	34
E15	Common Piece	456966	372858	0	0.53	0.55	0.59	0.67	0.59	40	33	32	34	33
E16	Angling Garden	457419	373388	0	0.56	0.59	0.64	0.70	0.58	40	31	40	36	36
E17	Moss Hall	457709	373100	0	0.53	0.55	0.63	0.69	0.57	40	31	37	36	36
E18	Markland Grips	450814	374465	0	0.67	0.39	0.44	0.26	0.73	45	38	41	31	42
E19	Markland Grips	450828	374732	0	0.62	0.39	0.46	0.26	0.74	44	39	43	36	44
E20	Markland Grips	450944	374983	0	0.56	0.41	0.48	0.27	0.71	45	44	45	37	45
E21	Markland Grips	451163	375118	0	0.55	0.43	0.49	0.28	0.69	49	49	49	42	48
E22	Markland Grips	451344	375202	0	0.54	0.45	0.50	0.29	0.68	51	52	52	44	49
E23	Hollinhill Grips	451183	375269	0	0.49	0.44	0.47	0.26	0.59	45	48	48	44	48
E24	Hollinhill Grips	450970	375306	0	0.45	0.42	0.44	0.24	0.52	42	45	45	37	45
E25	Hollinhill Grips	450754	375473	0	0.39	0.39	0.40	0.20	0.39	37	42	42	33	38
E26	Hollinhill Grips	450447	375492	0	0.37	0.37	0.38	0.18	0.36	35	38	39	29	36
LP1	Former Colliery Site	453694	376160	1.5	0.99	0.99	0.76	0.93	0.70	64	72	65	75	56
LP2	Former Colliery Site	453927	376038	1.5	1.34	1.91	1.12	1.33	1.27	77	84	66	71	80
LP3	Former Colliery Site	453248	375849	1.5	0.13	0.13	0.13	0.11	0.24	18	20	17	16	29
LP4	Former Colliery Site	453397	375955	1.5	0.19	0.18	0.17	0.16	0.20	22	25	24	23	26
LP5	Former Colliery Site	453532	375957	1.5	0.30	0.28	0.24	0.29	0.21	33	37	30	37	21
LP6	Former Colliery Site	453672	376061	1.5	0.73	0.75	0.56	0.71	0.54	56	61	54	66	47
E27	Ginny Spring	452057	378891	0	0.45	0.32	0.32	0.30	0.50	30	32	32	30	34
E28														

No.	Receptor name	X(m)	Y(m)	Z(m)	surface roughness sensitivity test - annual mean					surface roughness sensitivity test - short-term				
					0.02m	0.1m	0.2m	0.3m	0.5m	0.02m	0.1m	0.2m	0.3m	0.5m
R1	Southfield Lane	453192	376043	1.5	0.15	0.20	0.24	0.26	0.32	26	35	35	40	45
R2	Whitwell PS	453071	376294	1.5	0.24	0.30	0.34	0.37	0.43	44	51	54	58	65
R3	Middlegate	453296	376109	1.5	0.14	0.20	0.25	0.29	0.37	23	30	37	41	44
R4	Loxley Lane	453382	376201	1.5	0.16	0.26	0.34	0.42	0.55	25	36	44	48	59
R5	Station Rd	453443	376240	1.5	0.19	0.32	0.43	0.53	0.70	28	43	50	53	65
R6	Allotments	453511	376271	1.5	0.24	0.41	0.55	0.67	0.88	37	49	58	68	80
R7	Parkway	453522	376422	1.5	0.30	0.51	0.67	0.81	1.04	40	53	67	77	83
R8	Allotments	453888	376351	1.5	0.67	1.26	1.78	2.20	2.89	68	76	84	87	94
R9	Queens Gardens	454003	376434	1.5	0.90	1.73	2.36	2.81	3.52	67	83	88	89	92
R10	Allotments	454215	376436	1.5	1.48	2.46	3.04	3.43	4.02	77	86	91	90	92
R11	Sherwood Cottage	454039	375916	1.5	0.62	1.04	1.40	1.68	2.18	54	61	61	67	77
R12	Penny Green	454150	375796	1.5	0.56	0.97	1.28	1.52	1.93	44	63	69	78	87
R13	New Cottages	454227	375769	1.5	0.65	1.09	1.40	1.65	2.05	52	70	78	82	89
R14	Penny Green Cottages	454240	375606	1.5	0.58	0.99	1.31	1.56	1.97	47	64	71	79	90
R15	Greenacres	454249	376216	1.5	1.39	2.20	2.72	3.08	3.64	81	84	87	88	90
R16	Sprinfild Farm	454522	375484	1.5	1.04	1.63	1.99	2.23	2.59	71	85	90	95	97
R17	Willowside	454579	375563	1.5	1.05	1.62	1.98	2.23	2.59	73	83	86	91	94
R18	Belph	454598	375509	1.5	1.10	1.69	2.04	2.28	2.62	72	83	89	92	95
R19	Ganabrig Lodge	454639	375053	1.5	1.08	1.30	1.41	1.48	1.58	75	77	80	82	82
R20	Fishpond Lodge	454954	374780	1.5	0.98	1.06	1.11	1.14	1.19	69	71	70	70	68
R21	Henny Moor Farm	454086	374792	1.5	0.48	0.58	0.64	0.68	0.74	58	63	63	68	69
R22	Nursery Lodge	454540	374455	1.5	0.65	0.75	0.82	0.85	0.91	66	66	67	68	67
R23	Gasworks Lodge	454676	374112	1.5	0.60	0.68	0.71	0.73	0.75	59	59	59	59	61
R24	Huncecroft Lodge	454590	373995	1.5	0.55	0.59	0.61	0.61	0.62	57	59	59	60	57
R25	Huncecroft	454461	373905	1.5	0.47	0.47	0.48	0.47	0.47	54	55	53	53	53
R26	Hunterslea	454614	373668	1.5	0.46	0.46	0.46	0.45	0.45	51	50	50	49	48
R27	Creswell Crags	453886	374373	1.5	0.23	0.25	0.26	0.27	0.28	35	44	42	44	47
R28	Crags Lodge	453711	374437	1.5	0.16	0.18	0.19	0.20	0.23	25	29	33	40	38
R29	Holbeck	454359	374444	1.5	0.28	0.27	0.28	0.27	0.28	39	39	41	41	43
R30	Sabroan Cottage	454354	373308	1.5	0.25	0.25	0.26	0.25	0.26	39	39	40	41	43
R31	Badgers Copse	453155	373282	1.5	0.12	0.16	0.19	0.21	0.25	18	27	28	29	35
R32	Willow Farm	452992	373813	1.5	0.12	0.19	0.24	0.27	0.33	19	29	31	35	43
R33	Crags Cottages	453081	374083	1.5	0.11	0.18	0.23	0.27	0.33	16	28	31	37	46
R34	Bank House Farm	452936	374270	1.5	0.17	0.26	0.32	0.37	0.45	27	40	47	49	57
R35	Mansefield Rd	452814	374274	1.5	0.22	0.31	0.38	0.43	0.51	35	44	51	59	63
R36	Sheffield Rd	452706	374442	1.5	0.29	0.42	0.50	0.56	0.64	46	58	61	68	72
R37	Sheffield Rd	452609	374535	1.5	0.36	0.50	0.58	0.63	0.71	47	63	69	69	75
R38	Brookside Farm	452529	374812	1.5	0.49	0.60	0.65	0.68	0.72	67	82	81	80	82
R39	Allotments	452474	374967	1.5	0.51	0.57	0.60	0.62	0.66	72	77	80	79	75
R40	Bluebell Walk	452133	375196	1.5	0.43	0.49	0.52	0.55	0.59	63	64	63	64	69
R41	Lower Mill Farm	452389	375213	1.5	0.44	0.50	0.54	0.57	0.63	66	65	66	69	70
R42	Peter More	452170	375680	1.5	0.38	0.43	0.46	0.49	0.53	56	62	61	62	66
R43	Allotments	452270	376088	1.5	0.35	0.39	0.41	0.43	0.46	62	59	56	58	59
R44	New Street	452338	376141	1.5	0.34	0.37	0.40	0.42	0.46	57	53	53	56	56
R45	Vine Cottages	452524	376136	1.5	0.31	0.36	0.39	0.42	0.46	46	49	53	56	60
R46	Thorpe Avenue	452663	376154	1.5	0.28	0.34	0.38	0.41	0.46	41	53	54	55	62
R47	Franklin Avenue	452800	376109	1.5	0.25	0.32	0.36	0.40	0.45	44	49	52	53	58
R48	Franklin Crescent	452900	376146	1.5	0.24	0.31	0.35	0.38	0.43	39	49	50	58	63
R49	Longhurst View	452985	376140	1.5	0.22	0.29	0.33	0.36	0.41	35	43	51	57	66
E1	Birklands	461208	367858	0	0.27	0.32	0.34	0.35	0.36	20	22	21	20	23
E2	Fox Den	460165	367717	0	0.29	0.33	0.34	0.34	0.35	23	24	24	21	22
E3	Warsop Quarter	459663	367565	0	0.29	0.32	0.33	0.32	0.33	21	24	23	22	25
E4	Hanger Hill	459742	368286	0	0.30	0.35	0.36	0.36	0.37	24	25	26	23	23
E5	Jerusalem Plant	459466	368120	0	0.30	0.34	0.35	0.35	0.35	23	25	24	22	24
E6	Sod Wall Plant	458705	368396	0	0.31	0.34	0.34	0.33	0.34	22	25	25	26	26
E7	Gleadthorpe	459475	369146	0	0.31	0.37	0.40	0.40	0.41	23	25	26	27	26
E8	Assarts Wood	460816	368608	0	0.27	0.34	0.36	0.37	0.39	20	22	23	23	23
E9	Boundary Plant	460078	369377	0	0.29	0.36	0.39	0.40	0.42	21	24	25	25	25
E10	Meadowbank	460089	370130	0	0.29	0.35	0.38	0.40	0.43	21	23	24	24	25
E11	Budby South	460481	369472	0	0.28	0.34	0.37	0.38	0.41	20	22	23	23	25
E12	Budby South	460592	369036	0	0.28	0.34	0.37	0.38	0.40	20	22	24	23	23
E13	Budby South	460671	368732	0	0.28	0.34	0.36	0.37	0.39	20	23	23	23	23
E14	Nitticahill	449040	378478	0	0.19	0.24	0.28	0.30	0.34	23	25	27	28	30
E15	Common Piece	456966	372858	0	0.43	0.48	0.53	0.55	0.60	33	32	31	33	33
E16	Angling Garden	457419	373388	0	0.55	0.56	0.58	0.59	0.63	33	34	32	31	35
E17	Moss Hall	457709	373100	0	0.50	0.52	0.54	0.55	0.59	32	31	29	31	33
E18	Markland Grips	450814	374465	0	0.34	0.36	0.38	0.39	0.42	41	39	38	38	38
E19	Markland Grips	450828	374732	0	0.33	0.36	0.38	0.39	0.42	41	40	40	39	40
E20	Markland Grips	450944	374983	0	0.34	0.38	0.40	0.41	0.44	43	45	43	44	43
E21	Markland Grips	451163	375118	0	0.36	0.40	0.42	0.43	0.46	45	47	49	49	48
E22	Markland Grips	451344	375202	0	0.38	0.42	0.44	0.45	0.48	51	52	52	52	50
E23	Hollin Hill Grips	451183	375269	0	0.37	0.41	0.43	0.44	0.46	49	51	50	48	48
E24	Hollin Hill Grips	450970	375306	0	0.36	0.39	0.41	0.42	0.44	46	48	45	45	43
E25	Hollin Hill Grips	450754	375473	0	0.35	0.37	0.39	0.39	0.41	45	43	41	42	42
E26	Hollin Hill Grips	450447	375492	0	0.33	0.35	0.37	0.37	0.39	41	38	38	38	37
LP1	Former Colliery Site	453694	376160	1.5	0.36	0.57	0.79	0.99	1.39	45	58	65	72	78
LP2	Former Colliery Site	453927	376038	1.5	0.62	1.14	1.56	1.91	2.50	65	69	77	84	89
LP3	Former Colliery Site	453248	375849	1.5	0.08	0.10	0.12	0.13	0.16	9	14	18	20	26
LP4	Former Colliery Site	453397	375955	1.5	0.08	0.11	0.15	0.18	0.24	10	16	22	25	34
LP5	Former Colliery Site	453532	375957	1.5	0.12	0.18	0.23	0.28	0.39	17	29	32	37	46
LP6	Former Colliery Site	453672	376061	1.5	0.28	0.43	0.60	0.75	1.07	39	47	54	61	68
E27	Ginny Spring	452057	378891	0	0.23	0.27	0.30	0.32	0.36	35	33	33	32	31
E28	Anston Stones	452809	383258	0	0.20	0.28	0.34	0.37	0.42	19	20	22	22	22
E29	Lindrick Golf Course	453926	382195	0	0.32	0.47	0.56	0.62	0.70	22	24	29	28	31
E30	Woodsetts Pond	456311	381977	0	0.72	0.99	1.13	1.21	1.36	30	30	30	30	31
E31	Norbriggs Flash	444583	375510	0	0.19	0.21	0.21	0.20	0.20	22	24	22	20	19
E32	Lord Stubbins Wood	453843	369154	0	0.12	0.15	0.17	0.18	0.20	19	20	21	21	23
E33	Hills and Holes	455635	367901	0	0.14	0.15	0.16	0.16	0.17	17	22	21	19	21
E34	Birklands	459935	366834	0	0.28	0.30	0.30	0.30	0.30	21	22	21	22	23
E35	Sherwood Forest	461505	367970	0	0.26	0.32	0.34	0.34	0.36	20	20	21	21	21
E36	Nelson Grove	462151	370082	0	0.29	0.31	0.33	0.34	0.36	21	20	20	19	19
E37	Clumber Park	461429	373621	0	0.53	0.57	0.59	0.60	0.62	26	28	27	26	28
E38	Clumber Park	46055												

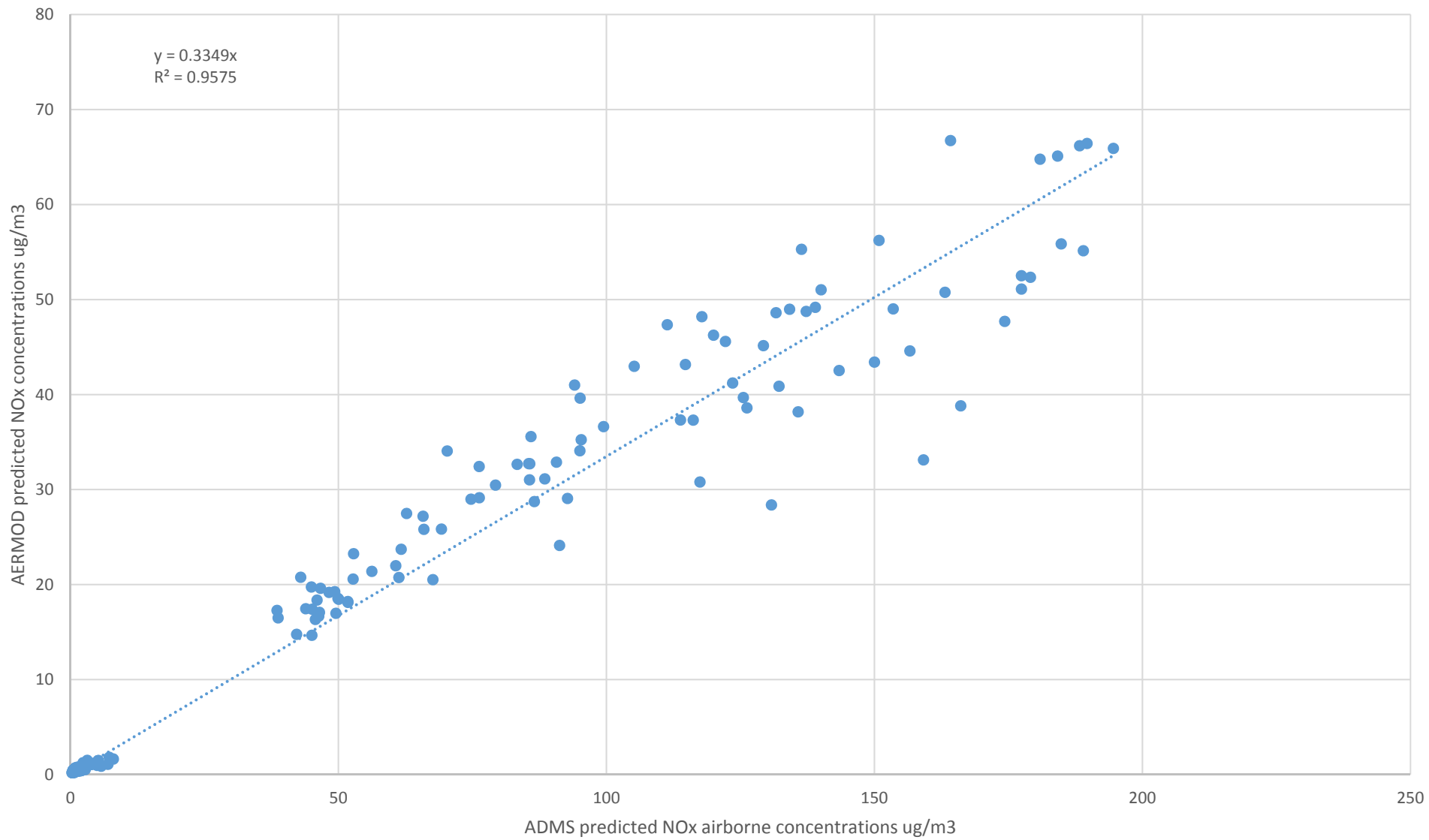
Receptor name	X(m)	Y(m)	Z(m)	terrain effects annual mean		terrain effects short-term	
				flat	hills	flat	hills
R1 Southfield Lane	453192	376043.5	1.5	0.32	0.35	45.4	48.7
R2 Whitwell PS	453071	376293.7	1.5	0.43	0.47	64.7	68.3
R3 Middlegate	453296.2	376109.1	1.5	0.37	0.41	44.3	48.6
R4 Loxley Lane	453382	376201.4	1.5	0.55	0.60	58.7	62.2
R5 Station Rd	453443.3	376239.9	1.5	0.70	0.77	65.4	71.7
R6 Allotments	453510.6	376270.9	1.5	0.88	0.97	79.6	83.4
R7 Parkway	453522	376421.8	1.5	1.04	1.15	83.1	88.5
R8 Allotments	453888.4	376351.4	1.5	2.89	3.11	94.5	96.0
R9 Queens Gardens	454002.9	376434.1	1.5	3.52	3.78	92.4	95.7
R10 Allotments	454214.9	376436.3	1.5	4.02	4.23	92.1	94.2
R11 Sherwood Cottage	454038.7	375915.6	1.5	2.18	2.41	76.8	80.7
R12 Penny Green	454150	375796.3	1.5	1.93	2.11	87.2	88.1
R13 New Cottages	454226.8	375768.5	1.5	2.05	2.19	88.7	92.7
R14 Penny Green Cots	454240.1	375605.5	1.5	1.97	2.10	89.6	92.0
R15 Greenacres	454249.4	376216.4	1.5	3.64	3.80	90.5	93.2
R16 Springfield Fm	454522.4	375483.6	1.5	2.59	2.61	97.3	98.6
R17 Willowside Cat	454579.3	375563.1	1.5	2.59	2.62	94.2	95.1
R18 Belp	454597.9	375508.8	1.5	2.62	2.63	94.8	96.2
R19 Ganabrig Lodge	454639	375052.9	1.5	1.58	1.52	82.1	81.0
R20 Fishpond Lodge	454954.4	374779.9	1.5	1.19	1.16	68.2	67.1
R21 Hennymoor Fm	454086.4	374791.8	1.5	0.74	0.75	69.5	70.8
R22 Nursery Lodge	454539.6	374455.3	1.5	0.91	0.89	67.1	66.4
R23 Gasworks Lodge	454676.1	374112	1.5	0.75	0.74	61.1	60.1
R24 Huncrocft Lodge	454589.9	373995.4	1.5	0.62	0.61	57.4	57.6
R25 Huncrocft	454461.4	373905.3	1.5	0.47	0.47	52.6	51.6
R26 Hunterslea	454613.8	373668.1	1.5	0.45	0.45	47.6	46.7
R27 Creswell Crags	453886.3	374373.1	1.5	0.28	0.28	47.0	46.8
R28 Craggs Lodge	453711.3	374436.7	1.5	0.23	0.23	38.1	38.4
R29 Holbeck	454359.4	373444.1	1.5	0.28	0.28	43.0	43.1
R30 Sabroan Cottage	454354.1	373307.7	1.5	0.26	0.27	42.9	44.2
R31 Badgers Copse	453154.8	373282.5	1.5	0.25	0.29	35.2	34.7
R32 Willow Farm	452991.8	373812.5	1.5	0.33	0.36	43.3	43.1
R33 Craggs Cottages	453080.6	374082.9	1.5	0.33	0.36	46.4	48.9
R34 Bank House Fm	452936.1	374269.7	1.5	0.45	0.47	56.9	56.7
R35 Mansefield Rd	452814.2	374273.7	1.5	0.51	0.54	63.1	62.8
R36 Sheffield Rd	452705.6	374442	1.5	0.64	0.66	71.7	71.8
R37 Sheffield Rd	452608.8	374534.8	1.5	0.71	0.72	75.0	74.1
R38 Brookside Fm	452529.3	374811.7	1.5	0.72	0.74	81.6	81.5
R39 Allotments	452473.6	374966.8	1.5	0.66	0.68	75.4	74.8
R40 Bluebell Walk	452133.1	375196	1.5	0.59	0.62	68.6	68.0
R41 Lower Mill Fm	452388.8	375213.3	1.5	0.63	0.66	70.0	68.7
R42 Peter More	452170.2	375679.7	1.5	0.53	0.59	65.8	67.4
R43 Allotments	452269.6	376087.9	1.5	0.46	0.54	58.9	62.4
R44 New Street	452338.5	376140.9	1.5	0.46	0.54	55.7	60.3
R45 Vine Cottages	452524	376135.6	1.5	0.46	0.56	60.0	68.3
R46 Thorpe Ave	452663.1	376154.1	1.5	0.46	0.57	61.8	70.3
R47 Franklin Ave	452799.6	376109.1	1.5	0.45	0.55	58.1	67.0
R48 Franlin Cres	452900.3	376146.2	1.5	0.43	0.52	62.8	72.1
R49 Longhurst View	452985.2	376139.5	1.5	0.41	0.48	66.1	71.5
E14 Nitticarhill	449039.6	378477.7	0	0.34	0.47	30.4	29.5
E15 Common Piece	456965.8	372858.3	0	0.60	0.52	32.9	31.7
E16 Angling Garden	457418.7	373387.8	0	0.63	0.55	34.6	32.0
E18 Markland Grips	450814.2	374465.3	0	0.42	0.49	38.2	40.1
E19 Markland Grips	450828.1	374732.4	0	0.42	0.49	39.7	40.7
E20 Markland Grips	450944.3	374983.2	0	0.44	0.51	42.8	44.9
E21 Markland Grips	451162.5	375117.9	0	0.46	0.53	47.5	48.8
E22 Markland Grips	451343.7	375201.5	0	0.48	0.54	49.7	51.5
E23 Hollinhill Grips	451183.4	375268.8	0	0.46	0.53	47.7	48.8
E24 Hollinhill Grips	450969.8	375306	0	0.44	0.52	42.8	45.3
E25 Hollinhill Grips	450753.8	375473.2	0	0.41	0.49	41.7	42.7
E26 Hollinhill Grips	450447.3	375491.8	0	0.39	0.46	37.4	39.9
LP1	453693.5	376159.7	1.5	1.39	1.64	78.3	82.5
LP2	453926.7	376038.3	1.5	2.50	2.83	88.7	95.1
LP3	453248.3	375849.4	1.5	0.16	0.19	25.9	28.9
LP4	453396.8	375955.4	1.5	0.24	0.27	33.8	35.6
LP5	453531.6	375957.3	1.5	0.39	0.45	45.6	49.2
LP6	453672.3	376061.4	1.5	1.07	1.33	67.9	76.7
E27 Ginny Spring	452056.8	378891.3	0	0.36	0.44	31.4	34.2
Max				4.02	4.23	97.30	98.57

model sensitivity analysis
Scampton 2015
surface roughness at met site = 0.02m
surface roughness 0.5m
terrain effects on
main building - silo building

No.	Receptor name	X(m)	Y(m)	Z(m)	ADMS		AERMOD		NOx annual mean	NOx 99.79%ile
					NOx annual mean	NOx 99.79%ile	NOx annual mean	NOx 99.79%ile		
R1	Southfield Lane	453192	376043	1.5	0.63	90.71	0.31	32.87	2.06	2.76
R2	Whitwell PS	453071	376294	1.5	0.86	129.31	0.42	45.13	2.07	2.87
R3	Middlegate	453296	376109	1.5	0.75	88.53	0.30	31.11	2.47	2.85
R4	Loxley Lane	453382	376201	1.5	1.10	117.47	0.32	30.78	3.49	3.82
R5	Station Rd	453443	376240	1.5	1.39	130.81	0.33	28.36	4.24	4.61
R6	Allotments	453511	376271	1.5	1.76	159.17	0.37	33.11	4.81	4.81
R7	Parkway	453522	376422	1.5	2.08	166.13	0.42	38.80	5.01	4.28
R8	Allotments	453888	376351	1.5	5.78	189.00	0.87	55.12	6.67	3.43
R9	Queens Gardens	454003	376434	1.5	7.04	184.87	1.06	55.85	6.61	3.31
R10	Allotments	454215	376436	1.5	8.04	184.19	1.62	65.08	4.96	2.83
R11	Sherwood Cottage	454039	375916	1.5	4.36	153.52	1.14	49.00	3.81	3.13
R12	Penny Green	454150	375796	1.5	3.87	174.33	1.07	47.69	3.61	3.66
R13	New Cottages	454227	375769	1.5	4.11	177.45	1.16	52.49	3.53	3.38
R14	Penny Green Cottages	454240	375606	1.5	3.95	179.12	1.05	52.32	3.77	3.42
R15	Greenacres	454249	376216	1.5	7.28	180.92	1.81	64.76	4.03	2.79
R16	Springfield Farm	454522	375484	1.5	5.18	194.61	1.43	65.90	3.63	2.95
R17	Willowside	454579	375563	1.5	5.19	188.31	1.46	66.17	3.56	2.85
R18	Belph	454598	375509	1.5	5.25	189.70	1.46	66.41	3.59	2.86
R19	Ganabrig Lodge	454639	375053	1.5	3.17	164.21	1.48	66.72	2.13	2.46
R20	Fishpond Lodge	454954	374780	1.5	2.39	136.43	1.24	55.27	1.93	2.47
R21	Hennymoor Farm	454086	374792	1.5	1.49	139.00	0.71	49.17	2.09	2.83
R22	Nursery Lodge	454540	374455	1.5	1.82	134.20	0.82	48.97	2.22	2.74
R23	Gasworks Lodge	454676	374112	1.5	1.50	122.24	0.77	45.57	1.95	2.68
R24	Huncecroft Lodge	454590	373995	1.5	1.23	114.75	0.75	43.15	1.65	2.66
R25	Huncecroft	454461	373905	1.5	0.94	105.20	0.69	42.96	1.37	2.45
R26	Hunterslea	454614	373668	1.5	0.90	95.12	0.66	39.61	1.36	2.40
R27	Creswell Crags	453886	374373	1.5	0.56	94.08	0.44	40.99	1.28	2.30
R28	Crags Lodge	453711	374437	1.5	0.45	76.28	0.34	32.42	1.32	2.35
R29	Holbeck	454359	373444	1.5	0.55	85.94	0.47	35.56	1.17	2.42
R30	Sabroan Cottage	454354	373308	1.5	0.51	85.73	0.44	32.71	1.18	2.62
R31	Badgers Copse	453155	373282	1.5	0.51	70.32	0.31	34.04	1.64	2.07
R32	Willow Farm	452992	373813	1.5	0.65	86.59	0.32	28.73	2.06	3.01
R33	Crags Cottages	453081	374083	1.5	0.66	92.77	0.31	29.06	2.14	3.19
R34	Bank House Farm	452936	374270	1.5	0.89	113.85	0.35	37.31	2.52	3.05
R35	Mansefield Rd	452814	374274	1.5	1.02	126.24	0.40	38.58	2.54	3.27
R36	Sheffield Rd	452706	374442	1.5	1.28	143.43	0.48	42.52	2.68	3.37
R37	Sheffield Rd	452609	374535	1.5	1.41	150.03	0.53	43.40	2.65	3.46
R38	Brookside Farm	452529	374812	1.5	1.44	163.19	0.65	50.75	2.23	3.22
R39	Allotments	452474	374967	1.5	1.32	150.88	0.67	56.21	1.97	2.68
R40	Bluebell Walk	452133	375196	1.5	1.18	137.30	0.60	48.74	1.98	2.82
R41	Lower Mill Farm	452389	375213	1.5	1.25	140.08	0.61	51.01	2.06	2.75
R42	Peter More	452170	375680	1.5	1.06	131.66	0.57	48.60	1.86	2.71
R43	Allotments	452270	376088	1.5	0.92	117.82	0.50	48.19	1.86	2.45
R44	New Street	452338	376141	1.5	0.91	111.37	0.50	47.34	1.84	2.35
R45	Vine Cottages	452524	376136	1.5	0.93	120.00	0.48	46.24	1.92	2.60
R46	Thorpe Avenue	452663	376154	1.5	0.93	123.58	0.45	41.20	2.05	3.00
R47	Franklin Avenue	452800	376109	1.5	0.90	116.22	0.42	37.29	2.11	3.12
R48	Franklin Crescent	452900	376146	1.5	0.87	125.57	0.41	39.67	2.11	3.17
R49	Longhurst View	452985	376140	1.5	0.82	132.23	0.40	40.86	2.08	3.24
E1	Birklands	461208	367858	0	0.73	45.08	0.25	14.65	2.91	3.08
E2	Fox Den	460165	367717	0	0.70	43.92	0.29	17.45	2.43	2.52
E3	Warsop Quarter	459663	367565	0	0.65	49.94	0.30	18.54	2.19	2.69
E4	Hanger Hill	459742	368286	0	0.74	46.04	0.30	18.35	2.46	2.51
E5	Jerusalem Plant	459466	368120	0	0.70	48.28	0.31	19.16	2.28	2.52
E6	Sod Wall Plant	458705	368396	0	0.67	52.77	0.33	20.57	2.05	2.57
E7	Gleadthorpe	459475	369146	0	0.82	51.79	0.31	18.20	2.69	2.85
E8	Assarts Wood	460816	368608	0	0.78	45.74	0.26	16.32	3.02	2.80
E9	Boundary Plant	460078	369377	0	0.84	50.07	0.28	18.45	3.02	2.71
E10	Meadowbank	460089	370130	0	0.86	49.34	0.29	19.24	3.01	2.56
E11	Budby South	460481	369472	0	0.82	49.57	0.27	16.96	3.07	2.92
E12	Budby South	460592	369036	0	0.80	46.49	0.26	17.06	3.05	2.72
E13	Budby South	460671	368732	0	0.79	46.36	0.26	16.67	3.01	2.78
E14	Nitticarhill	449040	378478	0	0.68	60.72	0.25	21.97	2.76	2.70
E15	Common Piece	456966	372858	0	1.19	65.83	0.48	27.18	2.49	2.42
E16	Angling Garden	457419	373388	0	1.25	69.24	0.59	25.83	2.11	2.68
E17	Moss Hall	457709	373100	0	1.18	65.97	0.53	25.80	2.20	2.56
E18	Markland Grips	450814	374465	0	0.83	76.31	0.45	29.13	1.85	2.62
E19	Markland Grips	450828	374732	0	0.85	79.35	0.44	30.46	1.95	2.61
E20	Markland Grips	450944	374983	0	0.88	85.69	0.44	31.00	1.98	2.76
E21	Markland Grips	451163	375118	0	0.92	95.08	0.47	34.07	1.95	2.79
E22	Markland Grips	451344	375202	0	0.96	99.49	0.50	36.62	1.92	2.72
E23	Hollinhill Grips	451183	375269	0	0.92	95.33	0.48	35.24	1.91	2.71
E24	Hollinhill Grips	450970	375306	0	0.88	85.53	0.46	32.72	1.91	2.61
E25	Hollinhill Grips	450754	375473	0	0.82	83.37	0.44	32.64	1.86	2.55
E26	Hollinhill Grips	450447	375492	0	0.78	74.76	0.41	28.97	1.89	2.58
LP1	Former Colliery Site	453694	376160	1.5	2.78	156.65	0.51	44.57	5.42	3.51
LP2	Former Colliery Site	453927	376038	1.5	5.00	177.46	0.95	51.09	5.27	3.47
LP3	Former Colliery Site	453248	375849	1.5	0.33	51.81	0.18	18.11	1.81	2.86
LP4	Former Colliery Site	453397	375955	1.5	0.49	67.66	0.19	20.50	2.57	3.30
LP5	Former Colliery Site	453532	375957	1.5	0.77	91.30	0.21	24.10	3.63	3.79
LP6	Former Colliery Site	453672	376061	1.5	2.14	135.80	0.42	38.17	5.05	3.56
E27	Ginny Spring	452057	378891	0	0.72	62.75	0.35	27.47	2.03	2.28
E28	Anston Stones	452809	383258	0	0.84	44.99	0.26	19.74	3.29	2.28
E29	Lindrick Golf Course	453926	382195	0	1.40	61.30	0.36	20.73	3.93	2.96
E30	Woodsetts Pond	456311	381977	0	2.71	61.74	0.76	23.71	3.55	2.60
E31	Norbriggs Flash	444583	375510	0	0.41	38.78	0.19	16.49	2.13	2.35
E32	Lord Stubbins Wood	453843	369154	0	0.41	46.70	0.19	19.60	2.19	2.38
E33	Hills and Holes	455635	367901	0	0.34	43.00	0.20	20.75	1.71	2.07
E34	Birklands	459935	366834	0	0.59	45.13	0.28	17.39	2.09	2.60
E35	Sherwood Forest	461505	367970	0	0.73	42.24	0.24	14.75	3.02	2.86
E36	Nelson Grove	462151	370082	0	0.72	38.57	0.28	17.26	2.55	2.23
E37	Clumber Park	461429	373621	0	1.23	56.25	0.49	21.38	2.54	2.63
E38	Clumber Park	460556	375832	0	1.47	52.86	0.57	23.24	2.60	2.27
Max (all)					8.04	194.61	1.81	66.72		
Max (residential)					8.04	194.61	1.81	66.72		
Max (eco)					2.71	62.75	0.76	27.47		
Max (eco)					1.25	99.49	0.59	36.62		

all units NOx ug/m3

comparison between ADMS and AERMOD
all data - short and long-term



No.	Receptor name	X(m)	Y(m)	Z(m)	air concentrations ug/m3 annual mean						deposition rate (H1 method) mg/m2/day					
					mercury	cadmium	group 2	flouride	selenium	dioxins	mercury	cadmium	group 2	flouride	selenium	dioxins
R1	Southfield Lane	453192	376043	1.5	6.58E-06	6.58E-06	5.27E-04	1.32E-04	6.79E-05	1.32E-11	1.71E-05	1.71E-05	1.36E-03	3.47E-04	1.76E-04	3.46E-11
R2	Whitwell PS	453071	376294	1.5	9.00E-06	9.00E-06	7.20E-04	1.80E-04	9.29E-05	1.80E-11	2.33E-05	2.33E-05	1.87E-03	4.61E-04	2.41E-04	4.66E-11
R3	Middlegate	453296	376109	1.5	7.77E-06	7.77E-06	6.22E-04	1.55E-04	8.02E-05	1.55E-11	2.01E-05	2.01E-05	1.61E-03	4.03E-04	2.08E-04	4.03E-11
R4	Loxley Lane	453382	376201	1.5	1.15E-05	1.15E-05	9.18E-04	2.30E-04	1.18E-04	2.30E-11	2.98E-05	2.98E-05	2.38E-03	5.95E-04	3.07E-04	5.95E-11
R5	Station Rd	453443	376240	1.5	1.45E-05	1.45E-05	1.16E-03	2.90E-04	1.50E-04	2.90E-11	3.76E-05	3.76E-05	3.01E-03	7.53E-04	3.88E-04	7.53E-11
R6	Allotments	453511	376271	1.5	1.83E-05	1.83E-05	1.46E-03	3.66E-04	1.89E-04	3.66E-11	4.74E-05	4.74E-05	3.79E-03	9.48E-04	4.89E-04	9.48E-11
R7	Parkway	453522	376422	1.5	2.17E-05	2.17E-05	1.74E-03	4.34E-04	2.24E-04	4.34E-11	5.63E-05	5.63E-05	4.50E-03	1.13E-03	5.81E-04	1.13E-10
R8	Allotments	453888	376351	1.5	6.02E-05	6.02E-05	4.82E-03	1.20E-03	6.22E-04	1.20E-10	1.56E-04	1.56E-04	1.25E-02	3.12E-03	1.61E-03	3.12E-10
R9	Queens Gardens	454003	376434	1.5	7.33E-05	7.33E-05	5.86E-03	1.47E-03	7.56E-04	1.47E-10	1.90E-04	1.90E-04	1.52E-02	3.80E-03	1.96E-03	3.80E-10
R10	Allotments	454215	376436	1.5	8.38E-05	8.38E-05	6.70E-03	1.68E-03	8.64E-04	1.68E-10	2.17E-04	2.17E-04	1.74E-02	4.34E-03	2.24E-03	4.34E-10
R11	Sherwood Cottage	454039	375916	1.5	4.54E-05	4.54E-05	3.63E-03	9.08E-04	4.69E-04	9.08E-11	1.18E-04	1.18E-04	9.42E-03	2.35E-03	1.21E-03	2.35E-10
R12	Penny Green	454150	375796	1.5	4.03E-05	4.03E-05	3.22E-03	8.06E-04	4.16E-04	8.06E-11	1.04E-04	1.04E-04	8.35E-03	2.09E-03	1.08E-03	2.09E-10
R13	New Cottages	454227	375769	1.5	4.28E-05	4.28E-05	3.42E-03	8.56E-04	4.41E-04	8.56E-11	1.11E-04	1.11E-04	8.87E-03	2.22E-03	1.14E-03	2.22E-10
R14	Penny Green Cottages	454240	375606	1.5	4.11E-05	4.11E-05	3.29E-03	8.23E-04	4.25E-04	8.23E-11	1.07E-04	1.07E-04	8.53E-03	2.13E-03	1.10E-03	2.13E-10
R15	Greenacres	454249	376216	1.5	7.59E-05	7.59E-05	6.07E-03	1.52E-03	7.83E-04	1.52E-10	1.97E-04	1.97E-04	1.57E-02	3.93E-03	2.03E-03	3.93E-10
R16	Sprinfeld Farm	454223	375484	1.5	5.39E-05	5.39E-05	4.31E-03	1.08E-03	5.57E-04	1.08E-10	1.40E-04	1.40E-04	1.12E-02	2.80E-03	1.47E-03	2.80E-10
R17	Willowside	454579	375563	1.5	5.41E-05	5.41E-05	4.32E-03	1.08E-03	5.58E-04	1.08E-10	1.40E-04	1.40E-04	1.12E-02	2.80E-03	1.45E-03	2.80E-10
R18	Belph	454598	375509	1.5	5.47E-05	5.47E-05	4.37E-03	1.09E-03	5.64E-04	1.09E-10	1.42E-04	1.42E-04	1.13E-02	2.83E-03	1.46E-03	2.83E-10
R19	Ganabrig Lodge	454639	375053	1.5	3.30E-05	3.30E-05	2.64E-03	6.60E-04	3.41E-04	6.60E-11	8.55E-05	8.55E-05	6.84E-03	1.71E-03	8.83E-04	1.71E-10
R20	Fishpond Lodge	454934	374780	1.5	2.49E-05	2.49E-05	1.99E-03	4.97E-04	2.57E-04	4.97E-11	6.45E-05	6.45E-05	5.16E-03	1.29E-03	6.65E-04	1.29E-10
R21	Hennywood Farm	454086	374792	1.5	1.55E-05	1.55E-05	1.24E-03	3.10E-04	1.60E-04	3.10E-11	4.01E-05	4.01E-05	3.21E-03	8.02E-04	4.14E-04	8.02E-11
R22	Nursery Lodge	454540	374455	1.5	1.90E-05	1.90E-05	1.52E-03	3.80E-04	1.96E-04	3.80E-11	4.92E-05	4.92E-05	3.94E-03	9.48E-04	5.08E-04	9.48E-11
R23	Gasworks Lodge	454676	374112	1.5	1.56E-05	1.56E-05	1.25E-03	3.13E-04	1.61E-04	3.13E-11	4.05E-05	4.05E-05	3.24E-03	8.10E-04	4.18E-04	8.10E-11
R24	Huncecroft Lodge	454590	373995	1.5	1.29E-05	1.29E-05	1.03E-03	2.57E-04	1.33E-04	2.57E-11	3.33E-05	3.33E-05	2.67E-03	6.67E-04	3.44E-04	6.67E-11
R25	Huncecroft	454461	373905	1.5	9.79E-06	9.79E-06	7.83E-04	1.96E-04	1.01E-04	1.96E-11	2.54E-05	2.54E-05	2.03E-03	5.07E-04	2.62E-04	5.07E-11
R26	Hunlerslea	454614	373668	1.5	9.37E-06	9.37E-06	7.49E-04	1.87E-04	9.67E-05	1.87E-11	2.43E-05	2.43E-05	1.94E-03	4.86E-04	2.51E-04	4.86E-11
R27	Creswell Crags	453886	374373	1.5	5.85E-05	5.85E-05	4.68E-04	1.17E-04	6.04E-05	1.17E-11	1.52E-05	1.52E-05	1.21E-03	3.04E-04	1.57E-04	3.04E-11
R28	Crags Lodge	453711	374437	1.5	4.70E-05	4.70E-05	3.76E-04	9.41E-05	4.85E-05	9.41E-12	1.22E-05	1.22E-05	9.75E-04	2.49E-04	1.26E-04	2.49E-11
R29	Holbeck	454359	373444	1.5	5.76E-05	5.76E-05	4.61E-04	1.15E-04	5.94E-05	1.15E-11	1.49E-05	1.49E-05	1.19E-03	2.99E-04	1.56E-04	2.99E-11
R30	Sabron Cottage	454354	373308	1.5	5.36E-05	5.36E-05	4.29E-04	1.07E-04	5.53E-05	1.07E-11	1.39E-05	1.39E-05	1.11E-03	2.78E-04	1.43E-04	2.78E-11
R31	Badgers Copse	453155	373282	1.5	5.28E-05	5.28E-05	4.23E-04	1.06E-04	5.45E-05	1.06E-11	1.37E-05	1.37E-05	1.10E-03	2.74E-04	1.41E-04	2.74E-11
R32	Willow Farm	452992	373813	1.5	6.78E-06	6.78E-06	5.42E-04	1.36E-04	6.99E-05	1.36E-11	1.76E-05	1.76E-05	1.41E-03	3.51E-04	1.81E-04	3.51E-11
R33	Crags Cottages	453081	374083	1.5	6.89E-06	6.89E-06	5.51E-04	1.38E-04	7.10E-05	1.38E-11	1.78E-05	1.78E-05	1.43E-03	3.57E-04	1.84E-04	3.57E-11
R34	Bank House Farm	452936	374270	1.5	9.28E-06	9.28E-06	7.42E-04	1.86E-04	9.58E-05	1.86E-11	2.41E-05	2.41E-05	1.92E-03	4.81E-04	2.48E-04	4.81E-11
R35	Mansfield Rd	452814	374274	1.5	1.07E-05	1.07E-05	8.54E-04	2.13E-04	1.10E-04	2.13E-11	2.77E-05	2.77E-05	2.21E-03	5.53E-04	2.86E-04	5.53E-11
R36	Sheffield Rd	452706	374442	1.5	1.33E-05	1.33E-05	1.07E-03	2.67E-04	1.38E-04	2.67E-11	3.46E-05	3.46E-05	2.76E-03	6.91E-04	3.57E-04	6.91E-11
R37	Sheffield Rd	452609	374535	1.5	1.47E-05	1.47E-05	1.18E-03	2.94E-04	1.52E-04	2.94E-11	3.82E-05	3.82E-05	3.05E-03	7.63E-04	3.91E-04	7.63E-11
R38	Brookside Farm	452529	374812	1.5	1.50E-05	1.50E-05	1.20E-03	3.00E-04	1.55E-04	3.00E-11	3.89E-05	3.89E-05	3.11E-03	7.78E-04	4.04E-04	7.78E-11
R39	Allotments	452474	374967	1.5	1.38E-05	1.38E-05	1.10E-03	2.76E-04	1.42E-04	2.76E-11	3.57E-05	3.57E-05	2.86E-03	7.15E-04	3.69E-04	7.15E-11
R40	Bluebell Walk	452133	375196	1.5	1.23E-05	1.23E-05	9.84E-04	2.46E-04	1.27E-04	2.46E-11	3.19E-05	3.19E-05	2.55E-03	6.38E-04	3.29E-04	6.38E-11
R41	Lower Mill Farm	452389	375213	1.5	1.30E-05	1.30E-05	1.04E-03	2.61E-04	1.34E-04	2.61E-11	3.38E-05	3.38E-05	2.70E-03	6.77E-04	3.49E-04	6.77E-11
R42	Peter More	452170	375680	1.5	1.10E-05	1.10E-05	8.81E-04	2.20E-04	1.14E-04	2.20E-11	2.85E-05	2.85E-05	2.28E-03	5.71E-04	2.94E-04	5.71E-11
R43	Allotments	452270	376088	1.5	9.61E-06	9.61E-06	7.68E-04	1.92E-04	9.91E-05	1.92E-11	2.49E-05	2.49E-05	1.99E-03	4.98E-04	2.57E-04	4.98E-11
R44	New Street	452338	376141	1.5	9.50E-06	9.50E-06	7.60E-04	1.90E-04	9.81E-05	1.90E-11	2.46E-05	2.46E-05	1.97E-03	4.93E-04	2.58E-04	4.93E-11
R45	Vine Cottages	452524	376136	1.5	9.64E-06	9.64E-06	7.71E-04	1.93E-04	9.94E-05	1.93E-11	2.50E-05	2.50E-05	2.00E-03	5.00E-04	2.54E-04	5.00E-11
R46	Thorpe Avenue	452663	376154	1.5	9.65E-06	9.65E-06	7.72E-04	1.93E-04	9.96E-05	1.93E-11	2.50E-05	2.50E-05	2.00E-03	5.00E-04	2.58E-04	5.00E-11
R47	Franklin Avenue	452800	376109	1.5	9.34E-06	9.34E-06	7.47E-04	1.87E-04	9.64E-05	1.87E-11	2.42E-05	2.42E-05	1.94E-03	4.84E-04	2.50E-04	4.84E-11
R48	Franklin Crescent	452900	376146	1.5	9.04E-06	9.04E-06	7.23E-04	1.81E-04	9.33E-05	1.81E-11	2.34E-05	2.34E-05	1.87E-03	4.69E-04	2.42E-04	4.69E-11
R49	Longhurst View	452985	376140	1.5	8.59E-06	8.59E-06	6.87E-04	1.72E-04	8.86E-05	1.72E-11	2.23E-05	2.23E-05	1.78E-03	4.45E-04	2.30E-04	4.45E-11
E1	Birklands	461208	367858	0	7.57E-06	7.57E-06	6.06E-04	1.51E-04	7.82E-05	1.51E-11	1.96E-05	1.96E-05	1.57E-03	3.93E-04	2.03E-04	3.93E-11
E2	Fox Den	460165	367717	0	7.26E-06	7.26E-06	5.81E-04	1.45E-04	7.49E-05	1.45E-11	1.88E-05	1.88E-05	1.51E-03	3.76E-04	1.94E-04	3.76E-11
E3	Warsop Quarter	459663	367565	0	6.80E-06	6.80E-06	5.44E-04	1.36E-04	7.02E-05	1.36E-11	1.76E-05	1.76E-05	1.41E-03	3.52E-04	1.82E-04	3.52E-11
E4	Hangar Hill	459742	368286	0	7.69E-06	7.69E-06	6.15E-04	1.54E-04	7.94E-05	1.54E-11	1.99E-05	1.99E-05	1.59E-03	3.97E-04	2.06E-04	3.97E-11
E5	Jerusalem Plant	459466	368120	0	7.33E-06	7.33E-06	5.86E-04	1.47E-04	7.56E-05	1.47E-11	1.90E-05	1.90E-05	1.52E-03	3.80E-04	1.96E-04	3.80E-11
E6	Sod Wall Plant	458705	368396	0	7.03E-06	7.03E-06	5.62E-04	1.41E-04	7.25E-05	1.41E-11	1.82E-05	1.82E-05	1.46E-03	3.64E-04	1.88E-04	3.64E-11
E7	Gleadthorpe	459475	369146	0	8.59E-06	8.59E-06	6.87E-04	1.72E-04	8.86E-05	1.72E-11	2.23E-05	2.23E-05	1.78E-03	4.45E-04	2.30E-04	4.45E-11
E8	Assarts Wood	460816	368608	0	8.08E-06	8.08E-06	6.46E-04	1.62E-04	8.34E-05	1.62E-11	2.09E-05	2.09E-05	1.68E-03	4.19E-04	2.16E-04	4.19E-11
E9	Boundary Plant	460078	369377	0	8.75E-06	8.75E-06	7.00E-04	1.75E-04	9.03E-05	1.75E-11	2.27E-05	2.27E-05	1.81E-03	4.53E-04	2.34E-04	4.53E-11
E10	Meadowbank	460089	370130	0	8.95E-06	8.95E-06	7.16E-04	1.79E-04	9.							

No.	Receptor name	X(m)	Y(m)	Z(m)	LC Conc (ug/m³) particulate stack 24hrs	LC Conc (ug/m³) particulate stack 24hrs	LC Conc (ug/m³) NOx stack 1hr	LC Conc (ug/m³) NOx stack 1hr	LC Conc (ug/m³) SO2 stack 1hr	LC Conc (ug/m³) SO2 stack 1hr	LC Conc (ug/m³) SO2 stack 1hr	LC Conc (ug/m³) SO2 stack 1hr	LC Conc (ug/m³) CO stack 8hrs	LC Conc (ug/m³) CO stack 8hrs	LC Conc (ug/m³) VOC stack 24hrs	LC Conc (ug/m³) HCl stack 1hr	LC Conc (ug/m³) HCl stack 1hr	LC Conc (ug/m³) HF stack 1hr	LC Conc (ug/m³) HF stack 1hr	LC Conc (ug/m³) HF stack 1hr	LC Conc (ug/m³) group 1 metals stack 1 hr	LC Conc (ug/m³) group 1 metals stack 1 hr	LC Conc (ug/m³) group 2 metals stack 1 hr	LC Conc (ug/m³) group 2 metals stack 1 hr	LC Conc (ug/m³) group 2 metals stack 1 hr	LC Conc (ug/m³) dioxins stack 1 hr	
R1	Southfield Lane	453192	376043	1.5	4.44E-03	3.68E-03	2.77E-01	3.98E+01	6.75E-02	1.36E+01	1.06E-02	1.71E+00	2.94E-04	1.08E-02	3.32E+00	1.93E-03	5.90E-01	1.83E-06	5.62E-04	8.43E-05	2.58E-02	5.81E-11					
R2	Whitwell PS	453071	376294	1.5	6.06E-03	6.77E-03	3.79E-01	5.68E+01	9.14E-02	1.76E+01	1.45E-02	1.92E+00	4.02E-04	1.48E-02	3.25E+00	2.63E-03	5.79E-01	2.50E-06	5.51E-04	1.15E-04	2.53E-02	7.94E-11					
R3	Middlegate	453296	376109	1.5	5.35E-03	6.00E-03	3.28E-01	3.89E+01	7.85E-02	1.39E+01	1.26E-02	1.70E+00	3.55E-04	1.28E-02	3.15E+00	2.27E-03	5.60E-01	2.16E-06	5.33E-04	9.95E-05	2.45E-02	6.86E-11					
R4	Loxley Lane	453382	376201	1.5	7.99E-03	1.40E-02	4.84E-01	5.16E+01	1.16E-01	1.71E+01	1.86E-02	1.65E+00	5.30E-04	1.89E-02	3.94E+00	3.36E-03	7.01E-01	3.19E-06	6.67E-04	1.47E-04	3.07E-02	1.01E-10					
R5	Station Rd	453443	376240	1.5	1.01E-02	2.21E-02	6.12E-01	5.74E+01	1.49E-01	2.21E+01	2.34E-02	2.18E+00	6.71E-04	2.39E-02	4.06E+00	4.25E-03	7.12E-01	4.04E-06	6.86E-04	1.86E-04	3.16E-02	1.28E-10					
R6	Allotments	453511	376271	1.5	1.27E-02	2.58E-02	7.71E-01	6.99E+01	1.88E-01	2.22E+01	2.95E-02	2.56E+00	8.41E-04	3.01E-02	3.94E+00	5.35E-03	7.00E-01	5.09E-06	6.66E-04	2.34E-04	3.06E-02	1.61E-10					
R7	Parkey	453522	376222	1.5	1.50E-02	3.30E-02	9.15E-01	7.29E+01	2.23E-01	2.21E+01	3.49E-02	2.68E+00	9.93E-04	3.57E-02	3.76E+00	6.35E-03	6.69E-01	6.04E-06	6.37E-04	2.78E-04	2.93E-02	1.92E-10					
R8	Allotments	453588	376351	1.5	1.40E-02	3.59E-02	2.54E+00	8.30E+01	6.27E-01	2.33E+01	9.59E-02	2.64E+00	2.66E-03	9.91E-02	3.81E+00	1.76E-02	6.77E-01	1.68E-05	6.44E-04	7.71E-04	2.96E-02	5.32E-10					
R9	Queens Gardens	454003	376434	1.5	4.87E-03	1.85E-01	3.09E+00	8.12E+00	1.32E+01	2.25E+01	1.17E-01	2.67E+00	3.23E-03	1.21E-01	3.62E+00	2.14E-02	6.47E-01	2.04E-05	6.15E-04	9.38E-04	2.83E-02	6.47E-10					
R10	Allotments	454215	376436	1.5	5.56E-02	2.05E-01	3.53E+00	8.09E+01	8.76E-01	2.20E+01	1.33E-01	2.52E+00	1.38E-03	1.38E-01	3.42E+00	2.45E-02	6.09E-03	2.33E-05	5.80E-04	1.07E-03	2.67E-02	7.39E-10					
R11	Sherwood Cottage	454039	375916	1.5	3.02E-02	1.10E-01	1.91E+00	6.74E+01	4.68E-01	1.91E+01	7.24E-02	2.43E+00	2.00E-03	7.47E-02	3.85E+00	1.33E-02	6.85E-01	1.12E-05	6.52E-04	5.81E-04	3.00E-02	4.01E-10					
R12	Penny Green	454150	375796	1.5	2.67E-02	8.73E-02	1.70E+00	7.65E+01	4.14E-01	2.19E+01	6.42E-02	2.20E+00	1.77E-03	6.62E-02	4.11E+00	1.18E-02	7.30E-01	1.26E-05	6.95E-04	5.16E-04	3.20E-02	3.56E-10					
R13	New Cottages	454427	375769	1.5	2.84E-02	9.64E-02	1.80E+00	7.79E+01	4.38E-01	2.26E+01	6.81E-02	2.42E+00	1.88E-03	7.03E-02	4.03E+00	1.25E-02	7.17E-01	1.19E-05	6.82E-04	5.48E-04	3.14E-02	3.78E-10					
R14	Penny Green Cottages	454240	375606	1.5	2.73E-02	9.66E-02	1.73E+00	7.86E+01	4.23E-01	2.17E+01	6.55E-02	2.27E+00	1.81E-03	6.77E-02	3.98E+00	1.20E-02	7.08E-01	1.15E-05	6.74E-04	5.27E-04	3.10E-02	3.63E-10					
R15	Greenacres	454249	376216	1.5	5.03E-02	1.73E-01	3.20E+00	7.94E+01	7.82E-01	2.18E+01	1.21E-01	2.47E+00	3.34E-03	1.25E-01	3.44E+00	2.22E-02	6.11E-01	2.11E-05	5.82E-04	9.71E-04	2.68E-02	6.70E-10					
R16	Sprinfeld Farm	454522	375484	1.5	3.57E-02	1.45E-01	2.27E+00	8.54E+01	5.62E-01	2.34E+01	8.58E-02	2.76E+00	2.47E-03	1.25E-01	3.75E+00	1.58E-02	6.67E-01	1.50E-05	6.34E-04	6.91E-04	2.92E-02	4.76E-10					
R17	Willowside	454579	375563	1.5	3.57E-02	1.21E-01	2.28E+00	8.27E+01	5.59E-01	2.29E+01	8.60E-02	2.70E+00	2.37E-03	8.89E-02	3.54E+00	1.58E-02	6.31E-01	1.50E-05	6.00E-04	6.92E-04	2.76E-02	4.77E-10					
R18	Belp	454598	375509	1.5	3.61E-02	1.38E-01	2.30E+00	8.33E+01	5.68E-01	2.27E+01	7.47E-02	2.74E+00	2.40E-03	8.99E-02	3.63E+00	1.60E-02	6.47E-01	1.52E-05	6.15E-04	7.00E-04	2.83E-02	4.83E-10					
R19	Ganabrig Lodge	454639	375053	1.5	2.19E-02	7.14E-02	1.39E+00	7.21E+01	3.37E-01	2.08E+01	5.26E-02	2.50E+00	1.45E-03	5.43E-02	3.33E+00	9.65E-03	5.93E-01	9.19E-06	5.64E-04	4.23E-04	2.60E-02	2.91E-10					
R20	Fishpond Lodge	454686	374782	1.5	1.61E-02	6.46E-02	2.86E-01	3.80E+01	6.95E-02	1.54E+01	1.10E-02	1.06E+00	3.05E-04	1.11E-02	2.63E+00	1.98E-03	6.68E-01	1.89E-06	4.45E-04	1.89E-06	2.05E-02	5.96E-10					
R21	Hennywood Farm	454086	374792	1.5	1.03E-02	2.49E-02	6.52E-01	6.10E+01	1.61E-01	1.85E+01	2.48E-02	2.31E+00	6.80E-04	2.55E-02	3.70E+00	4.53E-03	5.69E-01	4.03E-06	6.27E-04	1.98E-04	2.88E-02	1.37E-10					
R22	Nursery Lodge	454540	374415	1.5	1.26E-02	3.21E-02	8.00E-01	5.89E+01	2.00E-01	1.71E+01	3.03E-02	2.04E+00	4.87E-04	3.12E-02	3.41E+00	1.55E-03	6.06E-01	5.28E-06	5.77E-04	2.43E-04	2.65E-02	1.69E-10					
R23	Gasworks Lodge	454676	374512	1.5	1.04E-02	2.36E-02	6.59E-01	5.37E+01	1.64E-01	1.52E+01	2.50E-02	1.61E+00	6.91E-04	2.57E-02	3.35E+00	4.57E-03	5.96E-01	4.35E-06	5.67E-04	2.00E-04	2.61E-02	1.38E-10					
R24	Hunecroft Lodge	454590	373995	1.5	8.60E-03	1.86E-02	5.42E-01	5.04E+01	1.33E-01	1.54E+01	2.06E-02	1.38E+00	5.70E-04	2.11E-02	3.25E+00	3.76E-03	5.78E-01	3.58E-06	5.50E-04	1.65E-04	2.53E-02	1.14E-10					
R25	Hunecroft	454401	373905	1.5	6.58E-03	1.40E-02	4.12E-01	4.62E+01	9.78E-02	1.38E+01	1.57E-02	1.10E+00	4.37E-04	1.61E-02	3.24E+00	2.86E-03	5.76E-01	2.52E-06	5.48E-04	1.25E-04	2.52E-02	6.64E-10					
R26	Hunterlea	454614	373668	1.5	6.30E-03	1.44E-02	3.95E-01	4.18E+01	9.35E-02	1.28E+01	1.50E-02	1.00E+00	4.18E-04	1.54E-02	3.29E+00	2.74E-03	5.85E-01	2.61E-06	5.56E-04	1.20E-04	2.56E-02	8.27E-11					
R27	Creswell Crags	453886	374373	1.5	3.99E-03	4.89E-03	2.47E-01	4.13E+01	5.83E-02	1.57E+01	9.38E-03	1.32E+00	6.25E-04	9.63E-03	2.74E+00	1.71E-03	4.88E-01	1.63E-06	4.64E-04	7.50E-05	2.14E-02	5.17E-11					
R28	Crags Lodge	453711	374437	1.5	3.20E-03	1.99E-03	1.98E-01	3.35E+01	4.71E-02	1.24E+01	7.54E-03	9.55E-01	2.12E-04	7.73E-03	2.36E+00	1.38E-03	4.21E-01	1.31E-06	4.00E-04	6.02E-05	1.84E-02	4.15E-11					
R29	Holbeck	454359	373444	1.5	3.92E-03	6.04E-03	2.43E-01	3.77E+01	5.66E-02	1.21E+01	1.15E+00	2.60E+00	9.47E-03	2.44E+00	1.68E-03	4.47E-01	1.68E-03	3.35E-01	1.60E-06	4.14E-04	7.07E-03	1.90E-02	5.08E-11				
R30	Sabroon Cottage	454354	373308	1.5	3.65E-03	6.59E-03	2.26E-01	3.76E+01	5.30E-02	1.08E+01	8.63E-03	1.09E+00	2.42E-04	8.82E-03	2.19E+00	1.57E-03	3.90E-01	1.47E-06	3.71E-04	6.87E-05	1.71E-02	4.73E-11					
R31	Badgers Copse	454355	373287	1.5	3.59E-03	6.43E-03	2.23E-01	3.09E+01	5.59E-02	1.19E+01	8.60E-03	9.06E-01	2.38E-04	8.69E-03	2.39E+00	1.55E-03	4.26E-01	1.49E-06	4.05E-04	1.74E-04	1.86E-02	4.66E-11					
R32	Willow Farm	453992	373813	1.5	4.60E-03	3.23E-03	2.86E-01	3.80E+01	6.95E-02	1.54E+01	1.10E-02	1.06E+00	3.05E-04	1.11E-02	2.63E+00	1.98E-03	6.68E-01	1.89E-06	4.45E-04	1.89E-06	2.05E-02	5.96E-10					
R33	Crags Cottages	453681	374083	1.5	1.67E-03	3.15E-03	2.90E-01	4.07E+01	7.03E-02	1.40E+01	1.11E-02	1.19E+00	3.10E-04	1.13E-02	2.83E+00	2.01E-03	5.03E-01	1.02E-06	4.79E-04	8.82E-05	3.20E-02	6.09E-11					
R34	Bank House Farm	452936	374270	1.5	6.29E-03	7.62E-03	3.91E-01	5.00E+01	9.51E-02	1.76E+01	1.49E-02	1.82E+00	4.17E-04	1.53E-02	2.85E+00	2.71E-03	5.07E-01	2.58E-06	4.82E-04	1.19E-04	2.22E-02	8.19E-11					
R35	Mansefield Rd	452814	374224	1.5	7.22E-03	1.03E-02	4.50E-01	5.54E+01	1.10E-01	1.74E+01	1.71E-02	2.01E+00	4.79E-04	1.76E-02	3.00E+00	3.12E-03	5.34E-01	2.97E-06	5.09E-04	1.37E-04	2.34E-02	9.42E-11					
R36	Sheffield Rd	452760	374442	1.5	8.98E-03	1.00E-02	5.62E-01	6.30E+01	1.39E-01	1.86E+01	2.13E																

No.	Receptor name	X(m)	Y(m)	Z(m)	air concentrations ug/m3 annual mean						deposition rate (H1 method) mg/m2/day					
					mercury	cadmium	group 2	flouride	selenium	dioxins	mercury	cadmium	group 2	flouride	selenium	dioxins
R1	Southfield Lane	453192	376043	1.5	1.83E-06	5.62E-04	8.43E-05	1.93E-03	1.09E-05	5.81E-11	4.75E-04	1.46E-03	2.18E-04	4.99E-03	2.82E-05	1.51E-10
R2	Whitwell PS	453071	376294	1.5	2.50E-06	5.51E-04	1.15E-04	2.63E-03	1.49E-05	7.94E-11	6.49E-06	1.43E-03	2.99E-04	6.82E-03	3.85E-05	2.06E-10
R3	Middlegate	453296	376109	1.5	2.16E-06	5.33E-04	9.95E-05	2.27E-03	1.28E-05	6.86E-11	5.61E-06	1.38E-03	2.58E-04	5.89E-03	3.33E-05	1.78E-10
R4	Loxley Lane	453382	376201	1.5	3.19E-06	6.67E-04	1.47E-04	3.36E-03	1.90E-05	1.01E-10	8.28E-06	1.73E-03	3.81E-04	8.70E-03	4.91E-05	2.63E-10
R5	Station Rd	453443	376240	1.5	4.04E-06	6.86E-04	1.86E-04	4.25E-03	2.40E-05	1.28E-10	1.05E-05	1.78E-03	4.82E-04	1.10E-02	6.22E-05	3.32E-10
R6	Allotments	453511	376271	1.5	5.09E-06	6.66E-04	2.34E-04	5.35E-03	3.02E-05	1.61E-10	1.32E-05	1.73E-03	6.07E-04	1.39E-02	7.83E-05	4.19E-10
R7	Parkway	453522	376422	1.5	6.04E-06	6.37E-04	2.78E-04	6.35E-03	3.59E-05	1.92E-10	1.57E-05	1.65E-03	7.21E-04	1.65E-02	9.30E-05	4.97E-10
R8	Allotments	453888	376351	1.5	1.68E-05	6.44E-04	7.71E-04	1.76E-02	9.95E-05	5.32E-10	4.35E-05	1.67E-03	2.00E-03	4.57E-02	2.58E-04	1.38E-09
R9	Queens Gardens	454003	376434	1.5	2.04E-05	6.15E-04	9.38E-04	2.14E-02	1.21E-04	6.47E-10	5.29E-05	1.59E-03	2.43E-03	5.6E-02	3.14E-04	1.68E-09
R10	Allotments	454215	376436	1.5	2.33E-05	5.80E-04	1.07E-03	2.45E-02	1.38E-04	7.39E-10	6.04E-05	1.50E-03	2.78E-03	6.95E-02	3.59E-04	1.92E-09
R11	Sherwood Cottage	454039	375916	1.5	1.26E-05	6.52E-04	5.81E-04	1.33E-02	7.50E-05	4.01E-10	3.28E-05	1.69E-03	1.51E-03	3.44E-02	1.94E-04	1.04E-09
R12	Penny Green	454150	375796	1.5	1.12E-05	6.95E-04	5.16E-04	1.18E-02	6.65E-05	3.56E-10	2.91E-05	1.80E-03	1.34E-03	3.05E-02	1.72E-04	9.22E-10
R13	New Cottages	454227	375769	1.5	1.19E-05	6.82E-04	5.48E-04	1.25E-02	7.07E-05	3.78E-10	3.09E-05	1.77E-03	1.42E-03	3.24E-02	1.83E-04	9.79E-10
R14	Penny Green Cottages	454240	375606	1.5	1.15E-05	6.74E-04	5.27E-04	1.20E-02	6.80E-05	3.63E-10	2.97E-05	1.75E-03	1.37E-03	3.12E-02	1.76E-04	9.42E-10
R15	Greenacres	454249	376216	1.5	2.11E-05	5.82E-04	9.71E-04	2.22E-02	1.25E-04	6.70E-10	5.47E-05	1.51E-03	2.52E-03	5.79E-02	3.25E-04	1.74E-09
R16	Sprinfield Farm	454522	375484	1.5	1.50E-05	6.34E-04	6.91E-04	1.58E-02	8.91E-05	4.76E-10	3.89E-05	1.64E-03	1.79E-03	4.09E-02	2.31E-04	1.23E-09
R17	Willowside	454579	375563	1.5	1.50E-05	6.00E-04	6.92E-04	1.58E-02	8.93E-05	4.77E-10	3.90E-05	1.56E-03	1.79E-03	4.10E-02	2.31E-04	1.24E-09
R18	Belph	454598	375509	1.5	1.52E-05	6.15E-04	7.00E-04	1.60E-02	9.03E-05	4.83E-10	3.94E-05	1.59E-03	1.81E-03	4.15E-02	2.34E-04	1.25E-09
R19	Ganabrig Lodge	454639	375053	1.5	9.19E-06	5.64E-04	4.23E-04	9.65E-03	5.45E-05	2.91E-10	2.38E-05	1.46E-03	1.10E-03	2.80E-02	1.41E-04	7.55E-10
R20	Fishpond Lodge	454954	374780	1.5	6.92E-06	4.67E-04	3.18E-04	7.28E-03	4.11E-05	2.20E-10	1.79E-05	1.21E-03	8.25E-04	1.89E-02	1.06E-04	5.69E-10
R21	Hennymoor Farm	454086	374792	1.5	4.31E-06	6.27E-04	1.98E-04	4.53E-03	2.56E-05	1.37E-10	1.12E-05	1.62E-03	5.14E-04	1.17E-02	6.63E-05	3.54E-10
R22	Nursery Lodge	454540	374455	1.5	5.28E-06	5.77E-04	2.43E-04	5.55E-03	3.13E-05	1.68E-10	1.37E-05	1.50E-03	6.30E-04	1.44E-02	8.12E-05	4.34E-10
R23	Gasworks Lodge	454676	374112	1.5	4.35E-06	5.67E-04	2.00E-04	4.57E-03	2.58E-05	1.38E-10	1.13E-05	1.47E-03	5.19E-04	1.19E-02	6.69E-05	3.58E-10
R24	Hunccroft Lodge	454590	373995	1.5	3.58E-06	5.50E-04	1.65E-04	3.76E-03	2.12E-05	1.14E-10	9.28E-06	1.43E-03	4.27E-04	9.75E-03	5.51E-05	2.94E-10
R25	Hunccroft	454461	373905	1.5	2.72E-06	5.48E-04	1.25E-04	2.86E-03	1.62E-05	8.64E-11	7.06E-06	1.42E-03	3.25E-04	7.42E-03	4.47E-05	2.24E-10
R26	Hunterlea	454614	373668	1.5	2.61E-06	5.56E-04	1.20E-04	2.74E-03	1.55E-05	8.27E-11	6.76E-06	1.40E-03	3.11E-04	7.10E-03	4.01E-05	2.14E-10
R27	Creswell Crags	453886	374373	1.5	1.63E-06	4.64E-04	7.50E-05	1.71E-03	9.67E-06	5.17E-11	4.22E-06	1.20E-03	1.94E-04	4.44E-03	2.51E-05	1.34E-10
R28	Crags Lodge	453711	374437	1.5	1.31E-06	4.00E-04	6.02E-05	1.38E-03	7.77E-06	4.15E-11	3.39E-06	1.04E-03	1.56E-04	3.57E-03	2.01E-05	1.08E-10
R29	Holbeck	454359	373444	1.5	1.60E-06	4.14E-04	7.37E-05	1.68E-03	9.51E-06	5.08E-11	4.15E-06	1.07E-03	1.91E-04	4.37E-03	2.47E-05	1.32E-10
R30	Sabroan Cottage	454354	373308	1.5	1.49E-06	3.71E-04	6.87E-05	1.57E-03	8.86E-06	4.73E-11	3.87E-06	9.61E-04	1.78E-04	4.07E-03	2.26E-05	1.23E-10
R31	Badgers Copse	453155	373282	1.5	1.47E-06	4.05E-04	6.76E-05	1.55E-03	8.72E-06	4.66E-11	3.81E-06	1.05E-03	1.75E-04	4.00E-03	2.60E-05	1.21E-10
R32	Willow Farm	452992	373813	1.5	1.89E-06	4.45E-04	8.68E-05	1.98E-03	1.12E-05	5.98E-11	4.89E-06	1.15E-03	2.25E-04	5.14E-03	2.90E-05	1.55E-10
R33	Crags Cottages	453081	374083	1.5	1.92E-06	4.79E-04	8.82E-05	2.01E-03	1.14E-05	6.08E-11	4.97E-06	1.24E-03	2.28E-04	5.22E-03	2.95E-05	1.58E-10
R34	Bank House Farm	452936	374270	1.5	2.58E-06	4.82E-04	1.19E-04	2.71E-03	1.53E-05	8.19E-11	6.69E-06	1.25E-03	3.08E-04	7.02E-03	3.97E-05	2.12E-10
R35	Mansefield Rd	452814	374274	1.5	2.97E-06	5.09E-04	1.37E-04	3.12E-03	1.76E-05	9.42E-11	7.70E-06	1.32E-03	3.54E-04	8.09E-03	4.57E-05	2.44E-10
R36	Sheffield Rd	452706	374442	1.5	3.71E-06	5.26E-04	1.71E-04	3.90E-03	2.20E-05	1.18E-10	9.62E-06	1.36E-03	4.43E-04	1.01E-02	5.71E-05	3.05E-10
R37	Sheffield Rd	452609	374535	1.5	4.10E-06	5.39E-04	1.89E-04	4.31E-03	2.43E-05	1.30E-10	1.06E-05	1.40E-03	4.89E-04	1.12E-02	6.30E-05	3.37E-10
R38	Brookside Farm	452529	374812	1.5	4.18E-06	6.02E-04	1.92E-04	4.39E-03	2.48E-05	1.32E-10	1.08E-05	1.56E-03	4.98E-04	1.14E-02	6.42E-05	3.43E-10
R39	Allotments	452474	374967	1.5	3.84E-06	5.75E-04	1.77E-04	4.03E-03	2.28E-05	1.22E-10	9.95E-06	1.49E-03	4.58E-04	1.05E-02	5.90E-05	3.16E-10
R40	Bluebell Walk	452133	375196	1.5	3.42E-06	5.01E-04	1.58E-04	3.60E-03	2.03E-05	1.09E-10	8.88E-06	1.30E-03	4.08E-04	9.33E-03	5.27E-05	2.82E-10
R41	Lower Mill Farm	452389	375213	1.5	3.63E-06	5.94E-04	1.67E-04	3.81E-03	2.15E-05	1.15E-10	9.40E-06	1.54E-03	4.32E-04	8.85E-03	5.58E-05	2.98E-10
R42	Peter More	452170	375680	1.5	3.06E-06	4.74E-04	1.41E-04	3.22E-03	1.82E-05	9.72E-11	7.94E-06	1.23E-03	3.65E-04	8.95E-03	4.71E-05	2.52E-10
R43	Allotments	452270	376088	1.5	2.67E-06	5.97E-04	1.23E-04	2.81E-03	1.59E-05	8.48E-11	6.93E-06	1.55E-03	3.19E-04	7.28E-03	4.11E-05	2.20E-10
R44	New Street	452338	376141	1.5	2.65E-06	5.71E-04	1.22E-04	2.78E-03	1.57E-05	8.39E-11	6.86E-06	1.48E-03	3.15E-04	7.12E-03	4.47E-05	2.17E-10
R45	Vine Cottages	452524	376136	1.5	2.68E-06	5.29E-04	1.23E-04	2.82E-03	1.59E-05	8.51E-11	6.95E-06	1.37E-03	3.20E-04	7.31E-03	4.13E-05	2.21E-10
R46	Thorpe Avenue	452663	376154	1.5	2.69E-06	5.57E-04	1.24E-04	2.82E-03	1.59E-05	8.52E-11	6.96E-06	1.44E-03	3.20E-04	7.32E-03	4.14E-05	2.21E-10
R47	Franklin Avenue	452800	376109	1.5	2.60E-06	5.47E-04	1.20E-04	2.73E-03	1.54E-05	8.25E-11	6.74E-06	1.42E-03	3.10E-04	7.08E-03	4.00E-05	2.14E-10
R48	Franklin Crescent	452900	376146	1.5	2.52E-06	6.23E-04	1.16E-04	2.64E-03	1.49E-05	7.98E-11	6.52E-06	1.61E-03	3.00E-04	6.85E-03	3.87E-05	2.07E-10
R49	Longhurst View	452985	376140	1.5	2.39E-06	6.57E-04	1.10E-04	2.51E-03	1.42E-05	7.58E-11	6.20E-06	1.70E-03	2.85E-04	6.51E-03	3.68E-05	1.97E-10
E1	Birklands	461208	367858	0	2.11E-06	2.04E-04	9.70E-05	2.22E-03	1.25E-05	6.69E-11	5.46E-06	5.29E-04	2.51E-04	5.74E-03	3.24E-05	1.73E-10
E2	Fox Den	460165	367717	0	2.02E-06	2.26E-04	9.30E-05	2.12E-03	1.20E-05	6.41E-11	5.24E-06	5.87E-04	2.41E-04	5.51E-03	3.11E-05	1.66E-10
E3	Warsop Quarter	459663	367565	0	1.89E-06	2.28E-04	8.70E-05	1.99E-03	1.12E-05	6.00E-11	4.90E-06	5.90E-04	2.65E-04	5.15E-03	2.91E-05	1.56E-10
E4	Hanger Hill	459742	368286	0	2.14E-06	2.42E-04	9.85E-05	2.25E-03	1.27E-05	6.79E-11	5.55E-06	6.26E-04	2.55E-04	5.83E-03	3.29E-05	1.74E-10
E5	Jerusalem Plant	459466	368120	0	2.04E-06	2.34E-04	9.38E-05	2.14E-03	1.21E-05	6.47E-11	5.29E-06	6.05E-04	2.43E-04	5.56E-03	3.14E-05	1.68E-10
E6	Sod Wall Plant	458705	368396	0	1.96E-06	2.42E-04	9.00E-05	2.06E-03	1.16E-05	6.20E-11	5.07E-06	6.29E-04	2.33E-04	5.33E-03	3.01E-05	1.61E-10
E7	Gleadthorpe	459475	369146	0	2.39E-06	2.59E-04	1.10E-04	2.51E-03	1.42E-05	7.58E-11	6.20E-06	6.71E-04	2.85E-04	6.51E-03	3.68E-05	1.97E-10
E8	Assarts Wood	460816	368608	0	2.25E-06	2.18E-04	1.03E-04	2.36E-03	1.33E-05	7.13E-11	5.83E-06	5.64E-04	2.68E-04	6.13E-03	3.46E-05	1.85E-10
E9	Boundary Plant	460078	369377	0	2.43E-06	2.40E-04	1.12E-04	2.56E-03	1.44E-05	7.72E-11	6.31E-06	6.23E-04	2.90E-04	6.63E-03	3.74E-05	2.00E-10
E10	Meadowbank	460089	370130	0	2.49E-06	2.51E-04	1.15E-04	2.62E-0								

Appendix 4 – Ecological Assessment

No.	Receptor name	X(m)	Y(m)	Z(m)	Air Concentrations				
					NOx	SO2	HCl	HF	NH3
					LTConc ug/m ³ NOx <All sources> 1hr	LTConc ug/m ³ SO2 <All sources> 1hr	LTConc ug/m ³ HCl <All sources> 1hr	LTConc ug/m ³ HF <All sources> 1hr	LTConc ug/m ³ NH3 <All sources> 1hr
E1	Birklands	461208	367858	0	3.19E-01	7.95E-02	1.25E-02	2.22E-03	0.0000
E2	Fox Den	460165	367717	0	3.06E-01	7.60E-02	1.19E-02	2.12E-03	0.0000
E3	Warsop Quarter	459663	367565	0	2.86E-01	7.26E-02	1.12E-02	1.99E-03	0.0000
E4	Hanger Hill	459742	368286	0	3.24E-01	8.03E-02	1.26E-02	2.25E-03	0.0000
E5	Jerusalem Plant	459466	368120	0	3.09E-01	7.78E-02	1.21E-02	2.14E-03	0.0000
E6	Sod Wall Plant	458705	368396	0	2.96E-01	7.48E-02	1.16E-02	2.06E-03	0.0000
E7	Gleadthorpe	459475	369146	0	3.62E-01	8.88E-02	1.41E-02	2.51E-03	0.0000
E8	Assarts Wood	460816	368608	0	3.41E-01	8.61E-02	1.33E-02	2.36E-03	0.0000
E9	Boundary Plant	460078	369377	0	3.69E-01	9.34E-02	1.44E-02	2.56E-03	0.0000
E10	Meadowbank	460089	370130	0	3.77E-01	9.50E-02	1.47E-02	2.62E-03	0.0000
E11	Budby South	460481	369472	0	3.61E-01	9.18E-02	1.41E-02	2.50E-03	0.0000
E12	Budby South	460592	369036	0	3.52E-01	8.97E-02	1.37E-02	2.45E-03	0.0000
E13	Budby South	460671	368732	0	3.45E-01	8.73E-02	1.35E-02	2.40E-03	0.0000
E14	Nitticarhill	449040	378478	0	2.99E-01	7.67E-02	1.17E-02	2.08E-03	0.0000
E15	Common Piece	456966	372858	0	5.24E-01	1.28E-01	2.04E-02	3.63E-03	0.0000
E16	Angling Garden	457419	373388	0	5.51E-01	1.30E-01	2.15E-02	3.82E-03	0.0000
E17	Moss Hall	457709	373100	0	5.16E-01	1.21E-01	2.02E-02	3.58E-03	0.0000
E18	Markland Grips	450814	374465	0	3.65E-01	8.87E-02	1.42E-02	2.53E-03	0.0000
E19	Markland Grips	450828	374732	0	3.72E-01	9.08E-02	1.45E-02	2.58E-03	0.0000
E20	Markland Grips	450944	374983	0	3.87E-01	9.54E-02	1.51E-02	2.68E-03	0.0000
E21	Markland Grips	451163	375118	0	4.05E-01	1.00E-01	1.58E-02	2.81E-03	0.0000
E22	Markland Grips	451344	375202	0	4.21E-01	1.04E-01	1.64E-02	2.93E-03	0.0000
E23	Hollinhill Grips	451183	375269	0	4.06E-01	1.01E-01	1.58E-02	2.82E-03	0.0000
E24	Hollinhill Grips	450970	375306	0	3.87E-01	9.60E-02	1.51E-02	2.69E-03	0.0000
E25	Hollinhill Grips	450754	375473	0	3.62E-01	8.88E-02	1.41E-02	2.51E-03	0.0000
E26	Hollinhill Grips	450447	375492	0	3.42E-01	8.38E-02	1.33E-02	2.37E-03	0.0000
E27	Ginny Spring	452057	378891	0	3.15E-01	7.43E-02	1.23E-02	2.19E-03	0.0000
E28	Anston Stones	452809	383258	0	3.69E-01	8.46E-02	1.44E-02	2.56E-03	0.0000
E29	Lindrick Golf Course	453926	382195	0	6.16E-01	1.52E-01	2.40E-02	4.28E-03	0.0000
E30	Woodsetts Pond	456311	381977	0	1.19E+00	2.90E-01	4.65E-02	8.26E-03	0.0000
E31	Norbriggs Flash	444583	375510	0	1.80E-01	4.33E-02	7.01E-03	1.25E-03	0.0000
E32	Lord Stubbins Wood	453843	369154	0	1.79E-01	4.17E-02	6.99E-03	1.24E-03	0.0000
E33	Hills and Holes	455635	367901	0	1.50E-01	3.44E-02	5.86E-03	1.04E-03	0.0000
E34	Birklands	459935	366834	0	2.61E-01	6.60E-02	1.02E-02	1.81E-03	0.0000
E35	Sherwood Forest	461505	367970	0	3.19E-01	8.08E-02	1.25E-02	2.22E-03	0.0000
E36	Nelson Grove	462151	370082	0	3.15E-01	7.23E-02	1.23E-02	2.19E-03	0.0000
E37	Clumber Park	461429	373621	0	5.41E-01	1.37E-01	2.11E-02	3.75E-03	0.0000
E38	Clumber Park	460556	375832	0	6.46E-01	1.59E-01	2.52E-02	4.48E-03	0.0003

units = ug/m³ annual mean at ground level

based on worst case dispersion year (Scampton 2015)
 with worst case surface roughness conditions annual mean (0.5m)
 emissions from 94m high stack - ignores terrain effects
 predictions from ADMS 5.2

No.	Receptor name	X(m)	Y(m)	Z(m)	HCL				HF			
					air	dry	wet	total	air	dry	wet	total
					LTConc ug/m3 HCl <All sources> - 1hr	LTDry ug/m2/s HCl <All sources> - 1hr	LTWet ug/m2/s HCl <All sources> - 1hr	LTTot ug/m2/s HCl <All sources> - 1hr	LTConc ug/m3 HF <All sources> - 1hr	LTDry ug/m2/s HF <All sources> - 1hr	LTWet ug/m2/s HF <All sources> - 1hr	LTTot ug/m2/s HF <All sources> - 1hr
E1	Birklands	461208	367858	0	6.48E-03	3.89E-04	3.41E-05	4.23E-04	1.15E-03	6.92E-05	6.07E-06	7.53E-05
E2	Fox Den	460165	367717		6.30E-03	3.78E-04	2.81E-05	4.06E-04	1.12E-03	6.73E-05	4.99E-06	7.23E-05
E3	Warsop Quarter	459663	367565		5.92E-03	3.55E-04	2.53E-05	3.80E-04	1.05E-03	6.32E-05	4.51E-06	6.77E-05
E4	Hangar Hill	459742	368286		6.86E-03	4.12E-04	3.10E-05	4.43E-04	1.22E-03	7.32E-05	5.52E-06	7.87E-05
E5	Jeruusalem Plant	459466	368120		6.53E-03	3.92E-04	2.85E-05	4.20E-04	1.16E-03	6.97E-05	5.07E-06	7.47E-05
E6	Sod Wall Plant	458705	368396		6.41E-03	3.84E-04	2.70E-05	4.12E-04	1.14E-03	6.84E-05	4.81E-06	7.32E-05
E7	Gleadthorpe	459475	369146		7.93E-03	4.76E-04	3.96E-05	5.16E-04	1.41E-03	8.47E-05	7.04E-06	9.17E-05
E8	Assarts Wood	460816	368608		7.16E-03	4.29E-04	3.90E-05	4.68E-04	1.27E-03	7.64E-05	6.93E-06	8.33E-05
E9	Boundary Plant	460078	369377		8.08E-03	4.85E-04	4.46E-05	5.29E-04	1.44E-03	8.62E-05	7.94E-06	9.41E-05
E10	Meadowbank	460089	370130		8.56E-03	5.14E-04	4.32E-05	5.57E-04	1.52E-03	9.14E-05	7.68E-06	9.91E-05
E11	Budby South	460481	369472		7.90E-03	4.74E-04	4.21E-05	5.16E-04	1.41E-03	8.43E-05	7.49E-06	9.18E-05
E12	Budby South	460592	369036		7.56E-03	4.54E-04	4.14E-05	4.95E-04	1.34E-03	8.07E-05	7.36E-06	8.81E-05
E13	Budby South	460671	368732		7.30E-03	4.38E-04	3.98E-05	4.78E-04	1.30E-03	7.80E-05	7.09E-06	8.50E-05
E14	Nitticarhill	449040	378478		8.03E-03	4.82E-04	9.78E-05	5.80E-04	1.43E-03	8.57E-05	1.74E-05	1.03E-04
E15	Common Piece	456966	372858		1.46E-02	8.76E-04	8.48E-05	9.61E-04	2.60E-03	1.56E-04	1.51E-05	1.71E-04
E16	Angling Garden	457419	373388		1.54E-02	9.24E-04	8.85E-05	1.01E-03	2.74E-03	1.64E-04	1.57E-05	1.80E-04
E17	Moss Hall	457709	373100		1.41E-02	8.48E-04	7.43E-05	9.22E-04	2.51E-03	1.51E-04	1.32E-05	1.64E-04
E18	Markland Grips	450814	374465		1.18E-02	7.11E-04	9.33E-05	8.04E-04	2.11E-03	1.26E-04	1.66E-05	1.43E-04
E19	Markland Grips	450828	374732		1.22E-02	7.29E-04	1.02E-04	8.32E-04	2.16E-03	1.30E-04	1.82E-05	1.48E-04
E20	Markland Grips	450944	374983		1.27E-02	7.62E-04	1.42E-04	9.04E-04	2.26E-03	1.36E-04	2.53E-05	1.61E-04
E21	Markland Grips	451163	375118		1.34E-02	8.04E-04	1.59E-04	9.63E-04	2.38E-03	1.43E-04	2.83E-05	1.71E-04
E22	Markland Grips	451344	375202		1.40E-02	8.41E-04	1.67E-04	1.01E-03	2.49E-03	1.50E-04	2.96E-05	1.79E-04
E23	Hollinhill Grips	451183	375269		1.34E-02	8.02E-04	1.41E-04	9.43E-04	2.38E-03	1.43E-04	2.51E-05	1.68E-04
E24	Hollinhill Grips	450970	375306		1.26E-02	7.57E-04	1.23E-04	8.81E-04	2.25E-03	1.35E-04	2.19E-05	1.57E-04
E25	Hollinhill Grips	450754	375473		1.16E-02	6.98E-04	1.19E-04	8.17E-04	2.07E-03	1.24E-04	2.11E-05	1.45E-04
E26	Hollinhill Grips	450447	375492		1.08E-02	6.51E-04	1.07E-04	7.58E-04	1.93E-03	1.16E-04	1.91E-05	1.35E-04
E27	Ginny Spring	452057	378891		8.76E-03	5.25E-04	2.77E-04	8.02E-04	1.56E-03	9.35E-05	4.93E-05	1.43E-04
E28	Anston Stones	452809	383258		8.47E-03	5.08E-04	1.14E-04	6.22E-04	1.51E-03	9.04E-05	2.03E-05	1.11E-04
E29	Lindrick Golf Course	453926	382195		1.46E-02	8.73E-04	1.77E-04	1.05E-03	2.59E-03	1.55E-04	3.15E-05	1.87E-04
E30	Woodsetts Pond	456311	381977		2.77E-02	1.66E-03	1.68E-04	1.83E-03	4.93E-03	2.96E-04	2.98E-05	3.26E-04
E31	Norbriggs Flash	444583	375510		4.53E-03	2.72E-04	3.10E-05	3.03E-04	8.07E-04	4.84E-05	5.51E-06	5.39E-05
E32	Lord Stubbins Wood	453843	369154		4.50E-03	2.70E-04	6.58E-05	3.36E-04	8.00E-04	4.80E-05	1.17E-05	5.97E-05
E33	Hills and Holes	455635	367901		3.67E-03	2.20E-04	2.29E-05	2.43E-04	6.52E-04	3.91E-05	4.07E-06	4.32E-05
E34	Birklands	459935	366834		5.23E-03	3.14E-04	2.17E-05	3.35E-04	9.30E-04	5.58E-05	3.85E-06	5.96E-05
E35	Sherwood Forest	461505	367970		6.48E-03	3.89E-04	3.50E-05	4.24E-04	1.15E-03	6.92E-05	6.24E-06	7.54E-05
E36	Nelson Grove	462151	370082		6.79E-03	4.07E-04	2.78E-05	4.35E-04	1.21E-03	7.25E-05	4.94E-06	7.74E-05
E37	Clumber Park	461429	373621		1.28E-02	7.68E-04	6.69E-05	8.35E-04	2.28E-03	1.37E-04	1.19E-05	1.49E-04
E38	Clumber Park	460556	375832		1.65E-02	9.88E-04	1.21E-04	1.11E-03	2.93E-03	1.76E-04	2.15E-05	1.97E-04

based on worst case dispersion year (Scampton 2015)
 with worst case surface roughness conditions annual mean (0.5m)
 emissions from 94m high stack - ignores terrain effects
 modelled wet and dry deposition deposition velocity = 0.60m/s - for forest
 predictions from ADMS 5.2
 default assumptions for wet deposition

No.	Receptor name	X(m)	Y(m)	N acid gas dry deposition only				
				ug/m ³	deposition velocity (m/s) ⁽¹⁾	ug/m2/s	conversion factor ⁽²⁾	k _{eq} /ha/year
E1	Birklands	461208	367858	0.3192	0.003	9.58E-04	6.84	0.0065
E2	Fox Den	460165	367717	0.3060	0.003	9.18E-04	6.84	0.0063
E3	Warsop Quarter	459663	367565	0.2865	0.003	8.59E-04	6.84	0.0059
E4	Hanger Hill	459742	368286	0.3242	0.003	9.73E-04	6.84	0.0067
E5	Jerusalem Plant	459466	368120	0.3088	0.003	9.26E-04	6.84	0.0063
E6	Sod Wall Plant	458705	368396	0.2961	0.003	8.88E-04	6.84	0.0061
E7	Gleadthorpe	459475	369146	0.3620	0.003	1.09E-03	6.84	0.0074
E8	Assarts Wood	460816	368608	0.3406	0.003	1.02E-03	6.84	0.0070
E9	Boundary Plant	460078	369377	0.3687	0.003	1.11E-03	6.84	0.0076
E10	Meadowbank	460089	370130	0.3770	0.003	1.13E-03	6.84	0.0077
E11	Budby South	460481	369472	0.3605	0.003	1.08E-03	6.84	0.0074
E12	Budby South	460592	369036	0.3524	0.003	1.06E-03	6.84	0.0072
E13	Budby South	460671	368732	0.3452	0.003	1.04E-03	6.84	0.0071
E14	Nitticarhill	449040	378478	0.2993	0.003	8.98E-04	6.84	0.0061
E15	Common Piece	456966	372858	0.5236	0.003	1.57E-03	6.84	0.0107
E16	Angling Garden	457419	373388	0.5506	0.003	1.65E-03	6.84	0.0113
E17	Moss Hall	457709	373100	0.5164	0.003	1.55E-03	6.84	0.0106
E18	Markland Grips	450814	374465	0.3646	0.003	1.09E-03	6.84	0.0075
E19	Markland Grips	450828	374732	0.3720	0.003	1.12E-03	6.84	0.0076
E20	Markland Grips	450944	374983	0.3866	0.003	1.16E-03	6.84	0.0079
E21	Markland Grips	451163	375118	0.4050	0.003	1.21E-03	6.84	0.0083
E22	Markland Grips	451344	375202	0.4214	0.003	1.26E-03	6.84	0.0086
E23	Hollinhill Grips	451183	375269	0.4058	0.003	1.22E-03	6.84	0.0083
E24	Hollinhill Grips	450970	375306	0.3870	0.003	1.16E-03	6.84	0.0079
E25	Hollinhill Grips	450754	375473	0.3615	0.003	1.08E-03	6.84	0.0074
E26	Hollinhill Grips	450447	375492	0.3418	0.003	1.03E-03	6.84	0.0070
E27	Ginny Spring	452057	378891	0.3155	0.003	9.46E-04	6.84	0.0065
E28	Anston Stones	452809	383258	0.3686	0.003	1.11E-03	6.84	0.0076
E29	Lindrick Golf Course	453926	382195	0.6162	0.0015	9.24E-04	6.84	0.0063
E30	Woodsetts Pond	456311	381977	1.1905	0.003	3.57E-03	6.84	0.0244
E31	Norbriggs Flash	444583	375510	0.1796	0.003	5.39E-04	6.84	0.0037
E32	Lord Stubbins Wood	453843	369154	0.1790	0.003	5.37E-04	6.84	0.0037
E33	Hills and Holes	455635	367901	0.1502	0.003	4.51E-04	6.84	0.0031
E34	Birklands	459935	366834	0.2605	0.003	7.82E-04	6.84	0.0053
E35	Sherwood Forest	461505	367970	0.3191	0.003	9.57E-04	6.84	0.0065
E36	Nelson Grove	462151	370082	0.3152	0.003	9.46E-04	6.84	0.0065
E37	Clumber Park	461429	373621	0.5409	0.003	1.62E-03	6.84	0.0111
E38	Clumber Park	460556	375832	0.6458	0.003	1.94E-03	6.84	0.0133

Notes

1. According to AQTAG06 March 2014 the annual dry deposition flux can be obtained from the modelled annual average ground level concentration via the formula: dry deposition flux (ug/m2/s) = ground level concentration (ug/m3) * deposition velocity (m/s). The recommended dry deposition velocities are presented in Table 8.1 of AQTAG06.
2. Using factors from Table 8.3 to convert from ug/m2/s to keq/ha/year
3. Only CHP and AD plant are source of acid gas from NOx

No.	Receptor name	X(m)	Y(m)	S acid gas dry deposition only				
				ug/m ³	deposition velocity (m/s) ⁽¹⁾	ug/m ² /s	conversion factor ⁽²⁾	keq/ha/year
E1	Birklands	461208	367858	0.0795	0.024	1.91E-03	9.84	0.0188
E2	Fox Den	460165	367717	0.0760	0.024	1.82E-03	9.84	0.0180
E3	Warsop Quarter	459663	367565	0.0726	0.024	1.74E-03	9.84	0.0171
E4	Hanger Hill	459742	368286	0.0803	0.024	1.93E-03	9.84	0.0190
E5	Jerusalem Plant	459466	368120	0.0778	0.024	1.87E-03	9.84	0.0184
E6	Sod Wall Plant	458705	368396	0.0748	0.024	1.79E-03	9.84	0.0177
E7	Gleadthorpe	459475	369146	0.0888	0.024	2.13E-03	9.84	0.0210
E8	Assarts Wood	460816	368608	0.0861	0.024	2.07E-03	9.84	0.0203
E9	Boundary Plant	460078	369377	0.0934	0.024	2.24E-03	9.84	0.0221
E10	Meadowbank	460089	370130	0.0950	0.024	2.28E-03	9.84	0.0224
E11	Budby South	460481	369472	0.0918	0.024	2.20E-03	9.84	0.0217
E12	Budby South	460592	369036	0.0897	0.024	2.15E-03	9.84	0.0212
E13	Budby South	460671	368732	0.0873	0.024	2.09E-03	9.84	0.0206
E14	Nitticarhill	449040	378478	0.0767	0.024	1.84E-03	9.84	0.0181
E15	Common Piece	456966	372858	0.1280	0.024	3.07E-03	9.84	0.0302
E16	Angling Garden	457419	373388	0.1304	0.024	3.13E-03	9.84	0.0308
E17	Moss Hall	457709	373100	0.1207	0.024	2.90E-03	9.84	0.0285
E18	Markland Grips	450814	374465	0.0887	0.024	2.13E-03	9.84	0.0209
E19	Markland Grips	450828	374732	0.0908	0.024	2.18E-03	9.84	0.0214
E20	Markland Grips	450944	374983	0.0954	0.024	2.29E-03	9.84	0.0225
E21	Markland Grips	451163	375118	0.1003	0.024	2.41E-03	9.84	0.0237
E22	Markland Grips	451344	375202	0.1043	0.024	2.50E-03	9.84	0.0246
E23	Hollinhill Grips	451183	375269	0.1005	0.024	2.41E-03	9.84	0.0237
E24	Hollinhill Grips	450970	375306	0.0960	0.024	2.30E-03	9.84	0.0227
E25	Hollinhill Grips	450754	375473	0.0888	0.024	2.13E-03	9.84	0.0210
E26	Hollinhill Grips	450447	375492	0.0838	0.024	2.01E-03	9.84	0.0198
E27	Ginny Spring	452057	378891	0.0743	0.024	1.78E-03	9.84	0.0175
E28	Anston Stones	452809	383258	0.0846	0.024	2.03E-03	9.84	0.0200
E29	Lindrick Golf Course	453926	382195	0.1522	0.012	1.83E-03	9.84	0.0180
E30	Woodsetts Pond	456311	381977	0.2904	0.024	6.97E-03	9.84	0.0686
E31	Norbriggs Flash	444583	375510	0.0433	0.024	1.04E-03	9.84	0.0102
E32	Lord Stubbins Wood	453843	369154	0.0417	0.024	1.00E-03	9.84	0.0099
E33	Hills and Holes	455635	367901	0.0344	0.024	8.25E-04	9.84	0.0081
E34	Birklands	459935	366834	0.0660	0.024	1.58E-03	9.84	0.0156
E35	Sherwood Forest	461505	367970	0.0808	0.024	1.94E-03	9.84	0.0191
E36	Nelson Grove	462151	370082	0.0723	0.024	1.73E-03	9.84	0.0171
E37	Clumber Park	461429	373621	0.1371	0.024	3.29E-03	9.84	0.0324
E38	Clumber Park	460556	375832	0.1589	0.012	1.91E-03	9.84	0.0188

Notes

1. According to AQTAG06 March 2014 the annual dry deposition flux can be obtained from the modelled annual average ground level concentration via the formula: dry deposition flux (ug/m²/s) = ground level concentration (ug/m³) * deposition velocity (m/s). The recommended dry deposition velocities are presented in Table 8.1 of AQTAG06.
2. Using factors from Table 8.3 to convert from ug/m²/s to keq/ha/year
3. Only CHP plant is source of SO₂ acid gas

No.	Receptor name	X(m)	Y(m)	NH ₃ dry deposition only				
				ug/m ³	deposition velocity (m/s) ⁽¹⁾	ug/m ² /s	conversion factor ⁽²⁾	keq/ha/year
E1	Birklands	461208	367858	0.000	0.030	0.00E+00	18.5	0.0000
E2	Fox Den	460165	367717	0.000	0.030	0.00E+00	18.5	0.0000
E3	Warsop Quarter	459663	367565	0.000	0.030	0.00E+00	18.5	0.0000
E4	Hanger Hill	459742	368286	0.000	0.030	0.00E+00	18.5	0.0000
E5	Jerusalem Plant	459466	368120	0.000	0.030	0.00E+00	18.5	0.0000
E6	Sod Wall Plant	458705	368396	0.000	0.030	0.00E+00	18.5	0.0000
E7	Gleadthorpe	459475	369146	0.000	0.030	0.00E+00	18.5	0.0000
E8	Assarts Wood	460816	368608	0.000	0.030	0.00E+00	18.5	0.0000
E9	Boundary Plant	460078	369377	0.000	0.030	0.00E+00	18.5	0.0000
E10	Meadowbank	460089	370130	0.000	0.030	0.00E+00	18.5	0.0000
E11	Budby South	460481	369472	0.000	0.030	0.00E+00	18.5	0.0000
E12	Budby South	460592	369036	0.000	0.030	0.00E+00	18.5	0.0000
E13	Budby South	460671	368732	0.000	0.030	0.00E+00	18.5	0.0000
E14	Nitticarhill	449040	378478	0.000	0.030	0.00E+00	18.5	0.0000
E15	Common Piece	456966	372858	0.000	0.030	0.00E+00	18.5	0.0000
E16	Angling Garden	457419	373388	0.000	0.030	0.00E+00	18.5	0.0000
E17	Moss Hall	457709	373100	0.000	0.030	0.00E+00	18.5	0.0000
E18	Markland Grips	450814	374465	0.000	0.030	0.00E+00	18.5	0.0000
E19	Markland Grips	450828	374732	0.000	0.030	0.00E+00	18.5	0.0000
E20	Markland Grips	450944	374983	0.000	0.030	0.00E+00	18.5	0.0000
E21	Markland Grips	451163	375118	0.000	0.030	0.00E+00	18.5	0.0000
E22	Markland Grips	451344	375202	0.000	0.030	0.00E+00	18.5	0.0000
E23	Hollinhill Grips	451183	375269	0.000	0.030	0.00E+00	18.5	0.0000
E24	Hollinhill Grips	450970	375306	0.000	0.030	0.00E+00	18.5	0.0000
E25	Hollinhill Grips	450754	375473	0.000	0.030	0.00E+00	18.5	0.0000
E26	Hollinhill Grips	450447	375492	0.000	0.030	0.00E+00	18.5	0.0000
E27	Ginny Spring	452057	378891	0.000	0.030	0.00E+00	18.5	0.0000
E28	Anston Stones	452809	383258	0.000	0.030	0.00E+00	18.5	0.0000
E29	Lindrick Golf Course	453926	382195	0.000	0.030	0.00E+00	18.5	0.0000
E30	Woodsetts Pond	456311	381977	0.000	0.030	0.00E+00	18.5	0.0000
E31	Norbriggs Flash	444583	375510	0.000	0.030	0.00E+00	18.5	0.0000
E32	Lord Stubbins Wood	453843	369154	0.000	0.030	0.00E+00	18.5	0.0000
E33	Hills and Holes	455635	367901	0.000	0.030	0.00E+00	18.5	0.0000
E34	Birklands	459935	366834	0.000	0.030	0.00E+00	18.5	0.0000
E35	Sherwood Forest	461505	367970	0.000	0.030	0.00E+00	18.5	0.0000
E36	Nelson Grove	462151	370082	0.000	0.030	0.00E+00	18.5	0.0000
E37	Clumber Park	461429	373621	0.000	0.030	0.00E+00	18.5	0.0000
E38	Clumber Park	460556	375832	0.000	0.030	0.00E+00	18.5	0.0000

Notes

1. According to AQTAG06 March 2014 the annual dry deposition flux can be obtained from the modelled annual average ground level concentration via the formula: dry deposition flux (ug/m²/s) = ground level concentration (ug/m³) * deposition velocity (m/s). The recommended dry deposition velocities are presented in Table 8.1 of AQTAG06.
2. Using factors from Table 8.3 to convert from ug/m²/s to keq/ha/year

No.	Receptor name	X(m)	Y(m)	HCl acid gas dry deposition (AQTAG method) and ADMS modelled wet deposition (includes HF)				
				ug/m ³	deposition velocity (m/s) ⁽¹⁾	ug/m2/s	conversion factor ⁽²⁾	k _{eq} /ha/year
E1	Birklands	461208	367858	0.0147	0.060	9.20E-04	8.63	0.0079
E2	Fox Den	460165	367717	0.0141	0.060	8.77E-04	8.63	0.0076
E3	Warsop Quarter	459663	367565	0.0132	0.060	8.20E-04	8.63	0.0071
E4	Hanger Hill	459742	368286	0.0149	0.060	9.31E-04	8.63	0.0080
E5	Jerusalem Plant	459466	368120	0.0142	0.060	8.85E-04	8.63	0.0076
E6	Sod Wall Plant	458705	368396	0.0136	0.060	8.48E-04	8.63	0.0073
E7	Gleadthorpe	459475	369146	0.0166	0.060	1.04E-03	8.63	0.0090
E8	Assarts Wood	460816	368608	0.0157	0.060	9.85E-04	8.63	0.0085
E9	Boundary Plant	460078	369377	0.0169	0.060	1.07E-03	8.63	0.0092
E10	Meadowbank	460089	370130	0.0173	0.060	1.09E-03	8.63	0.0094
E11	Budby South	460481	369472	0.0166	0.060	1.04E-03	8.63	0.0090
E12	Budby South	460592	369036	0.0162	0.060	1.02E-03	8.63	0.0088
E13	Budby South	460671	368732	0.0159	0.060	9.99E-04	8.63	0.0086
E14	Nitticarhill	449040	378478	0.0138	0.060	9.41E-04	8.63	0.0081
E15	Common Piece	456966	372858	0.0241	0.060	1.54E-03	8.63	0.0133
E16	Angling Garden	457419	373388	0.0253	0.060	1.62E-03	8.63	0.0140
E17	Moss Hall	457709	373100	0.0237	0.060	1.51E-03	8.63	0.0130
E18	Markland Grips	450814	374465	0.0168	0.060	1.12E-03	8.63	0.0096
E19	Markland Grips	450828	374732	0.0171	0.060	1.15E-03	8.63	0.0099
E20	Markland Grips	450944	374983	0.0178	0.060	1.23E-03	8.63	0.0106
E21	Markland Grips	451163	375118	0.0186	0.060	1.30E-03	8.63	0.0113
E22	Markland Grips	451344	375202	0.0194	0.060	1.36E-03	8.63	0.0117
E23	Hollinhill Grips	451183	375269	0.0186	0.060	1.29E-03	8.63	0.0111
E24	Hollinhill Grips	450970	375306	0.0178	0.060	1.21E-03	8.63	0.0105
E25	Hollinhill Grips	450754	375473	0.0166	0.060	1.14E-03	8.63	0.0098
E26	Hollinhill Grips	450447	375492	0.0157	0.060	1.07E-03	8.63	0.0092
E27	Ginny Spring	452057	378891	0.0145	0.060	1.20E-03	8.63	0.0103
E28	Anston Stones	452809	383258	0.0169	0.060	1.15E-03	8.63	0.0099
E29	Lindrick Golf Course	453926	382195	0.0283	0.025	9.17E-04	8.63	0.0079
E30	Woodsetts Pond	456311	381977	0.0547	0.060	3.48E-03	8.63	0.0300
E31	Norbriggs Flash	444583	375510	0.0083	0.060	5.32E-04	8.63	0.0046
E32	Lord Stubbins Wood	453843	369154	0.0082	0.060	5.71E-04	8.63	0.0049
E33	Hills and Holes	455635	367901	0.0069	0.060	4.41E-04	8.63	0.0038
E34	Birklands	459935	366834	0.0120	0.060	7.44E-04	8.63	0.0064
E35	Sherwood Forest	461505	367970	0.0147	0.060	9.21E-04	8.63	0.0080
E36	Nelson Grove	462151	370082	0.0145	0.060	9.02E-04	8.63	0.0078
E37	Clumber Park	461429	373621	0.0249	0.060	1.57E-03	8.63	0.0136
E38	Clumber Park	460556	375832	0.0297	0.060	1.92E-03	8.63	0.0166

Notes

1. According to AQTAG06 March 2014 the annual dry deposition flux can be obtained from the modelled annual average ground level concentration via the formula: dry deposition flux (ug/m2/s) = ground level concentration (ug/m3) * deposition velocity (m/s). The recommended dry deposition velocities are presented in Table 8.1 of AQTAG06.
2. Using factors from Table 8.3 to convert from ug/m2/s to keq/ha/year
3. Includes HF + HCl

No.	Receptor name	X(m)	Y(m)	NOx as N Nutrient			NH3 as N Nutrient			N (all) ⁽²⁾	
				NOx N ug/m ² /s	conversion factor ⁽¹⁾	kg N /ha/year	NH3 N ug/m ² /s	conversion factor ⁽¹⁾	kg N /ha/year		kg N /ha/year
E1	Birklands	461208	367858	0	0.000958	95.9	0.0918	0.00000	260	0.0000	0.0918
E2	Fox Den	460165	367717		0.000918	95.9	0.0880	0.00000	260	0.0000	0.0880
E3	Warsop Quarter	459663	367565		0.000859	95.9	0.0824	0.00000	260	0.0000	0.0824
E4	Hanger Hill	459742	368286		0.000973	95.9	0.0933	0.00000	260	0.0000	0.0933
E5	Jerusalem Plant	459466	368120		0.000926	95.9	0.0889	0.00000	260	0.0000	0.0889
E6	Sod Wall Plant	458705	368396		0.000888	95.9	0.0852	0.00000	260	0.0000	0.0852
E7	Gleadthorpe	459475	369146		0.001086	95.9	0.1041	0.00000	260	0.0000	0.1041
E8	Assarts Wood	460816	368608		0.001022	95.9	0.0980	0.00000	260	0.0000	0.0980
E9	Boundary Plant	460078	369377		0.001106	95.9	0.1061	0.00000	260	0.0000	0.1061
E10	Meadowbank	460089	370130		0.001131	95.9	0.1085	0.00000	260	0.0000	0.1085
E11	Budby South	460481	369472		0.001082	95.9	0.1037	0.00000	260	0.0000	0.1037
E12	Budby South	460592	369036		0.001057	95.9	0.1014	0.00000	260	0.0000	0.1014
E13	Budby South	460671	368732		0.001036	95.9	0.0993	0.00000	260	0.0000	0.0993
E14	Nitticarhill	449040	378478		0.000898	95.9	0.0861	0.00000	260	0.0000	0.0861
E15	Common Piece	456966	372858	0	0.001571	95.9	0.1506	0.00000	260	0.0000	0.1506
E16	Angling Garden	457419	373388	0	0.001652	95.9	0.1584	0.00000	260	0.0000	0.1584
E17	Moss Hall	457709	373100	0	0.001549	95.9	0.1486	0.00000	260	0.0000	0.1486
E18	Markland Grips	450814	374465		0.001094	95.9	0.1049	0.00000	260	0.0000	0.1049
E19	Markland Grips	450828	374732		0.001116	95.9	0.1070	0.00000	260	0.0000	0.1070
E20	Markland Grips	450944	374983		0.001160	95.9	0.1112	0.00000	260	0.0000	0.1112
E21	Markland Grips	451163	375118		0.001215	95.9	0.1165	0.00000	260	0.0000	0.1165
E22	Markland Grips	451344	375202	0	0.001264	95.9	0.1212	0.00000	260	0.0000	0.1212
E23	Hollinhill Grips	451183	375269		0.001217	95.9	0.1167	0.00000	260	0.0000	0.1167
E24	Hollinhill Grips	450970	375306		0.001161	95.9	0.1114	0.00000	260	0.0000	0.1114
E25	Hollinhill Grips	450754	375473		0.001085	95.9	0.1040	0.00000	260	0.0000	0.1040
E26	Hollinhill Grips	450447	375492		0.001025	95.9	0.0983	0.00000	260	0.0000	0.0983
E27	Ginny Spring	452057	378891		0.000946	95.9	0.0908	0.00000	260	0.0000	0.0908
E28	Anston Stones	452809	383258		0.001106	95.9	0.1060	0.00000	260	0.0000	0.1060
E29	Lindrick Golf Course	453926	382195	0	0.000924	95.9	0.0886	0.00000	260	0.0000	0.0886
E30	Woodsetts Pond	456311	381977		0.003571	95.9	0.3425	0.00000	260	0.0000	0.3425
E31	Norbriggs Flash	444583	375510		0.000539	95.9	0.0517	0.00000	260	0.0000	0.0517
E32	Lord Stubbins Wood	453843	369154		0.000537	95.9	0.0515	0.00000	260	0.0000	0.0515
E33	Hills and Holes	455635	367901		0.000451	95.9	0.0432	0.00000	260	0.0000	0.0432
E34	Birklands	459935	366834		0.000782	95.9	0.0749	0.00000	260	0.0000	0.0749
E35	Sherwood Forest	461505	367970		0.000957	95.9	0.0918	0.00000	260	0.0000	0.0918
E36	Nelson Grove	462151	370082		0.000946	95.9	0.0907	0.00000	260	0.0000	0.0907
E37	Clumber Park	461429	373621		0.001623	95.9	0.1556	0.00000	260	0.0000	0.1556
E38	Clumber Park	460556	375832	0	0.001937	95.9	0.1858	0.00000	260	0.0000	0.1858

Notes

- Using factors from Table 8.2 to convert from ug/m²/s to kg N /ha/year
- Combined Nutrient from NOx and NH3

No.	Receptor name	X(m)	Y(m)	N ⁽¹⁾	S ⁽²⁾
				k _{eq} /ha/year	
E1	Birklands	461208	367858	0.0065	0.0267
E2	Fox Den	460165	367717	0.0063	0.0255
E3	Warsop Quarter	459663	367565	0.0059	0.0242
E4	Hanger Hill	459742	368286	0.0067	0.0270
E5	Jerusalem Plant	459466	368120	0.0063	0.0260
E6	Sod Wall Plant	458705	368396	0.0061	0.0250
E7	Gleadthorpe	459475	369146	0.0074	0.0300
E8	Assarts Wood	460816	368608	0.0070	0.0288
E9	Boundary Plant	460078	369377	0.0076	0.0313
E10	Meadowbank	460089	370130	0.0077	0.0318
E11	Budby South	460481	369472	0.0074	0.0307
E12	Budby South	460592	369036	0.0072	0.0300
E13	Budby South	460671	368732	0.0071	0.0292
E14	Nitticarhill	449040	378478	0.0061	0.0262
E15	Common Piece	456966	372858	0.0107	0.0436
E16	Angling Garden	457419	373388	0.0113	0.0448
E17	Moss Hall	457709	373100	0.0106	0.0416
E18	Markland Grips	450814	374465	0.0075	0.0306
E19	Markland Grips	450828	374732	0.0076	0.0313
E20	Markland Grips	450944	374983	0.0079	0.0332
E21	Markland Grips	451163	375118	0.0083	0.0349
E22	Markland Grips	451344	375202	0.0086	0.0364
E23	Hollinhill Grips	451183	375269	0.0083	0.0348
E24	Hollinhill Grips	450970	375306	0.0079	0.0331
E25	Hollinhill Grips	450754	375473	0.0074	0.0308
E26	Hollinhill Grips	450447	375492	0.0070	0.0290
E27	Ginny Spring	452057	378891	0.0065	0.0279
E28	Anston Stones	452809	383258	0.0076	0.0299
E29	Lindrick Golf Course	453926	382195	0.0063	0.0259
E30	Woodsetts Pond	456311	381977	0.0244	0.0986
E31	Norbriggs Flash	444583	375510	0.0037	0.0148
E32	Lord Stubbins Wood	453843	369154	0.0037	0.0148
E33	Hills and Holes	455635	367901	0.0031	0.0119
E34	Birklands	459935	366834	0.0053	0.0220
E35	Sherwood Forest	461505	367970	0.0065	0.0270
E36	Nelson Grove	462151	370082	0.0065	0.0248
E37	Clumber Park	461429	373621	0.0111	0.0459
E38	Clumber Park	460556	375832	0.0133	0.0354

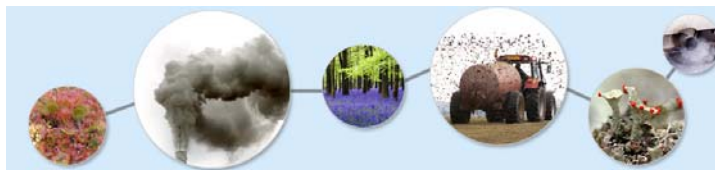
Notes

- 1 Based on combined NOx and NH3 calculations
- 2 Based on combined SO2 (dry) and HCl (wet and dry)
- 3 These are the data inputs to APIS CLF Tool for PC acid gases

Site	Pollutant	Units	Baseline	Process Contribution (PC) ⁽¹⁾	Predicted Environmental Concentration (PEC) ⁽²⁾	Critical Load or Level (CL) ⁽³⁾	(PC/CL)%
Common Piece E15 Broadleaved, Mixed & Yew Woodland	Acid gas deposition	<i>K_{eq}/ha/yr</i>	2.3	0.05	2.35	APIS	3.6%
	Nitrogen Deposition	<i>kg N/ha/yr</i>	26.32	0.151	26.5	10	1.5%
	NH ₃	<i>ug/m³ annual</i>	1.02	0.0000	1.02	1	0.0%
Angling Garden E16 Broadleaved, Mixed & Yew Woodland	Acid gas deposition	<i>K_{eq}/ha/yr</i>	2.3	0.06	2.36	APIS	4.3%
	Nitrogen Deposition	<i>kg N/ha/yr</i>	26.32	0.158	26.5	10	1.6%
	NH ₃	<i>ug/m³ annual</i>	1.02	0.00	1.02	1	0.0%
Moss Hall E17 Broadleaved, Mixed & Yew Woodland	Acid gas deposition	<i>K_{eq}/ha/yr</i>	2.3	0.5	2.35	APIS	3.6%
	Nitrogen Deposition	<i>kg N/ha/yr</i>	26.32	0.149	26.5	10	1.5%
	NH ₃	<i>ug/m³ annual</i>	1.02	0.00	1.02	1	0.0%
Markland Grips E22 Broadleaved, Mixed & Yew Woodland	Acid gas deposition	<i>K_{eq}/ha/yr</i>	3.03	0.0500	3.08	APIS	0.4%
	Nitrogen Deposition	<i>kg N/ha/yr</i>	35.28	0.121	35.40	15	0.8%
	NH ₃	<i>ug/m³ annual</i>	1.71	0.0000	1.71	1	0.0%
Lindrick Golf Course E29 Calcerous Grassland	Acid gas deposition	<i>K_{eq}/ha/yr</i>	2.12	0.0300	2.15	APIS	0.6%
	Nitrogen Deposition	<i>kg N/ha/yr</i>	24.5	0.089	24.59	15	0.6%
	NH ₃	<i>ug/m³ annual</i>	2.77	0.0000	2.77	1	0.0%
Clumber Park E38 Broadleaved, Mixed & Yew Woodland	Acid gas deposition	<i>K_{eq}/ha/yr</i>	2.28	0.0500	2.33	APIS	3.8%
	Nitrogen Deposition	<i>kg N/ha/yr</i>	26.6	0.186	26.8	10	1.9%
	NH ₃	<i>ug/m³ annual</i>	1.2	0.0000	1.2	1	0.0%

Notes

1. Process contribution for acid gas deposition is from APIS Critical Load Function Tool where PC = total acid deposition (S+N)
2. Where PEC for acid gas deposition is from APIS CLF Tool
3. Critical Load for Acid gases from APIS



(/)

Air Pollution Information System (/)

[home \(/\)](#) [site relevant critical loads \(/srcl\)](#) [search by location \(/search-location\)](#)

[habitat/pollutant impacts \(/search-pollutant-impacts\)](#) [biomonitoring \(/biomonitoring\)](#)

[contact \(/contact\)](#)

[Home \(/\)](#) / [Query by Location - Results](#)

Query by Location - Results

Habitat: Broadleaved, Mixed and Yew Woodland

Grid Reference: 457419,373388

Grid Easting: 457500 to the 5km mid point (metres)

Grid Northing: 372500 to the 5km mid point (metres)

Grid Easting: 457500 to the 1km mid point (metres)

Grid Easting: 373500 to the 1km mid point (metres)

Pollutant: Ammonia

Critical Level:



1.0 - 3 µg m⁻³

Concentration: 1.02 µg m⁻³



Data Year: 2013 - 2015

Exceedance: [1.0] to [-1.98] µg m⁻³

Pollutant: N Deposition

Critical Load Range:



Broadleaved deciduous woodland: 10 - 20 Kg N/ha/year

Fagus woodland: 10 - 20 Kg N/ha/year

Acidophilous Quercus-dominated woodland: 10 - 15 Kg N/ha/year

Meso- and eutrophic Quercus woodland: 15 - 20 Kg N/ha/year

For applying the best indicative critical load values for use in impact assessments please visit the following page (<http://www.apis.ac.uk/indicative-critical-load-values>).

Deposition: 26.32 Kg N/ha/year



Data Year: 2013 - 2015

Exceedance Ranges:

Broadleaved deciduous woodland [16.32] to [6.32] Kg N/ha/year

Fagus woodland [16.32] to [6.32] Kg N/ha/year

Acidophilous Quercus-dominated woodland [16.32] to [11.32] Kg N/ha/year

Meso- and eutrophic Quercus woodland [11.32] to [6.32] Kg N/ha/year



Pollutant: Nitrogen Oxides**Critical Level:**

30 µg NOx (as NO2) m-3

Concentration: 17.41 µg NOx (as NO2) m-3**Data Year:** 2013 - 2015**Exceedance:** -12.59 µg NOx (as NO2) m-3**Pollutant:** Sulphur Dioxide**Critical Level:**

20 µg m-3

Concentration: 0.56 µg m-3**Data Year:** 2013 - 2015**Exceedance:** -19.44 µg m-3**Pollutant:** Acid Deposition**Critical Load Class & Values:**Class: Broadleaved/Coniferous unmanaged woodland
CLmaxS: 1.26 CLminN: 0.142 CLmaxN: 1.402 (keq/ha/yr)**Deposition:** 1.74 (N: 1.88 | S: 0.42) (keq/ha/yr)**Data Year:** 2013 - 2015**Exceedance:**

Quick links

[Quick Links](#)[Plant Effects Gallery \(/plant-effects-gallery\)](/plant-effects-gallery)[APIS Bibliography \(/bibliography\)](/bibliography)[About APIS \(/introduction.html\)](/introduction.html)

Overviews

[Pollutants](#)[Ecosystems](#)[Legislation](#)[Issues](#)

This page was accessed on Sunday, January 20, 2019 10:29

[Privacy Notice \(/privacy-notice\)](#)

[Login \(/user/login\)](#)



[\(http://jncc.defra.gov.uk/\)](http://jncc.defra.gov.uk/)



[\(http://www.environment-agency.gov.uk/\)](http://www.environment-agency.gov.uk/)



<http://www.doeni.gov.uk/niea/index.htm>



[\(http://www.snh.gov.uk/\)](http://www.snh.gov.uk/)



[\(http://www.sniffer.org.uk/\)](http://www.sniffer.org.uk/)



[\(http://www.naturalengland.org.uk/\)](http://www.naturalengland.org.uk/)



<http://www.ccw.gov.uk>



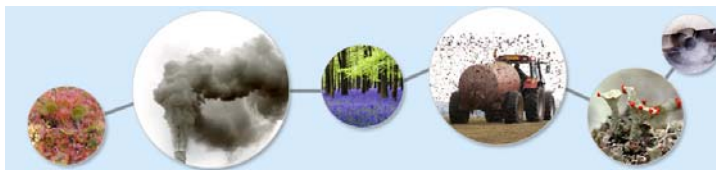
[\(http://www.sepa.org.uk/\)](http://www.sepa.org.uk/)



[\(http://www.ceh.ac.uk/\)](http://www.ceh.ac.uk/)

APIS ©2016 Hosted & Maintained by CEH





(/)

Air Pollution Information System (/)

[home \(/\)](#) [site relevant critical loads \(/srcl\)](#) [search by location \(/search-location\)](#)

[habitat/pollutant impacts \(/search-pollutant-impacts\)](#) [biomonitoring \(/biomonitoring\)](#)

[contact \(/contact\)](#)

[Home \(/\)](#) / [Query by Location - Results](#)

Query by Location - Results

Habitat: Broadleaved, Mixed and Yew Woodland

Grid Reference: 460556,375832

Grid Easting: 462500 to the 5km mid point (metres)

Grid Northing: 377500 to the 5km mid point (metres)

Grid Easting: 460500 to the 1km mid point (metres)

Grid Easting: 375500 to the 1km mid point (metres)

Pollutant: Ammonia

Critical Level:



1.0 - 3 µg m⁻³

Concentration: 1.2 µg m⁻³



Data Year: 2013 - 2015

Exceedance: [1.0] to [-1.8] µg m⁻³

Pollutant: N Deposition

Critical Load Range:



Broadleaved deciduous woodland: 10 - 20 Kg N/ha/year

Fagus woodland: 10 - 20 Kg N/ha/year

Acidophilous Quercus-dominated woodland: 10 - 15 Kg N/ha/year

Meso- and eutrophic Quercus woodland: 15 - 20 Kg N/ha/year

[For applying the best indicative critical load values for use in impact assessments please visit the following page \(http://www.apis.ac.uk/indicative-critical-load-values\).](http://www.apis.ac.uk/indicative-critical-load-values)

Deposition: 26.6 Kg N/ha/year



Data Year: 2013 - 2015

Exceedance Ranges:

Broadleaved deciduous woodland [16.6] to [6.6] Kg N/ha/year

Fagus woodland [16.6] to [6.6] Kg N/ha/year

Acidophilous Quercus-dominated woodland [16.6] to [11.6] Kg N/ha/year

Meso- and eutrophic Quercus woodland [11.6] to [6.6] Kg N/ha/year

Pollutant: Nitrogen Oxides

Critical Level:



30 µg NOx (as NO2) m-3

Concentration: 17.53 µg NOx (as NO2) m-3



Data Year: 2013 - 2015

Exceedance: -12.47 µg NOx (as NO2) m-3

Pollutant: Sulphur Dioxide

Critical Level:



20 µg m-3

Concentration: 0.49 µg m-3



Data Year: 2013 - 2015

Exceedance: -19.51 µg m-3

Pollutant: Acid Deposition

Critical Load Class & Values:



Class: Broadleaved/Coniferous unmanaged woodland
CLmaxS: 1.181 CLminN: 0.142 CLmaxN: 1.323 (keq/ha/yr)

Deposition: 1.76 (N: 1.9 | S: 0.38) (keq/ha/yr)



Data Year: 2013 - 2015

Exceedance:

Quick links



Quick Links

Plant Effects Gallery (/plant-effects-gallery)

APIS Bibliography (/bibliography)

About APIS (/introduction.html)

Overviews

Pollutants

Ecosystems

Legislation

Issues

Search this website...

This page was accessed on Sunday, January 20, 2019 09:59

[Privacy Notice \(/privacy-notice\)](#)

[Login \(/user/login\)](#)



[\(http://jncc.defra.gov.uk/\)](http://jncc.defra.gov.uk/)



[\(http://www.environment-agency.gov.uk/\)](http://www.environment-agency.gov.uk/)



<http://www.doeni.gov.uk/niea/index.htm>



[\(http://www.snh.gov.uk/\)](http://www.snh.gov.uk/)



[\(http://www.sniffer.org.uk/\)](http://www.sniffer.org.uk/)



[\(http://www.naturalengland.org.uk/\)](http://www.naturalengland.org.uk/)



<http://www.ccw.gov.uk>

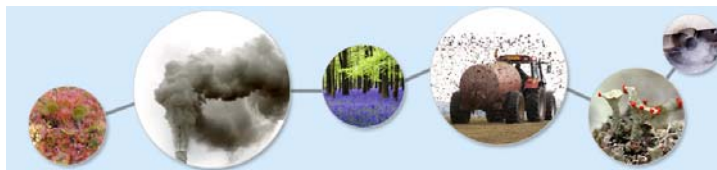


[\(http://www.sepa.org.uk/\)](http://www.sepa.org.uk/)



[\(http://www.ceh.ac.uk/\)](http://www.ceh.ac.uk/)

APIS ©2016 Hosted & Maintained by CEH



()

Air Pollution Information System (/)

home (/) site relevant critical loads (/srcl) search by location (/search-location)

habitat/pollutant impacts (/search-pollutant-impacts) biomonitring (/biomonitring)

contact (/contact)

Home (/) / Query by Location - Results

Query by Location - Results

Habitat: Calcareous grassland

Grid Reference: 453926,382195

Grid Easting: 452500 to the 5km mid point (metres)

Grid Northing: 382500 to the 5km mid point (metres)

Grid Easting: 453500 to the 1km mid point (metres)

Grid Easting: 382500 to the 1km mid point (metres)

Pollutant: Ammonia

Critical Level:



1.0 - 3 µg m⁻³

Concentration: 2.77 µg m⁻³



Data Year: 2013 - 2015

Exceedance: [1.0] to [-0.23] µg m⁻³

Pollutant: N Deposition

Critical Load Range:



Alpine and subalpine grasslands: 5 - 10 Kg N/ha/year

Sub-atlantic semi-dry calcareous grassland: 15 - 25 Kg N/ha/year

Alpine and subalpine grasslands: 5 - 10 Kg N/ha/year

Sub-atlantic semi-dry calcareous grassland: 15 - 25 Kg N/ha/year

For applying the best indicative critical load values for use in impact assessments please visit the following page (<http://www.apis.ac.uk/indicative-critical-load-values>).

Deposition: 24.5 Kg N/ha/year



Data Year: 2013 - 2015

Exceedance Ranges:

Alpine and subalpine grasslands [19.5] to [14.5] Kg N/ha/year

Sub-atlantic semi-dry calcareous grassland [9.5] to [-0.5] Kg N/ha/year

Alpine and subalpine grasslands [19.5] to [14.5] Kg N/ha/year

Sub-atlantic semi-dry calcareous grassland [9.5] to [-0.5] Kg N/ha/year

Pollutant: Nitrogen Oxides

Critical Level:



30 µg NOx (as NO2) m-3

Concentration: 21 µg NOx (as NO2) m-3



Data Year: 2013 - 2015

Exceedance: -9 µg NOx (as NO2) m-3

Pollutant: Sulphur Dioxide

Critical Level:



20 µg m-3

Concentration: 0.48 µg m-3



Data Year: 2013 - 2015

Exceedance: -19.52 µg m-3

Pollutant: Acid Deposition

Critical Load Class & Values:



Class: Calcareous grassland (using base cation)
CLmaxS: 4 CLminN: 0.856 CLmaxN: 4.856 (keq/ha/yr)

Deposition: 1.77 (N: 1.75 | S: 0.37) (keq/ha/yr)



Data Year: 2013 - 2015

Exceedance:

Quick links



[Quick Links](#)

[Plant Effects Gallery \(/plant-effects-gallery\)](/plant-effects-gallery)

[APIS Bibliography \(/bibliography\)](/bibliography)

[About APIS \(/introduction.html\)](/introduction.html)

Overviews

[Pollutants](#)

[Ecosystems](#)

[Legislation](#)

[Issues](#)

Search this website...

This page was accessed on Sunday, January 20, 2019 09:58

[Privacy Notice \(/privacy-notice\)](#)

[Login \(/user/login\)](#)



[\(http://jncc.defra.gov.uk/\)](http://jncc.defra.gov.uk/)



[\(http://www.environment-agency.gov.uk/\)](http://www.environment-agency.gov.uk/)



<http://www.doeni.gov.uk/niea/index.htm>



[\(http://www.snh.gov.uk/\)](http://www.snh.gov.uk/)



[\(http://www.sniffer.org.uk/\)](http://www.sniffer.org.uk/)



[\(http://www.naturalengland.org.uk/\)](http://www.naturalengland.org.uk/)



<http://www.ccw.gov.uk>

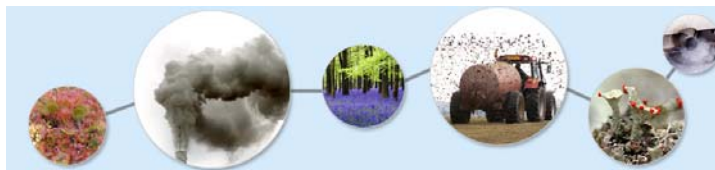


[\(http://www.sepa.org.uk/\)](http://www.sepa.org.uk/)



[\(http://www.ceh.ac.uk/\)](http://www.ceh.ac.uk/)

APIS ©2016 Hosted & Maintained by CEH



()

Air Pollution Information System (/)

home (/) site relevant critical loads (/srcl) search by location (/search-location)

habitat/pollutant impacts (/search-pollutant-impacts) biomonitoring (/biomonitoring)

contact (/contact)

Home (/) / Query by Location - Results

Query by Location - Results

Habitat: Broadleaved, Mixed and Yew Woodland

Grid Reference: 450850,374600

Grid Easting: 452500 to the 5km mid point (metres)

Grid Northing: 372500 to the 5km mid point (metres)

Grid Easting: 450500 to the 1km mid point (metres)

Grid Easting: 374500 to the 1km mid point (metres)

Pollutant: Ammonia

Critical Level:



1.0 - 3 $\mu\text{g m}^{-3}$

Concentration: 1.71 $\mu\text{g m}^{-3}$



Data Year: 2013 - 2015

Exceedance: [1.0] to [-1.29] $\mu\text{g m}^{-3}$

Pollutant: N Deposition

Critical Load Range:



Broadleaved deciduous woodland: 10 - 20 Kg N/ha/year

Fagus woodland: 10 - 20 Kg N/ha/year

Acidophilous Quercus-dominated woodland: 10 - 15 Kg N/ha/year

Meso- and eutrophic Quercus woodland: 15 - 20 Kg N/ha/year

For applying the best indicative critical load values for use in impact assessments please visit the following page (<http://www.apis.ac.uk/indicative-critical-load-values>).

Deposition: 35.28 Kg N/ha/year



Data Year: 2013 - 2015

Exceedance Ranges:

Broadleaved deciduous woodland [25.28] to [15.28] Kg N/ha/year

Fagus woodland [25.28] to [15.28] Kg N/ha/year

Acidophilous Quercus-dominated woodland [25.28] to [20.28] Kg N/ha/year

Meso- and eutrophic Quercus woodland [20.28] to [15.28] Kg N/ha/year

Pollutant: Nitrogen Oxides

Critical Level:



30 µg NOx (as NO2) m-3

Concentration: 20.35 µg NOx (as NO2) m-3



Data Year: 2013 - 2015

Exceedance: -9.65 µg NOx (as NO2) m-3

Pollutant: Sulphur Dioxide

Critical Level:



20 µg m-3

Concentration: 0.51 µg m-3



Data Year: 2013 - 2015

Exceedance: -19.49 µg m-3

Pollutant: Acid Deposition

Critical Load Class & Values:



Class: Broadleaved/Coniferous unmanaged woodland
CLmaxS: 11.083 CLminN: 0.142 CLmaxN: 11.225 (keq/ha/yr)

Deposition: 2.45 (N: 2.52 | S: 0.51) (keq/ha/yr)



Data Year: 2013 - 2015

Exceedance:

Quick links



[Quick Links](#)

[Plant Effects Gallery \(/plant-effects-gallery\)](/plant-effects-gallery)

[APIS Bibliography \(/bibliography\)](/bibliography)

[About APIS \(/introduction.html\)](/introduction.html)

Overviews

- [Pollutants](#)
- [Ecosystems](#)
- [Legislation](#)
- [Issues](#)

This page was accessed on Thursday, January 17, 2019 19:44

[Privacy Notice \(/privacy-notice\)](#)

[Login \(/user/login\)](#)



[\(http://jncc.defra.gov.uk/\)](http://jncc.defra.gov.uk/)



[\(http://www.environment-agency.gov.uk/\)](http://www.environment-agency.gov.uk/)



<http://www.doeni.gov.uk/niea/index.htm>



[\(http://www.snh.gov.uk/\)](http://www.snh.gov.uk/)



[\(http://www.sniffer.org.uk/\)](http://www.sniffer.org.uk/)



[\(http://www.naturalengland.org.uk/\)](http://www.naturalengland.org.uk/)



[\(http://www.ccw.gov.uk/\)](http://www.ccw.gov.uk/)

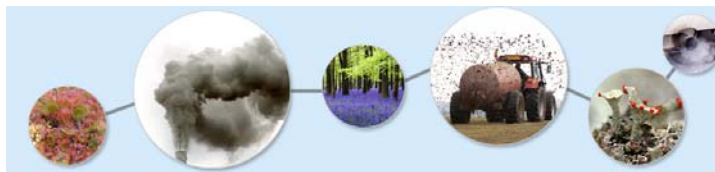


[\(http://www.sepa.org.uk/\)](http://www.sepa.org.uk/)



[\(http://www.ceh.ac.uk/\)](http://www.ceh.ac.uk/)

APIS ©2016 Hosted & Maintained by CEH



(/)

Air Pollution Information System (/)

[home \(/\)](#) [site relevant critical loads \(/srcl\)](#) [search by location \(/search-location\)](#)

[habitat/pollutant impacts \(/search-pollutant-impacts\)](#) [biomonitoring \(/biomonitoring\)](#)

[contact \(/contact\)](#)

[Home \(/\)](#) / [Quick Links \(/\)](#) / [Critical Load Function Tool](#)

Critical Load Function Tool

Introduction

Deposition of sulphur and nitrogen compounds can cause acidification, and both must be taken into account when assessing potential acidification impacts.

Over the last few years critical loads data in APIS has been updated to provide critical load functions for acidity, where available, rather than simply the empirical critical load. The function is defined by three quantities CLmaxS, CLmaxN and CLminN.

Calculating exceedance of an acidity critical load function, or the significance of a contribution from a source, is complex. Therefore, this tool calculates the exceedance for you. It enables you to compare acid deposition to the critical load function to help make a decision on the significance of a process contribution. Follow the instructions below. A detailed explanation (clf-guidance) of the approach is provided.

User data input

Critical Load Function

CLmaxS:

CLminN:

CLmaxN:

Deposition data

Source	keq/ha/yr		
	Sulphur Deposition	Nitrogen Deposition	Total Acid Deposition (S+N)
Process Contribution (PC)	<input type="text" value="0.0448"/>	<input type="text" value="0.0113"/>	0.06
Background	<input type="text" value="0.42"/>	<input type="text" value="1.88"/>	2.3
Predicted Environmental Concentration (PEC)	0.46	1.89	2.36

Results - exceedance and deposition as a proportion of the CL function

Source	Exceedance (keq/ha/yr)	% of CL function*
Process Contribution (PC)	no exceedance of CL function	4.3



Background	0.9	164.1
Predicted Environmental Concentration (PEC)	0.96	168.3

* % of CL function is calculated after the value of PEC relative to CL_{min}N is taken into account. See detailed explanation (cfl-guidance) for further information and justification.

Quick links



- [Quick Links](#)
- [Plant Effects Gallery \(/plant-effects-gallery\)](#)
- [APIS Bibliography \(/bibliography\)](#)
- [About APIS \(/introduction.html\)](#)

Overviews

- [Pollutants](#)
 - [Ecosystems](#)
 - [Legislation](#)
 - [Issues](#)
-

This page was accessed on Saturday, January 19, 2019 15:09

[Privacy Notice \(/privacy-notice\)](#)

[Login \(/user/login\)](#)



Joint Nature Conservation Committee

[\(http://jncc.defra.gov.uk/\)](http://jncc.defra.gov.uk/)



[\(http://www.environment-agency.gov.uk/\)](http://www.environment-agency.gov.uk/)



Northern Ireland Environment Agency

<http://www.doeni.gov.uk/niea/index.htm>



Scottish Natural Heritage
All of nature for all of Scotland

[\(http://www.snh.gov.uk/\)](http://www.snh.gov.uk/)





(<http://www.sniffer.org.uk/>)



(<http://www.naturalengland.org.uk/>)



(<http://www.ccw.gov.uk>)



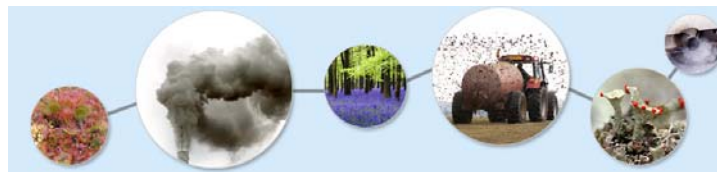
(<http://www.sepa.org.uk/>)



(<http://www.ceh.ac.uk/>)

APIS ©2016 Hosted & Maintained by CEH





(1)

Air Pollution Information System (1)

[home \(1\)](#) [site relevant critical loads \(/srcl\)](#) [search by location \(/search-location\)](#)

[habitat/pollutant impacts \(/search-pollutant-impacts\)](#) [biomonitoring \(/biomonitoring\)](#)

[contact \(/contact\)](#)

[Home \(1\)](#) / [Quick Links \(1\)](#) / [Critical Load Function Tool](#)

Critical Load Function Tool

Introduction

Deposition of sulphur and nitrogen compounds can cause acidification, and both must be taken into account when assessing potential acidification impacts.

Over the last few years critical loads data in APIS has been updated to provide critical load functions for acidity, where available, rather than simply the empirical critical load. The function is defined by three quantities CLmaxS, CLmaxN and CLminN.

Calculating exceedance of an acidity critical load function, or the significance of a contribution from a source, is complex. Therefore, this tool calculates the exceedance for you. It enables you to compare acid deposition to the critical load function to help make a decision on the significance of a process contribution. Follow the instructions below. A detailed explanation (clf-guidance) of the approach is provided.

User data input

Critical Load Function

CLmaxS:

CLminN:

CLmaxN:

Deposition data

Source	keq/ha/yr		
	Sulphur Deposition	Nitrogen Deposition	Total Acid Deposition (S+N)
Process Contribution (PC)	<input type="text" value="0.0354"/>	<input type="text" value="0.0133"/>	0.05
Background	<input type="text" value="0.38"/>	<input type="text" value="1.9"/>	2.28
Predicted Environmental Concentration (PEC)	0.42	1.91	2.33

Results - exceedance and deposition as a proportion of the CL function

Source	Exceedance (keq/ha/yr)	% of CL function*
Process Contribution (PC)	no exceedance of CL function	3.8



Background	0.96	172.3
Predicted Environmental Concentration (PEC)	1.01	176.1

* % of CL function is calculated after the value of PEC relative to CL_{min}N is taken into account. See detailed explanation (cl-guidance) for further information and justification.

Quick links



[Quick Links](#)

[Plant Effects Gallery \(/plant-effects-gallery\)](/plant-effects-gallery)

[APIS Bibliography \(/bibliography\)](/bibliography)

[About APIS \(/introduction.html\)](/introduction.html)

Overviews

[Pollutants](#)

[Ecosystems](#)

[Legislation](#)

[Issues](#)

This page was accessed on Saturday, January 19, 2019 15:09

[Privacy Notice \(/privacy-notice\)](#)

[Login \(/user/login\)](/user/login)





(<http://jncc.defra.gov.uk/>)



(<http://www.environment-agency.gov.uk/>)



(<http://www.doeni.gov.uk/niea/index.htm>)



(<http://www.snh.gov.uk/>)



(<http://www.sniffer.org.uk/>)



(<http://www.naturalengland.org.uk/>)



(<http://www.ccw.gov.uk>)



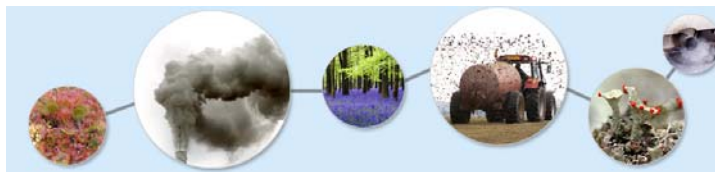
(<http://www.sepa.org.uk/>)



(<http://www.ceh.ac.uk/>)

APIS ©2016 Hosted & Maintained by CEH





(/)

Air Pollution Information System (/)

[home \(/\)](#) [site relevant critical loads \(/srcl\)](#) [search by location \(/search-location\)](#)

[habitat/pollutant impacts \(/search-pollutant-impacts\)](#) [biomonitoring \(/biomonitoring\)](#)

[contact \(/contact\)](#)

[Home \(/\)](#) / [Quick Links \(/\)](#) / [Critical Load Function Tool](#)

Critical Load Function Tool

Introduction

Deposition of sulphur and nitrogen compounds can cause acidification, and both must be taken into account when assessing potential acidification impacts.

Over the last few years critical loads data in APIS has been updated to provide critical load functions for acidity, where available, rather than simply the empirical critical load. The function is defined by three quantities CLmaxS, CLmaxN and CLminN.

Calculating exceedance of an acidity critical load function, or the significance of a contribution from a source, is complex. Therefore, this tool calculates the exceedance for you. It enables you to compare acid deposition to the critical load function to help make a decision on the significance of a process contribution. Follow the instructions below. A detailed explanation (clf-guidance) of the approach is provided.

User data input

Critical Load Function

CLmaxS:

CLminN:

CLmaxN:

Deposition data

Source	keq/ha/yr		
	Sulphur Deposition	Nitrogen Deposition	Total Acid Deposition (S+N)
Process Contribution (PC)	<input type="text" value="0.0436"/>	<input type="text" value="0.0107"/>	0.05
Background	<input type="text" value="0.42"/>	<input type="text" value="1.88"/>	2.3
Predicted Environmental Concentration (PEC)	0.46	1.89	2.35

Results - exceedance and deposition as a proportion of the CL function

Source	Exceedance (keq/ha/yr)	% of CL function*
Process Contribution (PC)	no exceedance of CL function	3.6



Background	0.9	164.1
Predicted Environmental Concentration (PEC)	0.95	167.6

* % of CL function is calculated after the value of PEC relative to CL_{min}N is taken into account. See detailed explanation (cl-guidance) for further information and justification.

Quick links



- [Quick Links](#)
- [Plant Effects Gallery \(/plant-effects-gallery\)](#)
- [APIS Bibliography \(/bibliography\)](#)
- [About APIS \(/introduction.html\)](#)

Overviews

- [Pollutants](#)
 - [Ecosystems](#)
 - [Legislation](#)
 - [Issues](#)
-

This page was accessed on Saturday, January 19, 2019 15:09

[Privacy Notice \(/privacy-notice\)](#)

[Login \(/user/login\)](#)



[\(http://jncc.defra.gov.uk/\)](http://jncc.defra.gov.uk/)



[\(http://www.environment-agency.gov.uk/\)](http://www.environment-agency.gov.uk/)



<http://www.doeni.gov.uk/niea/index.htm>



[\(http://www.snh.gov.uk/\)](http://www.snh.gov.uk/)





(<http://www.sniffer.org.uk/>)



(<http://www.naturalengland.org.uk/>)



(<http://www.ccw.gov.uk>)



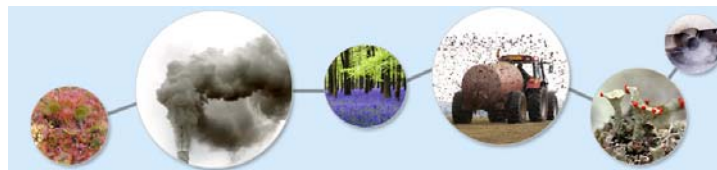
(<http://www.sepa.org.uk/>)



(<http://www.ceh.ac.uk/>)

APIS ©2016 Hosted & Maintained by CEH





()

Air Pollution Information System (/)

[home \(/\)](#) [site relevant critical loads \(/srcl\)](#) [search by location \(/search-location\)](#)

[habitat/pollutant impacts \(/search-pollutant-impacts\)](#) [biomonitoring \(/biomonitoring\)](#)

[contact \(/contact\)](#)

[Home \(/\)](#) / [Quick Links \(/\)](#) / [Critical Load Function Tool](#)

Critical Load Function Tool

Introduction

Deposition of sulphur and nitrogen compounds can cause acidification, and both must be taken into account when assessing potential acidification impacts.

Over the last few years critical loads data in APIS has been updated to provide critical load functions for acidity, where available, rather than simply the empirical critical load. The function is defined by three quantities CLmaxS, CLmaxN and CLminN.

Calculating exceedance of an acidity critical load function, or the significance of a contribution from a source, is complex. Therefore, this tool calculates the exceedance for you. It enables you to compare acid deposition to the critical load function to help make a decision on the significance of a process contribution. Follow the instructions below. A detailed explanation (clf-guidance) of the approach is provided.

User data input

Critical Load Function

CLmaxS:	<input type="text" value="4"/>
CLminN:	<input type="text" value="0.856"/>
CLmaxN:	<input type="text" value="4.856"/>

Deposition data

Source	keq/ha/yr		
	Sulphur Deposition	Nitrogen Deposition	Total Acid Deposition (S+N)
Process Contribution (PC)	<input type="text" value="0.0259"/>	<input type="text" value="0.0063"/>	0.03
Background	<input type="text" value="0.37"/>	<input type="text" value="1.75"/>	2.12
Predicted Environmental Concentration (PEC)	0.4	1.76	2.15

Results - exceedance and deposition as a proportion of the CL function

Source	Exceedance (keq/ha/yr)	% of CL function*
Process Contribution (PC)	no exceedance of CL function	0.6

Background	no exceedance of CL function	43.7
Predicted Environmental Concentration (PEC)	no exceedance of CL function	44.3

* % of CL function is calculated after the value of PEC relative to CL_{min}N is taken into account. See detailed explanation (clf-guidance) for further information and justification.

Quick links



[Quick Links](#)

[Plant Effects Gallery \(/plant-effects-gallery\)](/plant-effects-gallery)

[APIS Bibliography \(/bibliography\)](/bibliography)

[About APIS \(/introduction.html\)](/introduction.html)

Overviews

[Pollutants](#)

[Ecosystems](#)

[Legislation](#)

[Issues](#)

This page was accessed on Saturday, January 19, 2019 15:09

[Privacy Notice \(/privacy-notice\)](/privacy-notice)

Login (/user/login)



(<http://jncc.defra.gov.uk/>)



(<http://www.environment-agency.gov.uk/>)



(<http://www.doeni.gov.uk/niea/index.htm>)



(<http://www.snh.gov.uk/>)



(<http://www.sniffer.org.uk/>)



(<http://www.naturalengland.org.uk/>)



(<http://www.ccw.gov.uk>)

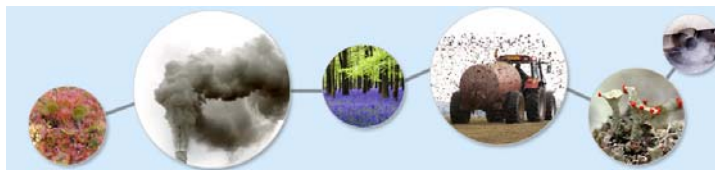


(<http://www.sepa.org.uk/>)



(<http://www.ceh.ac.uk/>)

APIS ©2016 Hosted & Maintained by CEH



()

Air Pollution Information System (/)

[home \(/\)](#) [site relevant critical loads \(/srcl\)](#) [search by location \(/search-location\)](#)

[habitat/pollutant impacts \(/search-pollutant-impacts\)](#) [biomonitoring \(/biomonitoring\)](#)

[contact \(/contact\)](#)

[Home \(/\)](#) / [Quick Links \(/\)](#) / [Critical Load Function Tool](#)

Critical Load Function Tool

Introduction

Deposition of sulphur and nitrogen compounds can cause acidification, and both must be taken into account when assessing potential acidification impacts.

Over the last few years critical loads data in APIS has been updated to provide critical load functions for acidity, where available, rather than simply the empirical critical load. The function is defined by three quantities CLmaxS, CLmaxN and CLminN.

Calculating exceedance of an acidity critical load function, or the significance of a contribution from a source, is complex. Therefore, this tool calculates the exceedance for you. It enables you to compare acid deposition to the critical load function to help make a decision on the significance of a process contribution. Follow the instructions below. A detailed explanation (clf-guidance) of the approach is provided.

User data input

Critical Load Function

CLmaxS:

CLminN:

CLmaxN:

Deposition data

Source	keq/ha/yr		
	Sulphur Deposition	Nitrogen Deposition	Total Acid Deposition (S+N)
Process Contribution (PC)	<input type="text" value="0.0416"/>	<input type="text" value="0.0106"/>	0.05
Background	<input type="text" value="0.42"/>	<input type="text" value="1.88"/>	2.3
Predicted Environmental Concentration (PEC)	0.46	1.89	2.35

Results - exceedance and deposition as a proportion of the CL function

Source	Exceedance (keq/ha/yr)	% of CL function*
Process Contribution (PC)	no exceedance of CL function	3.6



Background	0.9	164.1
Predicted Environmental Concentration (PEC)	0.95	167.6

* % of CL function is calculated after the value of PEC relative to CL_{min}N is taken into account. See detailed explanation (cl-guidance) for further information and justification.

Quick links



Quick Links
Plant Effects Gallery (/plant-effects-gallery)
APIS Bibliography (/bibliography)
About APIS (/introduction.html)

Overviews

Pollutants
Ecosystems
Legislation
Issues
Search this website...

This page was accessed on Saturday, January 19, 2019 15:09

[Privacy Notice \(/privacy-notice\)](#)

[Login \(/user/login\)](#)



[\(http://jncc.defra.gov.uk/\)](http://jncc.defra.gov.uk/)



[\(http://www.environment-agency.gov.uk/\)](http://www.environment-agency.gov.uk/)



<http://www.doeni.gov.uk/niea/index.htm>



[\(http://www.snh.gov.uk/\)](http://www.snh.gov.uk/)





(<http://www.sniffer.org.uk/>)



(<http://www.naturalengland.org.uk/>)



(<http://www.ccw.gov.uk>)



(<http://www.sepa.org.uk/>)



(<http://www.ceh.ac.uk/>)

APIS ©2016 Hosted & Maintained by CEH



Appendix 5 – Dioxin Risk Assessment

Appendix 5.1 Human Health Risk Assessment

The approach adopted in the air quality impact assessment (AQIA) is to predict air quality concentrations and deposition of pollutants from the proposed installation and to compare these with relevant environmental assessment levels (EAL) published by the Environment Agency (EA), statutory air quality limit values and objectives, World Health Organisation criteria, European Limit values and standards derived from occupational exposure limits. These EALs provide an indication of exposure in the environment that is considered tolerable. For some substances with persistent, bio-accumulative or highly toxic effects, it is difficult to establish thresholds below which it could be considered “no harm” takes place. The risk to human health from the proposed installation depends on adjacent land uses and needs to consider the combined exposure to relevant substances and their cumulative burden over the life of the plant.¹

In its review of environmental and health effects from waste incineration, DEFRA concluded that a direct measurement of exposure attributable to such facilities cannot be made due to the complexity of the pollutant mixture, the possibility of exposure through multiple pathways and, wider environmental and lifestyle influences.² For certain persistent pollutants, such as dioxins and furans, the main exposure pathway is through ingestion of contaminated foods, with less residual risk through direct inhalation. In addition to the standard air quality impact assessment methods described above, the environmental impact assessment (EIA) needs to consider these exposure pathways, and their consequences for human health

In the absence of an equivalent UK method, the US EPA Human Health Risk Assessment Protocol (HHRAP)³ has been used. The HHRAP method calculates the fate of trace contaminants released from the stack. This is a highly complex protocol which includes exposure from ingestion of foods, drinking water and inhalation. The computer software program IRAP-h⁴ which implements HHRAP has been used to calculate exposure. The US EPA method is a risk based approach, whereas the UK approach is based on comparison with tolerable daily intake of contaminants in the human diet. The EA regards adult exposure to dioxin like substances to be tolerable where the total daily intake is <2pg per kg of body weight.⁵

The predicted exposure has been calculated from the modelled emissions predicted using ADMS 5.2. These are summarised in Table 1 below. This assessment considers exposure to dioxins and furans only since all other pollutants have already been assessed in comparison to the relevant EALs. The data in Table 1 takes the predicted atmospheric concentration at the worst case receptor from the AQIA (LP3 – land allocated in the local development plan for housing at OS 453248, 375849). This assumes that the predicted airborne particle and vapour phases and wet and dry deposition are partitioned equally.

¹ Guidelines for Environmental Risk Assessment and Management, July 2001, DETR, Environment Agency, Institute of Environmental Health, The Stationery Office ISBN 0 11 753551 6

² DEFRA 2004. Review of Environmental and Health Effects of Waste Management: Municipal Solid Waste and Similar Wastes

³ Office of Solid Waste and Emergency Response (5305W) EPA530-R-05-006 September 2005. Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities (Final) www.epa.gov/osw

⁴ Lakes Environmental 2008. <http://www.lakes-environmental.com/iraph.html>

⁵ Environment Agency Soil Guideline Values for dioxins, furans and dioxin like PCBs in soil – Science Report SC050021/Dioxins SGV

Table 1 – Dioxin & Furan Exposure at worst case receptor (R01 Decoy Farm)

Parameter	Concentration	units
Air concentration particle phase	2.51E-11	ug/m ³
Air concentration particle bound	2.51E-11	ug/m ³
Air concentration vapour phase	2.51E-11	ug/m ³
Dry deposition particle phase	7.90E-12	g/m ² /year
Dry deposition particle bound	7.90E-12	g/m ² /year
Dry deposition vapour phase	7.90E-12	g/m ² /year
Wet deposition particle phase	2.19E-10	g/m ² /year
Wet deposition particle bound	2.19E-10	g/m ² /year
Wet deposition vapour phase	2.19E-10	g/m ² /year

The default exposure parameters and toxicological data are based on HHRAP methods. These parameters include averaging times for carcinogens and non-carcinogens, body weight, consumption and inhalation rates, exposure frequencies and duration. Throughout this assessment, where there is some uncertainty in respect of the data, a conservative approach has been used to estimate the possible risks from exposure to emissions from the proposed facility. The rationale is to ensure that full allowance is made for any uncertainties in the interpretation of the data provided in order to protect human health.

The risk assessment only considers exposure from dioxins and furans, which do not have appropriate EALs. The annual rates of air concentration and deposition of dioxins/furans were estimated through air dispersion modelling using the worst case dispersion parameters and are based on the highest predicted exposure at any sensitive residential receptor. The fractions of each isomer used to estimate exposure are presented in Table 2. These are based on typical emission rates from incineration plant.

Table 2 - Fraction of Dioxins & Furans used to assess exposure

Pollutant	Fraction
2,3,7,8-TCDD	0.0015
1,2,3,7,8-PeCDD	0.0124
1,2,3,4,7,8-HxCDD	0.0144
1,2,3,7,8,9-HxCDD	0.0104
1,2,3,6,7,8-HxCDD	0.0129
1,2,3,4,6,7,8-HpCDD	0.0842
OCDD	0.1982
2,3,7,8-TCDF	0.0134
2,3,4,7,8-PeCDF	0.0268
1,2,3,7,8-PeCDF	0.0139
1,2,3,4,7,8-HxCDF	0.1090
1,2,3,7,8,9-HxCDF	0.0021
1,2,3,6,7,8-HxCDF	0.0401
2,3,4,6,7,8-HxCDF	0.0431
1,2,3,4,6,7,8-HpCDF	0.2180
1,2,3,4,7,8,9-HpCDF	0.0213
OCDF	0.1784
Total	1.0000

N.B. this assumes that the total release is based on 100% of IED with a permitted release of 3.172E-08 g/s

Emissions have been modelled using the worst case one year in five of hourly sequential meteorological data (Scampton 2015). The assessment considers adult and child exposure levels to take account of different body mass and food intake. The HHRAP method includes Scenarios for residential, agricultural and fisher exposure groups. The agricultural and fisher exposure categories in HHRAP are not considered to be relevant for assessment adjacent to the installation. Residential exposure includes inhalation, ingestion of soils, and eating home-grown food produce. The detailed model outputs from the IRAP model are presented in Appendix 5.2 and summarised in Table 3 below.

Table 3 – Summary of Exposure from all Pathways for dioxins and furans (Residential)

Isomer WHO I-TEQ	Adult Exposure (mg/kg/day)		Child Exposure (mg/kg/day)	
	cancer exposure	all hazards exposure	cancer exposure	all hazards exposure
HeptaCDD, 1,2,3,4,6,7,8	5.62E-14	7.25E-14	2.03E-13	2.92E-13
HeptaCDF, 1,2,3,4,6,7,8	1.70E-13	2.30E-13	5.80E-13	8.52E-13
HeptaCDF, 1,2,3,4,7,8,9	1.62E-14	2.22E-14	5.58E-14	8.24E-14
HexaCDD, 1,2,3,4,7,8	9.92E-15	1.30E-14	3.53E-14	5.13E-14
HexaCDD, 1,2,3,6,7,8	3.20E-14	4.39E-14	1.08E-13	1.60E-13
HexaCDD, 1,2,3,7,8,9	8.35E-15	1.14E-14	2.82E-14	4.16E-14
HexaCDF, 1,2,3,4,7,8	9.77E-14	1.38E-13	3.19E-13	4.79E-13
HexaCDF, 1,2,3,6,7,8	1.15E-14	1.64E-14	3.77E-14	5.67E-14
HexaCDF, 1,2,3,7,8,9	1.85E-15	2.63E-15	6.06E-15	9.15E-15
HexaCDF, 2,3,4,6,7,8	3.85E-14	5.47E-14	1.26E-13	1.89E-13
OctaCDD, 1,2,3,4,6,7,8,9	1.28E-13	1.63E-13	4.67E-13	6.70E-13
OctaCDF, 1,2,3,4,6,7,8,9	1.24E-13	1.62E-13	4.38E-13	6.33E-13
PentaCDD, 1,2,3,7,8	1.31E-14	1.94E-14	4.09E-14	6.28E-14
PentaCDF, 1,2,3,7,8	1.26E-14	1.89E-14	4.10E-14	6.37E-14
PentaCDF, 2,3,4,7,8	2.99E-14	4.54E-14	9.18E-14	1.44E-13
TetraCDD, 2,3,7,8	1.08E-15	1.70E-15	3.71E-15	5.96E-15
TetraCDF, 2,3,7,8	1.68E-14	2.75E-14	4.98E-14	8.22E-14
Total mg/kg/day	7.67E-13	1.04E-12	2.63E-12	3.87E-12
pg/kg/day	0.0008	0.0010	0.0026	0.0039
%EAL	0.04%	0.05%	n/a	n/a

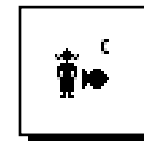
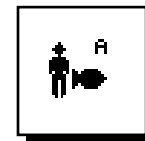
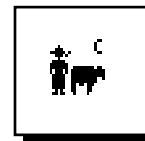
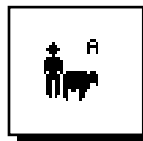
The results from the adult residential exposure indicate that residential exposure is likely to be insignificant in terms of the EA assessment criteria, where the daily intake is $\leq 0.05\%$ of the tolerable daily intake. The tolerable daily intake is therefore well below 1% of the EA assessment criteria and is considered to be insignificant.

The HHRAP method does not include for the effects of dioxins in breast milk within the exposure pathways for children as these are calculated separately for infant exposure. The calculated daily intakes for residential exposure is 2.26E-03 pg/kg body weight. This is <1% of the typical concentrations of dioxin like substances reported in human breast milk within the UK.⁶

⁶ COMMITTEE ON TOXICITY OF CHEMICALS IN FOOD, CONSUMER PRODUCTS AND THE ENVIRONMENT June 2012. Second draft overarching statement on risks of chemicals and the development of food allergic disease, of relevance to infant feeding (draft for discussion). TOX/2012/20. <https://cot.food.gov.uk/sites/default/files/cot/tox201220.pdf>

Appendix 5.2 Human Health Risk Assessment – Model Outputs

RECEPTOR : LP3



Resident Adult

Resident Child

Farmer Adult

Farmer Child

Fisher Adult

Fisher Child

CANCER:

6.743E-011

4.581E-011

0.000E+000

0.000E+000

0.000E+000

0.000E+000

HAZARD:

1.627E-006












5.712E-006












0.000E+000

0.000E+000

0.000E+000

0.000E+000

		RECEPTOR : LP3					
		SCENARIO: resident_adult					
							
CANCER:		6.772E-013	1.083E-011	0.000E+000	5.592E-011	0.000E+000	
HAZARD:		0.000E+000	2.869E-007	0.000E+000	1.340E-006	0.000E+000	1.163E-011
							
CANCER:		0.000E+000	0.000E+000	0.000E+000	0.000E+000	0.000E+000	
HAZARD:		0.000E+000	0.000E+000	0.000E+000	0.000E+000	0.000E+000	

		RECEPTOR : LP3					
		SCENARIO: resident_child					
							
CANCER:		1.354E-013	2.021E-011	0.000E+000	2.546E-011	0.000E+000	
HAZARD:		0.000E+000	2.678E-006	0.000E+000	3.034E-006	0.000E+000	1.163E-011
							
CANCER:		0.000E+000	0.000E+000	0.000E+000	0.000E+000	0.000E+000	
HAZARD:		0.000E+000	0.000E+000	0.000E+000	0.000E+000	0.000E+000	

PATHWAY INTAKE BY COPC

Date : 22/01/2019

RECEPTOR	SCENARIO	SOURCE	PATHWAY	COPC	TOTAL CANCER INTAKE mg/kg-day	TOTAL HAZARD INTAKE mg/kg-day
LP3	resident_adult	Lhoist Stack	i_ag	HeptaCDD, 1,2,3,4,6,7,8-	4.5868E-014	5.4531E-014
LP3	resident_adult	Lhoist Stack	i_beef	HeptaCDD, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_chick	HeptaCDD, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_dw	HeptaCDD, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_eggs	HeptaCDD, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_fish	HeptaCDD, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_milk	HeptaCDD, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_pork	HeptaCDD, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_soil	HeptaCDD, 1,2,3,4,6,7,8-	1.0317E-014	1.7962E-014
			Total		5.6185E-014	7.2493E-014
LP3	resident_adult	Lhoist Stack	i_ag	HeptaCDF, 1,2,3,4,6,7,8-	1.4310E-013	1.8390E-013
LP3	resident_adult	Lhoist Stack	i_beef	HeptaCDF, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_chick	HeptaCDF, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_dw	HeptaCDF, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_eggs	HeptaCDF, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_fish	HeptaCDF, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_milk	HeptaCDF, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_pork	HeptaCDF, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_soil	HeptaCDF, 1,2,3,4,6,7,8-	2.6673E-014	4.6407E-014
			Total		1.6977E-013	2.3031E-013
LP3	resident_adult	Lhoist Stack	i_ag	HeptaCDF, 1,2,3,4,7,8,9-	1.3630E-014	1.7617E-014
LP3	resident_adult	Lhoist Stack	i_beef	HeptaCDF, 1,2,3,4,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_chick	HeptaCDF, 1,2,3,4,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_dw	HeptaCDF, 1,2,3,4,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_eggs	HeptaCDF, 1,2,3,4,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_fish	HeptaCDF, 1,2,3,4,7,8,9-	0.0000E+000	0.0000E+000

PATHWAY INTAKE BY COPC

Date : 22/01/2019

RECEPTOR	SCENARIO	SOURCE	PATHWAY	COPC	TOTAL CANCER INTAKE mg/kg-day	TOTAL HAZARD INTAKE mg/kg-day
LP3	resident_adult	Lhoist Stack	i_milk	HeptaCDF, 1,2,3,4,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_pork	HeptaCDF, 1,2,3,4,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_soil	HeptaCDF, 1,2,3,4,7,8,9-	2.6061E-015	4.5343E-015
			Total		1.6236E-014	2.2151E-014
LP3	resident_adult	Lhoist Stack	i_ag	HexaCDD, 1,2,3,4,7,8-	8.1545E-015	9.9487E-015
LP3	resident_adult	Lhoist Stack	i_beef	HexaCDD, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_chick	HexaCDD, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_dw	HexaCDD, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_eggs	HexaCDD, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_fish	HexaCDD, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_milk	HexaCDD, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_pork	HexaCDD, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_soil	HexaCDD, 1,2,3,4,7,8-	1.7633E-015	3.0690E-015
			Total		9.9178E-015	1.3018E-014
LP3	resident_adult	Lhoist Stack	i_ag	HexaCDD, 1,2,3,6,7,8-	2.7115E-014	3.5391E-014
LP3	resident_adult	Lhoist Stack	i_beef	HexaCDD, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_chick	HexaCDD, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_dw	HexaCDD, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_eggs	HexaCDD, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_fish	HexaCDD, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_milk	HexaCDD, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_pork	HexaCDD, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_soil	HexaCDD, 1,2,3,6,7,8-	4.8895E-015	8.4928E-015
			Total		3.2005E-014	4.3883E-014
LP3	resident_adult	Lhoist Stack	i_ag	HexaCDD, 1,2,3,7,8,9-	7.0827E-015	9.2289E-015
LP3	resident_adult	Lhoist Stack	i_beef	HexaCDD, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000

RECEPTOR	SCENARIO	SOURCE	PATHWAY	COPC	TOTAL CANCER INTAKE mg/kg-day	TOTAL HAZARD INTAKE mg/kg-day
LP3	resident_adult	Lhoist Stack	i_chick	HexaCDD, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_dw	HexaCDD, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_eggs	HexaCDD, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_fish	HexaCDD, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_milk	HexaCDD, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_pork	HexaCDD, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_soil	HexaCDD, 1,2,3,7,8,9-	1.2681E-015	2.2026E-015
			Total		8.3508E-015	1.1432E-014
LP3	resident_adult	Lhoist Stack	i_ag	HexaCDF, 1,2,3,4,7,8-	8.4370E-014	1.1539E-013
LP3	resident_adult	Lhoist Stack	i_beef	HexaCDF, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_chick	HexaCDF, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_dw	HexaCDF, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_eggs	HexaCDF, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_fish	HexaCDF, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_milk	HexaCDF, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_pork	HexaCDF, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_soil	HexaCDF, 1,2,3,4,7,8-	1.3281E-014	2.3060E-014
			Total		9.7651E-014	1.3845E-013
LP3	resident_adult	Lhoist Stack	i_ag	HexaCDF, 1,2,3,6,7,8-	9.9752E-015	1.3655E-014
LP3	resident_adult	Lhoist Stack	i_beef	HexaCDF, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_chick	HexaCDF, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_dw	HexaCDF, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_eggs	HexaCDF, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_fish	HexaCDF, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_milk	HexaCDF, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_pork	HexaCDF, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000

PATHWAY INTAKE BY COPC

Date : 22/01/2019

RECEPTOR	SCENARIO	SOURCE	PATHWAY	COPC	TOTAL CANCER INTAKE mg/kg-day	TOTAL HAZARD INTAKE mg/kg-day
LP3	resident_adult	Lhoist Stack	i_soil	HexaCDF, 1,2,3,6,7,8-	1.5735E-015	2.7335E-015
			Total		1.1549E-014	1.6388E-014
LP3	resident_adult	Lhoist Stack	i_ag	HexaCDF, 1,2,3,7,8,9-	1.5918E-015	2.1901E-015
LP3	resident_adult	Lhoist Stack	i_beef	HexaCDF, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_chick	HexaCDF, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_dw	HexaCDF, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_eggs	HexaCDF, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_fish	HexaCDF, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_milk	HexaCDF, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_pork	HexaCDF, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_soil	HexaCDF, 1,2,3,7,8,9-	2.5600E-016	4.4462E-016
			Total		1.8478E-015	2.6347E-015
LP3	resident_adult	Lhoist Stack	i_ag	HexaCDF, 2,3,4,6,7,8-	3.3267E-014	4.5546E-014
LP3	resident_adult	Lhoist Stack	i_beef	HexaCDF, 2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_chick	HexaCDF, 2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_dw	HexaCDF, 2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_eggs	HexaCDF, 2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_fish	HexaCDF, 2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_milk	HexaCDF, 2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_pork	HexaCDF, 2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_soil	HexaCDF, 2,3,4,6,7,8-	5.2541E-015	9.1252E-015
			Total		3.8521E-014	5.4671E-014
LP3	resident_adult	Lhoist Stack	i_ag	OctaCDD, 1,2,3,4,6,7,8,9-	1.0338E-013	1.2031E-013
LP3	resident_adult	Lhoist Stack	i_beef	OctaCDD, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_chick	OctaCDD, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_dw	OctaCDD, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000

PATHWAY INTAKE BY COPC

Date : 22/01/2019

RECEPTOR	SCENARIO	SOURCE	PATHWAY	COPC	TOTAL CANCER INTAKE mg/kg-day	TOTAL HAZARD INTAKE mg/kg-day
LP3	resident_adult	Lhoist Stack	i_eggs	OctaCDD, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_fish	OctaCDD, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_milk	OctaCDD, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_pork	OctaCDD, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_soil	OctaCDD, 1,2,3,4,6,7,8,9-	2.4302E-014	4.2326E-014
			Total		1.2769E-013	1.6264E-013
LP3	resident_adult	Lhoist Stack	i_ag	OctaCDF, 1,2,3,4,6,7,8,9-	1.0225E-013	1.2431E-013
LP3	resident_adult	Lhoist Stack	i_beef	OctaCDF, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_chick	OctaCDF, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_dw	OctaCDF, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_eggs	OctaCDF, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_fish	OctaCDF, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_milk	OctaCDF, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_pork	OctaCDF, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_soil	OctaCDF, 1,2,3,4,6,7,8,9-	2.1876E-014	3.8101E-014
			Total		1.2413E-013	1.6241E-013
LP3	resident_adult	Lhoist Stack	i_ag	PentaCDD, 1,2,3,7,8-	1.1608E-014	1.6808E-014
LP3	resident_adult	Lhoist Stack	i_beef	PentaCDD, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_chick	PentaCDD, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_dw	PentaCDD, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_eggs	PentaCDD, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_fish	PentaCDD, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_milk	PentaCDD, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_pork	PentaCDD, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_soil	PentaCDD, 1,2,3,7,8-	1.4988E-015	2.5922E-015
			Total		1.3106E-014	1.9401E-014

PATHWAY INTAKE BY COPC

Date : 22/01/2019

RECEPTOR	SCENARIO	SOURCE	PATHWAY	COPC	TOTAL CANCER INTAKE mg/kg-day	TOTAL HAZARD INTAKE mg/kg-day
LP3	resident_adult	Lhoist Stack	i_ag	PentaCDF, 1,2,3,7,8-	1.0944E-014	1.5924E-014
LP3	resident_adult	Lhoist Stack	i_beef	PentaCDF, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_chick	PentaCDF, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_dw	PentaCDF, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_eggs	PentaCDF, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_fish	PentaCDF, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_milk	PentaCDF, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_pork	PentaCDF, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_soil	PentaCDF, 1,2,3,7,8-	1.6903E-015	2.9321E-015
			Total		1.2634E-014	1.8856E-014
LP3	resident_adult	Lhoist Stack	i_ag	PentaCDF, 2,3,4,7,8-	2.6632E-014	3.9801E-014
LP3	resident_adult	Lhoist Stack	i_beef	PentaCDF, 2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_chick	PentaCDF, 2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_dw	PentaCDF, 2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_eggs	PentaCDF, 2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_fish	PentaCDF, 2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_milk	PentaCDF, 2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_pork	PentaCDF, 2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_soil	PentaCDF, 2,3,4,7,8-	3.2319E-015	5.5836E-015
			Total		2.9864E-014	4.5384E-014
LP3	resident_adult	Lhoist Stack	i_ag	TetraCDD, 2,3,7,8-	9.0715E-016	1.3979E-015
LP3	resident_adult	Lhoist Stack	i_beef	TetraCDD, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_chick	TetraCDD, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_dw	TetraCDD, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_eggs	TetraCDD, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_fish	TetraCDD, 2,3,7,8-	0.0000E+000	0.0000E+000

PATHWAY INTAKE BY COPC

Date : 22/01/2019

RECEPTOR	SCENARIO	SOURCE	PATHWAY	COPC	TOTAL CANCER INTAKE mg/kg-day	TOTAL HAZARD INTAKE mg/kg-day
LP3	resident_adult	Lhoist Stack	i_milk	TetraCDD, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_pork	TetraCDD, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_soil	TetraCDD, 2,3,7,8-	1.7567E-016	2.9924E-016
			Total		1.0828E-015	1.6971E-015
LP3	resident_adult	Lhoist Stack	i_ag	TetraCDF, 2,3,7,8-	1.5197E-014	2.4877E-014
LP3	resident_adult	Lhoist Stack	i_beef	TetraCDF, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_chick	TetraCDF, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_dw	TetraCDF, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_eggs	TetraCDF, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_fish	TetraCDF, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_milk	TetraCDF, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_pork	TetraCDF, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_adult	Lhoist Stack	i_soil	TetraCDF, 2,3,7,8-	1.5549E-015	2.6369E-015
			Total		1.6752E-014	2.7514E-014
LP3	resident_child	Lhoist Stack	i_ag	HeptaCDD, 1,2,3,4,6,7,8-	1.0638E-013	1.2426E-013
LP3	resident_child	Lhoist Stack	i_beef	HeptaCDD, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_chick	HeptaCDD, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_dw	HeptaCDD, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_eggs	HeptaCDD, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_fish	HeptaCDD, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_milk	HeptaCDD, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_pork	HeptaCDD, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_soil	HeptaCDD, 1,2,3,4,6,7,8-	9.6290E-014	1.6765E-013
			Total		2.0267E-013	2.9191E-013
LP3	resident_child	Lhoist Stack	i_ag	HeptaCDF, 1,2,3,4,6,7,8-	3.3064E-013	4.1869E-013
LP3	resident_child	Lhoist Stack	i_beef	HeptaCDF, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000

RECEPTOR	SCENARIO	SOURCE	PATHWAY	COPC	TOTAL CANCER INTAKE mg/kg-day	TOTAL HAZARD INTAKE mg/kg-day
LP3	resident_child	Lhoist Stack	i_chick	HeptaCDF, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_dw	HeptaCDF, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_eggs	HeptaCDF, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_fish	HeptaCDF, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_milk	HeptaCDF, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_pork	HeptaCDF, 1,2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_soil	HeptaCDF, 1,2,3,4,6,7,8-	2.4895E-013	4.3314E-013
			Total		5.7959E-013	8.5183E-013
LP3	resident_child	Lhoist Stack	i_ag	HeptaCDF, 1,2,3,4,7,8,9-	3.1459E-014	4.0063E-014
LP3	resident_child	Lhoist Stack	i_beef	HeptaCDF, 1,2,3,4,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_chick	HeptaCDF, 1,2,3,4,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_dw	HeptaCDF, 1,2,3,4,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_eggs	HeptaCDF, 1,2,3,4,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_fish	HeptaCDF, 1,2,3,4,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_milk	HeptaCDF, 1,2,3,4,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_pork	HeptaCDF, 1,2,3,4,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_soil	HeptaCDF, 1,2,3,4,7,8,9-	2.4324E-014	4.2321E-014
			Total		5.5783E-014	8.2383E-014
LP3	resident_child	Lhoist Stack	i_ag	HexaCDD, 1,2,3,4,7,8-	1.8871E-014	2.2633E-014
LP3	resident_child	Lhoist Stack	i_beef	HexaCDD, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_chick	HexaCDD, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_dw	HexaCDD, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_eggs	HexaCDD, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_fish	HexaCDD, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_milk	HexaCDD, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_pork	HexaCDD, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000

RECEPTOR	SCENARIO	SOURCE	PATHWAY	COPC	TOTAL CANCER INTAKE mg/kg-day	TOTAL HAZARD INTAKE mg/kg-day
LP3	resident_child	Lhoist Stack	i_soil	HexaCDD, 1,2,3,4,7,8-	1.6457E-014	2.8644E-014
			Total		3.5328E-014	5.1277E-014
LP3	resident_child	Lhoist Stack	i_ag	HexaCDD, 1,2,3,6,7,8-	6.2618E-014	8.0594E-014
LP3	resident_child	Lhoist Stack	i_beef	HexaCDD, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_chick	HexaCDD, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_dw	HexaCDD, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_eggs	HexaCDD, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_fish	HexaCDD, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_milk	HexaCDD, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_pork	HexaCDD, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_soil	HexaCDD, 1,2,3,6,7,8-	4.5635E-014	7.9266E-014
			Total		1.0825E-013	1.5986E-013
LP3	resident_child	Lhoist Stack	i_ag	HexaCDD, 1,2,3,7,8,9-	1.6361E-014	2.1023E-014
LP3	resident_child	Lhoist Stack	i_beef	HexaCDD, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_chick	HexaCDD, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_dw	HexaCDD, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_eggs	HexaCDD, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_fish	HexaCDD, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_milk	HexaCDD, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_pork	HexaCDD, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_soil	HexaCDD, 1,2,3,7,8,9-	1.1836E-014	2.0558E-014
			Total		2.8197E-014	4.1581E-014
LP3	resident_child	Lhoist Stack	i_ag	HexaCDF, 1,2,3,4,7,8-	1.9487E-013	2.6351E-013
LP3	resident_child	Lhoist Stack	i_beef	HexaCDF, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_chick	HexaCDF, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_dw	HexaCDF, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000

PATHWAY INTAKE BY COPC

Date : 22/01/2019

RECEPTOR	SCENARIO	SOURCE	PATHWAY	COPC	TOTAL CANCER INTAKE mg/kg-day	TOTAL HAZARD INTAKE mg/kg-day
LP3	resident_child	Lhoist Stack	i_eggs	HexaCDF, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_fish	HexaCDF, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_milk	HexaCDF, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_pork	HexaCDF, 1,2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_soil	HexaCDF, 1,2,3,4,7,8-	1.2396E-013	2.1523E-013
			Total		3.1882E-013	4.7874E-013
LP3	resident_child	Lhoist Stack	i_ag	HexaCDF, 1,2,3,6,7,8-	2.3037E-014	3.1180E-014
LP3	resident_child	Lhoist Stack	i_beef	HexaCDF, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_chick	HexaCDF, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_dw	HexaCDF, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_eggs	HexaCDF, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_fish	HexaCDF, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_milk	HexaCDF, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_pork	HexaCDF, 1,2,3,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_soil	HexaCDF, 1,2,3,6,7,8-	1.4686E-014	2.5513E-014
			Total		3.7723E-014	5.6693E-014
LP3	resident_child	Lhoist Stack	i_ag	HexaCDF, 1,2,3,7,8,9-	3.6732E-015	4.9970E-015
LP3	resident_child	Lhoist Stack	i_beef	HexaCDF, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_chick	HexaCDF, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_dw	HexaCDF, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_eggs	HexaCDF, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_fish	HexaCDF, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_milk	HexaCDF, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_pork	HexaCDF, 1,2,3,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_soil	HexaCDF, 1,2,3,7,8,9-	2.3894E-015	4.1498E-015
			Total		6.0625E-015	9.1468E-015

RECEPTOR	SCENARIO	SOURCE	PATHWAY	COPC	TOTAL CANCER INTAKE mg/kg-day	TOTAL HAZARD INTAKE mg/kg-day
LP3	resident_child	Lhoist Stack	i_ag	HexaCDF, 2,3,4,6,7,8-	7.6825E-014	1.0400E-013
LP3	resident_child	Lhoist Stack	i_beef	HexaCDF, 2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_chick	HexaCDF, 2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_dw	HexaCDF, 2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_eggs	HexaCDF, 2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_fish	HexaCDF, 2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_milk	HexaCDF, 2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_pork	HexaCDF, 2,3,4,6,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_soil	HexaCDF, 2,3,4,6,7,8-	4.9039E-014	8.5169E-014
			Total		1.2586E-013	1.8917E-013
LP3	resident_child	Lhoist Stack	i_ag	OctaCDD, 1,2,3,4,6,7,8,9-	2.4025E-013	2.7466E-013
LP3	resident_child	Lhoist Stack	i_beef	OctaCDD, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_chick	OctaCDD, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_dw	OctaCDD, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_eggs	OctaCDD, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_fish	OctaCDD, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_milk	OctaCDD, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_pork	OctaCDD, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_soil	OctaCDD, 1,2,3,4,6,7,8,9-	2.2682E-013	3.9504E-013
			Total		4.6706E-013	6.6970E-013
LP3	resident_child	Lhoist Stack	i_ag	OctaCDF, 1,2,3,4,6,7,8,9-	2.3379E-013	2.7778E-013
LP3	resident_child	Lhoist Stack	i_beef	OctaCDF, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_chick	OctaCDF, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_dw	OctaCDF, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_eggs	OctaCDF, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_fish	OctaCDF, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000

PATHWAY INTAKE BY COPC

Date : 22/01/2019

RECEPTOR	SCENARIO	SOURCE	PATHWAY	COPC	TOTAL CANCER INTAKE mg/kg-day	TOTAL HAZARD INTAKE mg/kg-day
LP3	resident_child	Lhoist Stack	i_milk	OctaCDF, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_pork	OctaCDF, 1,2,3,4,6,7,8,9-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_soil	OctaCDF, 1,2,3,4,6,7,8,9-	2.0417E-013	3.5561E-013
			Total		4.3796E-013	6.3340E-013
LP3	resident_child	Lhoist Stack	i_ag	PentaCDD, 1,2,3,7,8-	2.6865E-014	3.8601E-014
LP3	resident_child	Lhoist Stack	i_beef	PentaCDD, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_chick	PentaCDD, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_dw	PentaCDD, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_eggs	PentaCDD, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_fish	PentaCDD, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_milk	PentaCDD, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_pork	PentaCDD, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_soil	PentaCDD, 1,2,3,7,8-	1.3989E-014	2.4194E-014
			Total		4.0853E-014	6.2796E-014
LP3	resident_child	Lhoist Stack	i_ag	PentaCDF, 1,2,3,7,8-	2.5207E-014	3.6363E-014
LP3	resident_child	Lhoist Stack	i_beef	PentaCDF, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_chick	PentaCDF, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_dw	PentaCDF, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_eggs	PentaCDF, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_fish	PentaCDF, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_milk	PentaCDF, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_pork	PentaCDF, 1,2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_soil	PentaCDF, 1,2,3,7,8-	1.5776E-014	2.7366E-014
			Total		4.0983E-014	6.3729E-014
LP3	resident_child	Lhoist Stack	i_ag	PentaCDF, 2,3,4,7,8-	6.1652E-014	9.1569E-014
LP3	resident_child	Lhoist Stack	i_beef	PentaCDF, 2,3,4,7,8-	0.0000E+000	0.0000E+000

RECEPTOR	SCENARIO	SOURCE	PATHWAY	COPC	TOTAL CANCER INTAKE mg/kg-day	TOTAL HAZARD INTAKE mg/kg-day
LP3	resident_child	Lhoist Stack	i_chick	PentaCDF, 2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_dw	PentaCDF, 2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_eggs	PentaCDF, 2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_fish	PentaCDF, 2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_milk	PentaCDF, 2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_pork	PentaCDF, 2,3,4,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_soil	PentaCDF, 2,3,4,7,8-	3.0164E-014	5.2114E-014
			Total		9.1816E-014	1.4368E-013
LP3	resident_child	Lhoist Stack	i_ag	TetraCDD, 2,3,7,8-	2.0655E-015	3.1638E-015
LP3	resident_child	Lhoist Stack	i_beef	TetraCDD, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_chick	TetraCDD, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_dw	TetraCDD, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_eggs	TetraCDD, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_fish	TetraCDD, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_milk	TetraCDD, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_pork	TetraCDD, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_soil	TetraCDD, 2,3,7,8-	1.6396E-015	2.7929E-015
			Total		3.7051E-015	5.9566E-015
LP3	resident_child	Lhoist Stack	i_ag	TetraCDF, 2,3,7,8-	3.5238E-014	5.7605E-014
LP3	resident_child	Lhoist Stack	i_beef	TetraCDF, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_chick	TetraCDF, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_dw	TetraCDF, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_eggs	TetraCDF, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_fish	TetraCDF, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_milk	TetraCDF, 2,3,7,8-	0.0000E+000	0.0000E+000
LP3	resident_child	Lhoist Stack	i_pork	TetraCDF, 2,3,7,8-	0.0000E+000	0.0000E+000

PATHWAY INTAKE BY COPC

Date : 22/01/2019

RECEPTOR	SCENARIO	SOURCE	PATHWAY	COPC	TOTAL CANCER INTAKE mg/kg-day	TOTAL HAZARD INTAKE mg/kg-day
LP3	resident_child	Lhoist Stack	i_soil	TetraCDF, 2,3,7,8-	1.4513E-014	2.4611E-014
			Total		4.9751E-014	8.2217E-014

RECEPTOR NAME	SCENARIO	SOURCE	COPC	ADD
LP3	resident_adult	Lhoist Stack	HeptaCDD, 1,2,3,4,6,7,8-	2.1199E-005
LP3	resident_adult	Lhoist Stack	HeptaCDF, 1,2,3,4,6,7,8-	6.7307E-005
LP3	resident_adult	Lhoist Stack	HeptaCDF, 1,2,3,4,7,8,9-	6.4739E-006
LP3	resident_adult	Lhoist Stack	HexaCDD, 1,2,3,4,7,8-	3.8061E-005
LP3	resident_adult	Lhoist Stack	HexaCDD, 1,2,3,6,7,8-	1.2823E-004
LP3	resident_adult	Lhoist Stack	HexaCDD, 1,2,3,7,8,9-	3.3405E-005
LP3	resident_adult	Lhoist Stack	HexaCDF, 1,2,3,4,7,8-	4.0442E-004
LP3	resident_adult	Lhoist Stack	HexaCDF, 1,2,3,6,7,8-	4.7872E-005
LP3	resident_adult	Lhoist Stack	HexaCDF, 1,2,3,7,8,9-	7.6964E-006
LP3	resident_adult	Lhoist Stack	HexaCDF, 2,3,4,6,7,8-	1.5970E-004
LP3	resident_adult	Lhoist Stack	OctaCDD, 1,2,3,4,6,7,8,9-	4.7568E-007
LP3	resident_adult	Lhoist Stack	OctaCDF, 1,2,3,4,6,7,8,9-	4.7484E-007
LP3	resident_adult	Lhoist Stack	PentaCDD, 1,2,3,7,8-	5.6646E-004
LP3	resident_adult	Lhoist Stack	PentaCDF, 1,2,3,7,8-	2.7536E-005
LP3	resident_adult	Lhoist Stack	PentaCDF, 2,3,4,7,8-	6.6248E-004
LP3	resident_adult	Lhoist Stack	TetraCDD, 2,3,7,8-	4.9589E-005
LP3	resident_adult	Lhoist Stack	TetraCDF, 2,3,7,8-	8.0301E-005