

REPORT

Proposed Peak Power Generation Facility- Harts Farm Way

Air Quality Assessment

Client: Green Frog Power II Ltd

Reference: I&BPB5588-111R001F01

Revision: 01/Final

Date: 20 July 2017

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Document title: Proposed Peak Power Generation Facility- Harts Farm Way

Document short title: Harts Farm Way- Air Quality

Reference: I&BPB5588-111R001F01

Revision: 01/Final

Date: 20 July 2017

Project name: PB5588-111 GFP Environmental Support - Harts Farm Way- AQ

Project number: PB5588-111

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Date / initials: 18/07/2017 ME

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Classification

Air Quality Assessment



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1 Introduction

This air quality assessment was prepared, on behalf of Green Frog Power II Ltd (GFP), in relation to a planning application for a generator compound off Harts Farm Road, near Havant, Hampshire. The proposal is for the installation of 14 gas-fuelled generators with a combined electrical output capacity of no greater than 20MW_E. The proposed generators will supply short term power to the national grid, under electricity markets including the Capacity Mechanism, during periods when peak demand on the network exceeds supply. The gas engines have been selected based on their environmental performance and will be operated under the 'emissions optimised' (specifically NO_x) mode to minimise environmental impacts.

This report provides a review of existing air quality in the area and considers the potential for air quality impacts at identified human and ecological receptors. The assessment used atmospheric dispersion modelling to predict the likely impacts of emissions of oxides of nitrogen (NO_x and NO₂) and carbon monoxide (CO).

The proposed development would not be categorised as a Part A activity under the Environmental Permitting Regulations¹, as it would have a generating capacity of less than 50 megawatt thermal input (MW_{th}). However with an aggregated net thermal input greater than 20MW_{th} the facility would require a permit to operate from the local authority.

1.1 Site Description and Surrounding Area

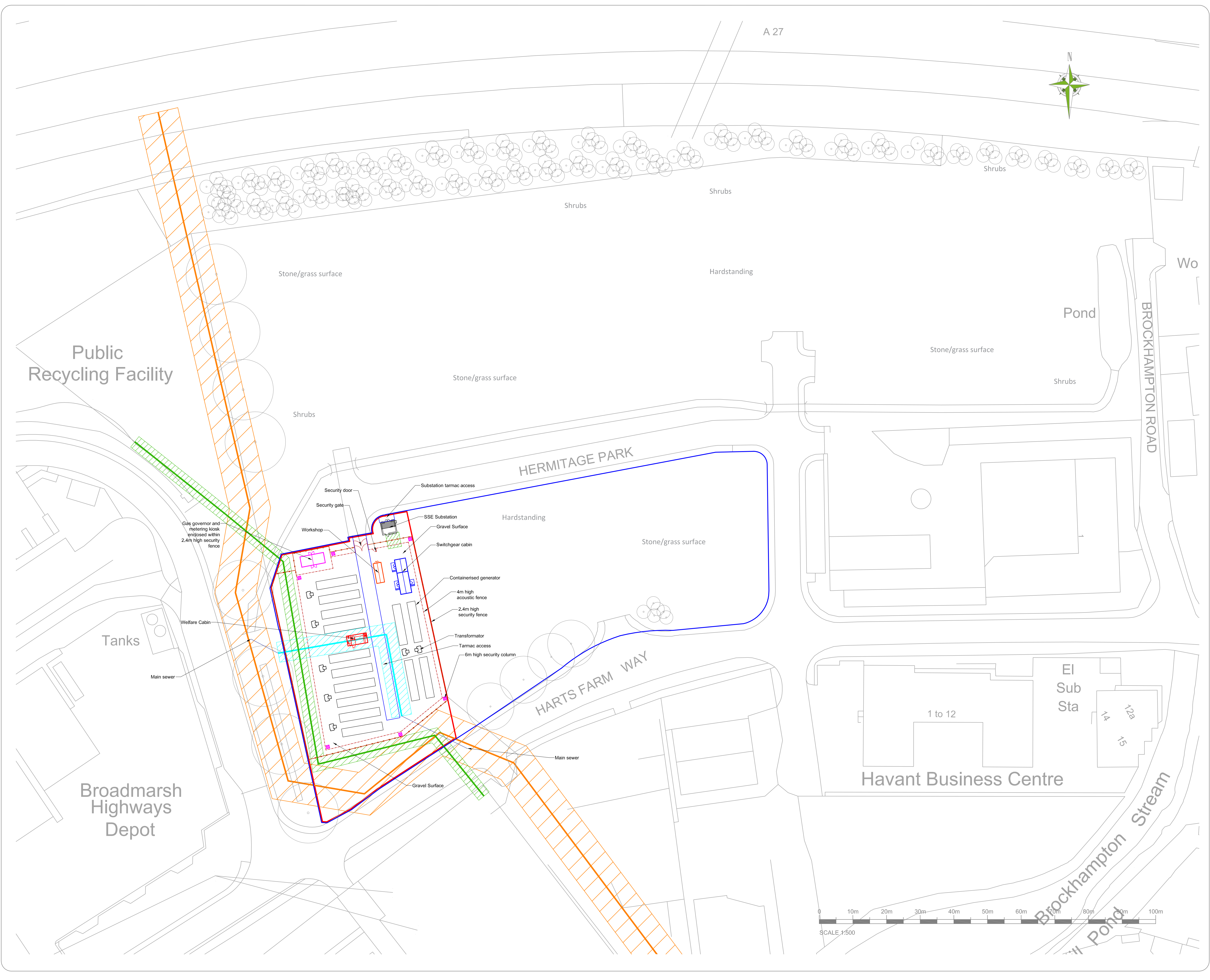
The proposed development consists of a peak power generator compound off Harts Farm Way, near Havant. The site is a currently unused brownfield site located between the A27 Road, to the North, industrial units to the East and West and a Sewage Treatment Plant to the South.

The closest residential receptors are properties located on Brockhampton Road, approximately 450m to the North East and the second closest residential receptor is located on Mill Lane, approximately 380m to the North West. The proposed development lies within the Havant Borough Council (HBC) administrative area.

The development will comprise 14 containerised generator units and associated infrastructure (welfare areas, security/acoustic fencing, transformers and switchgear).

The site location is detailed in **Figure 1**.

¹ Statutory Instrument 2016 - No.1154. The Environmental Permitting (England and Wales) Regulations 2016



PLANNING PLAN

LEGEND:

SITE INFRASTRUCTURE:

- LANDLORDS PROPERTY
- PROPOSED SITE
- DRIVE ACCESS
- PERIMETER FENCELINE
- INNER FENCELINE
- DNO SUBSTATION
- SECURITY COLUMN
- GAS GOVERNORS
- TRANSFORMER
- SWITCHGEAR
- SECURITY GATE
- WELFARE CABIN
- GENERATOR
- HIGH PRESSURE GAS ROUTE
- DIVERTED ELECTRIC ROUTE
- DIVERTED SEWER ROUTE
- SEWER DIVERSION EASEMENT
- ELECTRIC WAYLEAVE/EASEMENT
- HIGH PRESSURE GAS EASEMENT

rev	revision notes	date
REVISIONS		

Planning

ALL DIMENSIONS TO BE CHECKED ON SITE
WORK TO FIGURED DIMENSIONS ONLY
REPORT DISCREPANCIES TO THE GFP
AT ONCE BEFORE PROCEEDING
COPYRIGHT ACT APPLIES



Project Title:
GENERATION COMPOUND
HARTS FARM WAY
PO9 1HS

Drawing Title:

PROPOSED SITE PLAN

Scale @A1: 1:500
Drawn: TB
Drawing No: 4000_GF_DR_PP_103 -
Date: Apr 2017
Checked: DS
Rev:

2 Legislative Framework and Planning Policy

2.1 National Legislation

2.1.1 The Air Quality Strategy

Air pollution can have adverse effects on the health of humans and ecosystems. European Union (EU) legislation forms the basis for UK air quality policy. The EU Air Quality Framework Directive 96/62/EC on Ambient Air Quality Assessment and Management entered into force in September 1996². This was a framework for tackling air quality through setting European-wide air quality limit values in a series of Daughter Directives, prescribing how air quality should be assessed and managed by the Member States. Directive 96/62/EC and the first three Daughter Directives were combined to form the new EU Directive 2008/50/EC³ on Ambient Air Quality and Cleaner Air for Europe, which came into force June 2008.

The 1995 Environment Act⁴ required the preparation of a national Air Quality Strategy (AQS) which set air quality standards and Objectives for specified pollutants. The Act also outlined measures to be taken by local planning authorities in relation to meeting these standards and Objectives (the Local Air Quality Management (LAQM) system).

The UK AQS was originally adopted in 1997⁵ and was reviewed and updated in order to take account of the evolving EU Legislation, technical and policy developments and the latest information on health effects of air pollution. The strategy was revised and reissued in 2000 as the AQS for England, Scotland, Wales and Northern Ireland⁶. This was subsequently amended in 2003⁷ and was last updated in July 2007⁸.

The standards and Objectives relevant to the LAQM framework are prescribed through the Air Quality (England) Regulations (2000)⁹, and the Air Quality (England) (Amendment) Regulations 2002¹⁰; the Air Quality Standards Regulations 2010 set out the combined Daughter Directive limit values and interim targets for Member State compliance¹¹.

The current air quality standards and Objectives of relevance to this assessment (for the purpose of LAQM) are outlined in **Table 1**. Pollutant standards relate to ambient pollutant concentrations in air, set on the basis of medical and scientific evidence of how each pollutant affects human health. Pollutant Objectives incorporate dates by which each standard is to be achieved, taking into account economic considerations, practicability and technical feasibility.

Where an Air Quality Objective is unlikely to be met by the relevant deadline, local authorities must designate those areas as Air Quality Management Areas (AQMAs) and take action, along with others, to work towards meeting the Objectives. Following the designation of an AQMA, local authorities are required to develop an Air Quality Action Plan (AQAP) to work towards meeting the Objectives and improve air quality locally.

² European Parliament (1996) Council Directive 96/62/EC on Ambient Air Quality Assessment and Management.

³ European Parliament (2008) Council Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe.

⁴ HMSO (1995) 'The Environment Act 1995 (c.25)', London: TSO.

⁵ Department of the Environment (DoE) (1997) 'The UK National Air Quality Strategy', London: HMSO.

⁶ Department of the Environment, Transport & the Regions (DETR) (2000) 'UK Air Quality Strategy'. London: HMSO.

⁷ DETR (2003) 'UK Air Quality Strategy- Addendum'. London: HMSO.

⁸ Department for Environment, Food and Rural Affairs (Defra) (2007) 'The Air Quality Strategy for England, Scotland, Wales and Northern Ireland', London: HMSO.

⁹ HMSO (2000) 'Statutory Instrument 2000 No. 928, The Air Quality (England) Regulations 2000', London: HMSO.

¹⁰ HMSO (2002) 'Statutory Instrument 2002 No. 3043, The Air Quality (England) (Amendment) Regulations 2002', London: HMSO.

¹¹ HMSO (2010) 'Statutory Instrument 2010 No. 1001, Air Quality Standards (England) Regulations, 2010'. London: HMSO.

Possible exceedances of Air Quality Objectives are usually assessed in relation to those locations where members of the public are likely to be regularly present and are likely to be exposed for a period of time appropriate to the averaging period of the Objective.

Table 1: Air Quality Strategy Objectives (England) for the Purpose of Local Air Quality Management

Pollutant	Air Quality Objective		To be Achieved by
	Concentration	Measured as*	
Carbon monoxide	10mg.m ⁻³	Maximum daily running 8-hour mean	31/12/2003
Nitrogen dioxide (NO ₂)	200µg.m ⁻³	1 hour mean not to be exceeded more than 18 times per year	31/12/2005
	40µg.m ⁻³	Annual mean	31/12/2005

Note: * how the Objectives are to be measured is set out in the UK Air Quality (England) Regulations (2000)

2.1.2 Ecological Assessment

Critical levels are provided for the protection of vegetation and ecosystems and correspond to the concentration of pollutants in air below which adverse impacts are not anticipated. The critical levels for the pollutants considered in the assessment are detailed in **Table 2**.

Table 2: Critical Levels for Pollutants Considered in the Assessment

Pollutant	Concentration (µg.m ⁻³)	Measured As
NO _x	30	Annual Mean
	75	24-Hour Mean

The assessment assumes that all identified ecological sites are sensitive to airborne concentrations of NO_x, which may not be the case.

2.2 National Policy Guidance

2.2.1 National Planning Policy Framework

The National Planning Policy Framework¹² (NPPF) was adopted in March 2012 and refers to the Local Air Quality Management process by recognising that:

“Planning policies should sustain compliance with and contribute towards EU limit values or national Objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas.”

The NPPF identifies that local planning authorities should maintain consistency within the Local Air Quality Management process and states that:

“Planning decisions should ensure that any new development within Air Quality Management Areas is consistent with the local Air Quality Action Plan.”

2.2.2 Planning Practice Guidance

The government's Planning Practice Guidance provides guidance on how the planning process can take account of the impact new development may have on air quality. The guidance states that air quality may be relevant to a planning application where:

- Traffic in the vicinity of the development may be affected by increasing volume or congestion or altering the fleet composition on local roads;
- New point sources of air pollution are to be introduced;
- People may be exposed to existing sources of pollution;
- Potentially unacceptable impacts (such as dust) may arise during construction; and
- Biodiversity may be affected.

2.3 Local Planning Policy Guidance

HBC has produced the Core Strategy Development Plan Document (2006-2026) which was formally adopted in March 2011. The core strategy is the principal document in the Council's local development Framework (LDF) and sets out the spatial planning strategy, up to the year 2026 for the Borough of Havant. A review of the Havant Core Strategy and Local plan identified the following policy relevant to air quality:

Policy DM10 Pollution.

“Some forms of development which can result in pollutants are necessary to the economic and social needs of the borough. This would include some industrial uses which, although necessary, may be detrimental to amenity. Only in instances where the risk is appropriately managed will development be permitted. Consideration will be given to any mitigating measures that could be implemented into development schemes to ensure its effects are sufficiently alleviated. It must be clearly demonstrated that any proposed mitigation measures will be effective and suitably reduce any harm. In some instances this may be through the provision of a buffer zone between conflicting land uses which can minimise harmful effects and can reduce the need for more stringent mitigating measures.”

The requirements of this planning policy were considered in this air quality assessment.

¹² Department for Communities and Local Government (DCLG) (2012) National Planning Policy Framework

3 Methodology and Assessment Criteria

3.1 Data Sources

The assessment was undertaken with reference to information from a number of sources, as detailed in **Table 3**.

Table 3: Data Sources

Data Sources	Reference
Havant Borough Council (HBC)	Havant Borough Council, 2015 Air Quality Updating and Screening Assessment for Havant Borough Council ¹³ , Core Strategy ¹⁴
Department for Environment Food and Rural Affairs (Defra)	Defra (2016): Local Air Quality Management - Technical Guidance TG(16)
Defra LAQM Support Tools	Defra: Local Air Quality Management 1km x 1 km grid background pollutant maps
Institute of Air Quality Management (IAQM) and Environmental Protection UK	IAQM & EPUK (2017): Land-use Planning & Development Control: Planning for Air Quality.
Defra and Environment Agency Environmental Permitting Guidance	Risk assessments for your environmental permit (2016) Air emissions risk assessment for your environmental permit (2016)

3.2 Consultation

Consultation was undertaken with the HBC Environmental Protection Team to agree the appropriate methodology for the assessment¹⁵. This included the assessment methodology, choice of dispersion model, selection of meteorological data, representation of operating hours and assessed receptor locations.

3.3 Baseline Air Quality Conditions

Where possible, baseline air quality conditions at seated receptor locations were represented by monitoring undertaken by HBC. This was possible when diffusion tubes were located at nearby positions of relevant public exposure. It is often not appropriate to use Kerbside and Roadside monitoring locations for determining baseline conditions as they are located much closer to transport pollution sources than relevant positions of public exposure.

Background air pollutant concentrations corresponding to the 1km x 1km grid squares covering the study area were obtained from the LAQM support tools provided by Defra for use in air quality assessments. Background concentrations for the base year (2017) were obtained to establish baseline air quality conditions at the receptor locations identified. This data was used to represent baseline air quality conditions at locations where no relevant monitoring data was available.

3.4 Dispersion Model Selection

¹³ HBC (2016), 2015 Air Quality Updating and Screening Assessment for Havant Borough Council.

¹⁴ Havant Borough Council Core Strategy, Local Development Framework, 2011.

¹⁵ Consultation was undertaken with the HBC Environmental Protection team. Agreement of the proposed scope and methodology was provided via email on 12th July 2017.

Pollutant emissions from the proposed peak power generator compound were modelled using the AERMOD atmospheric dispersion model utilising the 16216r executable. AERMOD is an advanced dispersion model based on the Gaussian theory of plume dispersion, developed by the United States Environmental Protection Agency (US EPA). It is widely used in the UK and internationally for regulatory and assessment purposes. Atmospheric dispersion is determined by input data (stack and pollutant release parameters, terrain, hourly sequential meteorological data and building dimensions) to calculate ground level pollutant concentrations across a selected receptor grid and discrete receptor points.

3.5 Meteorological Data

Five years (2012 – 2016) of hourly sequential meteorological data from Thorney Island recording station were used in the AERMOD model. The Thorney Island station is located approximately 7km to the south east of the site, and was considered the closest, most representative recording station.

Use of meteorological data from the Thorney Island recording station was agreed with HBC during the consultation period. Wind roses for 2012 - 2016 are provided in **Appendix A**.

The meteorological data were processed to make their interaction with the land surface representative of the local study area. The study area was characterised by the immediate land use surrounding the proposed facility as one discrete sector. The parameters associated with the selected land use type are detailed in **Table 4**.

Table 4: Surface Characteristics used in the Processing of Meteorological Data

Sector	Land Use	Albedo	Bowen Ratio	Surface Roughness
0-360°	Open Suburban/Light Industrial	0.2075	1.625	0.5

3.6 Terrain

To represent the influence of terrain elevations in the dispersion of pollutants, a digital elevation file was used in the AERMOD model. For both the receptors and grid points the recommended Lakes Inverse Distance interpolation was used. This function interpolates the neighbouring points using the inverse distance to obtain the elevation at the desired point.

The assessment used the SRTM1 global topographical survey data which is reported at approximately 30m intervals. Shuttle Radar Topography Mission (SRTM1) elevation data was extrapolated from the WebGIS website and incorporated into the modelling assessment. This dataset provides terrain data at a resolution of 30m from satellite data. A visualisation of the terrain used in the assessment is presented in **Appendix B**.

3.7 Treatment of Buildings

Buildings were incorporated into the dispersion model to predict the impact of their interaction with plume dispersion. The Building Profile Input Programme (BPIP) algorithm was used to calculate building downwash parameters within AERMOD. The BPIP model considers the plume effects of stacks within a defined Structure Influence Zone (SIZ) which is based on the dimensions of the building and the proximity to the emission source.

Building dimensions were taken from the information provided by GFP. All buildings within the site boundary were included in the model. Building height details were provided by the design team for the project. Full details of the buildings included in the model are provided in **Table 5**.

Table 5: Buildings Included in the AERMOD Model

Building Description	Height (m)	Width (m)	Length (m)
Generator container (x14)	2.9	2.4	12.3
Gas Governor	2.5	3.5	7.5
Welfare Cabin	2.5	3.3	7.0
Switchgear Cabin	2.9	3.5	10.5
Substation	2.5	4.5	4.0
Workshop	2.5	5.2	2.35

3.8 Process Emissions

Emission parameters for the proposed generator compound were derived from information provided by engine manufacturer Cummins for the 'QSK60 series' natural gas engines. The pollutant emission rate, exhaust gas temperature and volume were calculated based on information provided in the generator technical specifications and indicative emission performance provided by the manufacturer. The emission rates represent emissions at full generating capacity and are applied to all 14 engines. The emission rates used in the dispersion model are provided in **Table 6**. A visualisation of the model inputs is provided in **Appendix C**.

Table 6: Process Emissions

Parameter	Input for Dispersion Model
Number of generators	14
Release height (m)	3.97
Stack diameter (m)	0.35
Efflux velocity (m.s^{-1})	42.93
Efflux temperature ($^{\circ}\text{C}$)	432
Pollutant Concentration (mg.m^{-3}) - Provided by Engine Manufacturer *	
NO_x	500
CO	830
Maximum Emission Rates (g.s^{-1}) - Provided by Engine Manufacturer	
NO_x	0.590
CO	0.980

* Concentration at reference conditions - 5% O_2 and 0°C . Modelled at actual conditions – wet flow rate at 9.2% O_2 and 432°C

3.9 Conversion of NO_x to NO₂

Environment Agency technical guidance¹⁶ provides an approach to the conversion rates for NO_x to NO₂ in modelling studies. In accordance with this guidance, the short term (1 hour) and long term (annual mean) concentrations of NO₂ were derived from the predicted NO_x concentrations using the following approach: 35% of NO_x to NO₂ for short term and 70% of NO_x to NO₂ for long term average concentrations.

3.10 Representation of Operating Hours

The proposed generator compound is likely to operate for approximately 2,000 hours in a year in order to serve short periods where energy demand is elevated. The assessment has therefore considered the impact of the generators operating at full generating capacity over the expected number of hours of operation.

Due to the infrequent nature of operation, the dispersion model was developed to allow a realistic representation of emissions. The operating windows are not known in advance and, as such, applying emissions during specific operating hours was not considered appropriate. Due to the nature of the facility, it was assumed for the purposes of the assessment that operation of the facility would only occur between the hours of 07:00 to 23:00, which is considered to represent the period of the day during which peak power demand is likely to occur. It is not considered likely that peak power demand would occur outside of these hours. As a result, the dispersion model included an hourly variable emission file, which considered emissions during this 16-hour window.

This resulted in a total of 5,840 hours of operation per year, which would overestimate impacts at receptor locations compared to the likely maximum operation of 2,000 hours per year. Guidance provided by the Environment Agency¹⁷ indicates that a factor adjustment should be applied to represent conditions for facilities that do not operate all the time. A conversion factor of 0.342 (calculated by dividing the number of estimated hours of operation, 2,000 hours, by the number of modelled hours within the potential operating window, 5,840 hours) was therefore applied to the annual mean model results to more accurately represent the likely impact of the facility emissions. A conversion factor of 0.343 was applied when considering 24 hour assessment periods based on the assumption that operation is unlikely to exceed 5.5 hours per day (5.5 hours divided by the number of modelled hours with the operating window, 16 hours).

The short term Air Quality Objectives apply to the maximum (either 1 or 8 hour) or to a percentile value for any assessed calendar year. Due to the periodic nature of emissions, assuming that the emitting sources operate continuously over the operating window would overestimate short term impacts, as this would account for emissions occurring during all worst-case dispersion conditions in the year. The short term results are therefore provided as indicative upper-end predictions based on a scenario where the facility would operate for 5,840 hours per year (i.e. 16 hours per day) rather than the estimated 2,000 hours per year (i.e. less than 5.5 hours per day).

3.11 Assessment Significance Criteria

Guidance is provided by the IAQM and EPUK¹⁸ on determining the significance of a development's impact on local air quality. **Table 7** details the impact descriptors that take account of the magnitude of changes in pollutant concentrations, and the concentration in relation to the Air Quality Objectives. The

¹⁶ Environment Agency – Air Quality Modelling and Assessment Unit – (http://webarchive.nationalarchives.gov.uk/20140328084622/http://www.environment-agency.gov.uk/static/documents/Conversion_ratios_for_NOx_and_NO2_.pdf)

¹⁷ Environment Agency and Department for Environment, Food & Rural Affairs, Guidance - Air emissions risk assessment for your environmental permit, August 2016

guidance recommends that the assessment of significance of effect will need to take into account the following factors:

- The existing and future air quality in the absence of the development;
- The extent of current and future population exposure to the impacts; and
- The influence and validity of adopted assumptions when undertaking the prediction of impacts.

The guidance also states that a judgement of the significance should be made by a competent professional who is suitably qualified. This air quality assessment and determination of the significance of the development on local air quality was undertaken by members of the IAQM.

Table 7: Impact Descriptors for Individual Receptors

Long term average Concentration at receptor in assessment year	% Change in Concentration Relative to the 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

Note: Figures are to be rounded up to the nearest round number. Any value less than 1% after rounding (effectively less than 0.5%) will be described as "Negligible".

This assessment considered both the magnitude of the process contribution of the emitting facility (i.e. the predicted additional pollutant concentrations from the proposed development) and whether as a consequence overall air quality at receptors was likely to breach relevant Objective levels. The latter includes the process contribution, background concentrations and any other relevant local pollution sources.

The assessment used the Environment Agency¹⁹ criteria to determine the significance of nitrogen and acid deposition. Process contributions are considered insignificant using the following significance criteria:

- For SPAs, SACs, RAMSAR and SSSI
 - the short-term PC is less than 10% of the short-term environmental standard for protected conservation areas
 - the long-term PC is less than 1% of the long-term environmental standard for protected conservation areas
- For all other locally designated ecological sites
 - the short-term PC is less than 100% of the short-term environmental standard
 - the long-term PC is less than 100% of the long-term environmental standard

¹⁸ IAQM & EPUK (2017): Land-use Planning & Development Control: Planning for Air Quality. Institute of Air Quality Management.

¹⁹ Environment Agency and Defra – Environmental management – guidance. Air emissions risk assessment for your environmental permit 2016

4 Description of Baseline Conditions

4.1 Local Air Quality Management

The most recent published LAQM report is the 2015 HBC Air Quality Updating and Screening Assessment (USA). There are currently no statutory designated Air Quality Management Area (AQMA) within the borough. The USA identified that there may be potential for exceedences of the air quality Objectives at locations within Havant Town Centre and further assessment is required to determine whether declaration of an AQMA is appropriate.

Data from the 2011 and 2012 progress reports showed that certain areas of the town centre were likely to exceed objectives and thus a detailed assessment was undertaken for the transport corridor around Havant Town Centre. The data showed discrepancies between the different methods used to assess NO₂ levels and thus a declaration of an AQMA was considered unnecessary. A detailed monitoring study at 23 locations near to the Park Road area of the Town has been maintained since 2010 to monitor pollution levels in this area.

HBC does not operate any automatic monitoring within the district. **Table 8** summaries the location and classification of each monitoring location as stated in the HBC 2015 USA¹³ report.

Table 8: NO₂ monitoring Locations in Havant Borough Council

Monitoring Location	Grid Reference (m)		Site Type	Nitrogen Dioxide Concentration (µg.m-3)			
	X (m)	Y (m)		2013	2014	2015	2016
Langstone Road (West)	471610	105592	Roadside	29.20	29.28	33.59	34.89
Rectory Road	471742	105794	Suburban	27.73	26.09	24.61	25.48
Havant Road	472198	102055	Roadside	32.85	32.43	28.70	30.29
Emsworth (A27)	474866	106425	Roadside	22.71	22.90	19.61	20.74
South Street	471789	106205	Urban Centre	24.81	27.00	23.04	20.47
Park Road South (West St Jctn)	471555	106298	Roadside	37.67	35.25	31.33	32.10
Brockhampton Lane	471180	106063	Roadside	27.45	27.96	25.25	25.27
London Road (Purbrook)	467314	107956	Roadside	26.17	26.40	24.30	23.93
London Road (W'Ville)	468305	109548	Roadside	35.63	38.55	35.77	35.41
Ramblers Way	470032	110043	Suburban	24.30	23.29	19.45	20.29
Xyratex	471611	105680	Roadside	34.50	35.72	29.94	30.89
Grove Road	471988	106076	Urban Centre	22.15	20.45	19.41	17.88
Elm Park Road	471777	106759	Urban Centre	21.66	21.39	18.90	18.50
School Playground	471894	108403	Urban Centre	14.66	15.15	13.58	12.80
Waterlooville Precinct	468264	109415	Roadside	20.54	20.57	17.91	18.10
Langstone Road (East)	471640	105794	Kerbside	38.77	40.71	43.61	47.66
Bosmere Junior School	471693	105920	Urban Centre	29.68	30.30	26.53	25.91
Park Road South (Solent Jctn)	471589	106132	Kerbside	39.71	42.27	40.48	37.31
Park Road South (Bulbeck Jctn)	471573	106200	Roadside	34.33	35.37	29.55	32.49
Elm Lane (Park Road South Jctn)	471571	106374	Kerbside	40.93	44.55	39.48	39.52
Stakes Hill Road	468479	107721	Kerbside	26.46	26.25	22.61	21.53
Ladybridge Road (London Rd Jctn)	467228	107849	Roadside	26.26	24.63	21.37	22.42

Results from the 23 monitoring locations showed that there were no exceedances of the indicative 60µg/m³ annual mean concentration which suggested that exceedances of the hourly mean objective was unlikely.

4.2 Identification of Receptor Locations

4.2.1 Human Receptor Locations

Sensitive human receptor locations were identified within the study area for consideration in the assessment. Predicted changes in NO₂ and CO concentrations, as a result of emissions from the

development, were calculated at these locations.

The sensitive receptor locations were selected based on their proximity to the proposed generator compound. The assessment selected eight receptor locations to consider the impact at residential locations in the study area. The sensitive receptor locations are detailed in **Table 9** and in **Figure 1**.

Table 9: Existing Sensitive Receptor Locations

Receptor	Receptor Location	Grid Reference (m)		Distance from Development (m)	Direction from Development
		X (m)	Y (m)		
R1	Old Mill House, Mill Lane, Bedhampton	470330	106079	380	NW
R2	Manor Court, 11 Brockhampton Road	470958	106118	450	NE
R3	17, The Mallards	471454	105563	880	ESE
R4	Forty Acres Farm, Havant Road	469309	105643	1320	W
R5	10 Osmond House, Abrams Way	470818	106240	460	NNE
R6	Watermill Court, 10 Sprinwell	471641	106121	1070	ENE
R7	5, Park Road South	471577	106179	1030	ENE
R8	15 Rectory Road	471733	105795	1120	E

The Air Quality (England) Regulations (as amended)¹⁰, state in paragraph 4(2) that:

“The achievement or likely achievement of an air quality objective prescribed by paragraph (1) shall be determined by reference to the quality of air at locations

- (a) which are situated outside of buildings or other natural or man-made structures above or below ground; and*
- (b) where members of the public are regularly present.”*

In accordance with the Air Quality Regulations, this assessment considered receptor locations representative of relevant public exposure during the likely operational periods of the proposed facility.

4.2.2 Ecological Receptor Locations

Although the proposed facility would not be regulated as a Part A process under the Environmental Permitting Regulations, the assessment used Environment Agency and Defra guidance relating to air quality risk assessments²⁰ to consider the impacts upon ecological receptors.

The Environment Agency recommends that designated ecological sites require consideration when within the following distances from a Part A environmentally permitted site:

²⁰ Environment Agency and Defra 2016 - Environmental Management – Guidance, Risk Assessments for your Environmental Permit

- Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites within 10km of the proposed development;
- Sites of Special Scientific Interest (SSSI) within 2km of the proposed development; and
- National Nature Reserves (NNRs), Local Nature Reserves (LNRs), local wildlife sites (LWS) and ancient woodland (AW) within 2km of the proposed development.

As this assessment does not require a Part A permit, the assessment has considered impacts upon the following statutory and locally designated ecological receptors within 2km of the development site:

- 4 x Ancient Woodland Designations;
- Chichester and Langstone Harbours SPA;
- 3 x LNR;
- Chichester and Langstone Harbours Ramsar;
- Langstone Harbour SSSI;
- Chichester Harbour SSSI; and
- Solent Maritime SAC.

At positions close to the development site, the statutory SSSI/SPA/RAMSAR/SAC designations share the same site boundary. Where the boundary is shared by multiple designations, the assessment will consider the most sensitive habitat from all the statutory designations.

Due to the proximity of the ecological sites to the proposed development, it was not considered appropriate to consider individual discrete receptors. The assessment used the contour plot outputs from the dispersion model to identify the maximum airborne pollutant concentrations within the designated ecological habitats.

A map of the locations of considered ecological receptors is provided in Appendix C3.

4.3 Baseline Concentrations at Receptor Locations

4.3.1 Airborne Pollutant Concentrations

Air quality monitoring data from the 2015 HBC USA¹³ were used to represent background NO₂ concentrations where they were considered to represent relevant public exposure near to one of the selected receptor locations.

Background concentrations of NO₂ and CO were also obtained from the air pollutant concentration maps provided by Defra²¹ for the grid squares covering the study area. 2017 NO₂ background concentrations were used as agreed during consultation with HBC. The latest available CO background maps were used. Background pollutant concentrations across the UK are generally predicted to decrease in future years; therefore by making no adjustment in future background concentrations, the approach is considered to be conservative.

The background concentrations at human receptor locations for the assessment years are detailed in **Table 10**.

²¹ Background maps, provided by Defra as part of the LAQM support tools, <http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html>

Table 10: Baseline Pollutant Concentrations ($\mu\text{g.m}^{-3}$) at Sensitive Receptor Locations

Receptor	Grid Square	Background conc. Data Source	Predicted Annual Mean Background Concentrations - 2017	
			NO ₂ ($\mu\text{g.m}^{-3}$)	CO (mg.m^{-3})
R1, R2, R5, Site	470500,106500	DEFRA - 2017 prediction	16.37	0.393
R3	471500,105500	DEFRA - 2017 prediction	18.98	0.358
R4	469500, 105500	DEFRA - 2017 prediction	20.29	0.385
R6	471500,106500	DEFRA - 2017 prediction	17.33	0.374
R7	471573, 106200	HBC – 2015 Monitoring Park Road South	32.49	0.374
R8	471742, 105794	HBC – 2015 Monitoring Rectory Road	25.48	0.358

* NO₂, background concentrations obtained from the latest 2017 based background maps. CO background concentrations are provided for a 2001 base year and are not factored for future years.

In accordance with Environment Agency Guidance¹⁷, as a conservative assumption, background concentrations were assumed to be double the annual mean value for the purposes of assessment of short-term effects.

4.3.2 Nutrient Nitrogen and Acid Deposition Background Conditions

This assessment considered background concentrations of NO_x at receptors where the assessment screening criteria, detailed in **Section 3.11**, indicates that impacts require detailed consideration. As such the background levels are presented in **Section 5.2** where appropriate.

Critical loads for each designated site were taken from the Air Pollution Information System (APIS) website. The rate of nutrient nitrogen and acid deposition at the considered designated sites was predicted and compared to the site-specific critical load for the most sensitive habitat. This is a conservative approach as the most sensitive habitats within the designated ecological site may not be located at the modelled area of maximum predicted nutrient nitrogen and acid deposition.

Evaluation of data from the APIS website showed that the critical load for the most sensitive habitat was 8-10 kgN/ha/yr for nutrient nitrogen and 1.38keq/ha/yr for acidity critical loads. The sensitivity of ancient woodland habitats is not provided on the APIS website. As a result, the assessment used the most stringent nutrient nitrogen critical load for woodland habitat, 10 kgN.ha⁻¹.yr⁻¹, for all ancient woodland habitats and no consideration of acid deposition was able to be conducted.

5 Impact Assessment

The results of the impact assessment at human receptor locations are detailed in **Section 5.1**. Annual average emissions were converted based on the projected hours of operation and are compared to the relevant Air Quality Objectives. As detailed in **Section 3.10**, predictions requiring percentile values were based on a conservative representation of likely potential operation periods. This conservative assumption overstates impacts as the facility will only generate emissions during the operational windows, when energy demand is elevated.

Isopleth (contour) plots showing predicted pollutant concentrations are presented within **Appendix D**.

5.1 Human Receptor Locations

5.1.1 Nitrogen Dioxide

The results of the impact assessment for NO₂ at human receptor locations are detailed in **Table 11**.

Table 11: Predicted NO₂ Impacts at Human Receptors

Receptor Location	NO ₂ (µg.m ⁻³)				
	Process Contribution (µg.m ⁻³)	Background Concentration (µg.m ⁻³)	Total (µg.m ⁻³)	Process Contribution/ Objective (%)	Total Concentration /Objective (%)
Annual Mean Air Quality Objective – 40µg.m⁻³					
R1	0.98	16.37	17.35	2.4	43.4
R2	1.88	16.37	18.25	4.7	45.6
R3	0.61	18.98	19.59	1.5	49.0
R4	0.24	20.29	20.53	0.6	51.3
R5	1.31	16.37	17.68	3.3	44.2
R6	0.54	17.33	17.87	1.3	44.7
R7	0.55	32.49	33.04	1.4	82.6
R8	0.48	25.48	25.96	1.2	64.9
99.79 Percentile of Hourly Averages Objective – 200µg.m⁻³ *					
R1	54.65	32.73	87.38	27.3	43.7
R2	60.55	32.73	93.28	30.3	46.6
R3	35.32	37.96	73.28	17.7	36.6
R4	22.47	40.59	63.06	11.2	31.5
R5	49.77	32.73	82.50	24.9	41.3
R6	26.52	34.67	61.19	13.3	30.6
R7	25.78	64.98	90.76	12.9	45.4
R8	25.80	50.96	76.76	12.9	38.4

* based upon a representation of operation during all potential operating periods. Likely to overstate impacts as described in **Section 3.10**.

The results show that:

- The maximum predicted total concentration of NO₂, as an annual mean at a selected receptor location, was 33.04µg.m⁻³, which is below the Air Quality Objective of 40 µg.m⁻³.
- The development would contribute a maximum annual mean NO₂ process contribution of 1.88µg.m⁻³ at a modelled selected receptor location, which is 4.7% of the annual mean NO₂ Air Quality Objective. Using the IAQM significance criteria detailed in **Section 3.11**, this corresponds to a '**negligible impact**' at that receptor location; and
- A conservative representation of potential short term impacts indicated that the relevant Objective of 200µg.m⁻³ (as a 99.79 percentile of hourly averages) would not be exceeded at residential

receptor locations. The maximum predicted concentration (including the background contribution) was predicted to be less than the Objective value ($93.28\mu\text{g.m}^{-3}$).

5.1.2 Carbon Monoxide

The results of the impact assessment for CO at human receptor locations are detailed in **Table 12**.

Table 12: Predicted CO Impacts at Human Receptors

Receptor Location	CO (mg.m^{-3}) – 8 Hour Rolling Mean				
	Process Contribution (mg.m^{-3})	Background (mg.m^{-3})	Total (mg.m^{-3})	Process Contribution/ Objective (%)	Total Concentration /Objective (%)
Maximum 8 Hour Mean – 10mg.m^{-3}					
R1	0.20	0.79	0.99	9.9	2.0
R2	0.18	0.79	0.97	9.7	1.8
R3	0.10	0.72	0.82	8.2	1.0
R4	0.08	0.77	0.85	8.5	0.8
R5	0.19	0.79	0.98	9.8	1.9
R6	0.06	0.74	0.80	8.0	0.58
R7	0.07	0.74	0.81	8.1	0.70
R8	0.08	0.75	0.83	8.3	0.79

The results show that:

- A representation of potential short term operation would not give rise to a breach of the maximum 8 hour rolling average Air Quality Objective of 10mg.m^{-3} at residential receptor locations. The maximum predicted concentration of 0.203mg.m^{-3} , 2% of the air quality Objective value.

5.2 Ecological Receptor Locations

5.2.1 Critical Level Assessment - Oxides of Nitrogen

The assessment has been undertaken using guidance provided by the Environment Agency. A summary of the results is provided as follows:

- Ancient Woodlands
 - The process contribution did not exceed 100% of the assessment level at any receptor location. The maximum long and short term process contributions were predicted to be 1% and 4.6% of the assessment levels respectively.
- SSSI, SAC, SPA and Ramsar sites
 - The Environment Agency's 1% annual mean NO_x screening criterion was exceeded at the following identified ecological receptors;
 - The shared boundary of: Langstone Harbour (SSSI), Chichester Harbour (SSSI), Chichester and Langstone Harbours (RAMSAR), Solent Maritime (SAC) and Chichester and Langstone Harbours (SPA). As a result further

- consideration of these receptor was conducted.
- The Environment Agency's 10% short term NO_x screening criterion process contribution was exceeded at the identified ecological receptors
 - The shared boundary of: Langstone Harbour (SSSI), Chichester Harbour (SSSI), Chichester and Langstone Harbours (RAMSAR), Solent Maritime (SAC) and Chichester and Langstone Harbours (SPA). As a result further consideration of these receptor was conducted.

The results of the detailed assessment of NO_x at ecological receptor locations are provided in **Table 13**. The predicted result represents the highest predicted concentration within the boundary of each identified ecological site that breaches the EA detailed assessment screening criteria. Where an exceedance was predicted, the results show the proportion of the ecological receptor that was predicted to be affected.

The area of the ecological receptors which is in exceedance of the screening criteria level equates to 143.1 hectares, approximately 2.5% of the total area of the SSSI/RAMSAR/SAC/SPA. The area in exceedance of the 24 hour mean screening criteria is 32 hectares which is approximately 0.6% of the total area of the SSSI/RAMSAR/SAC/SPA.

Table 13: Critical Level Assessment – Airborne NO_x Concentrations at Ecological Receptor Locations

Receptor	Background NO _x (µg.m ⁻³)	Max PC	Max PEC	Percentage PC of Critical Level (%)	Percentage PEC of Critical Level (%)
Annual Mean NO_x Critical Level - 30µg.m⁻³					
Boundary of ecological site with multiple designations*	26.91	1.23	28.14	4.1	93.8
24 Hour Mean NO_x Critical Level - 75µg.m⁻³					
Boundary of ecological site with multiple designations*	53.82	16.50	70.32	22.0	93.8

*includes the shared boundary of SSSI, SAC,SPA and RAMSAR sites within the same area

The results of the critical level assessment show that the predicted maximum concentrations at these locations were less than the long term and short term critical levels of 30µg/m³ and 75µg/m³ respectively.

5.2.2 Critical Load Assessment - Nutrient Nitrogen and Acid Deposition

The assessment was undertaken using guidance provided by the Environment Agency. The critical load value for the most sensitive habitat within the SSSI/RAMSAR/SAC/SPA, 8kgN/ha/yr, was used to represent the whole area. As a conservative assumption, the highest sensitivity to nutrient nitrogen deposition was applied to all identified ecological receptors (SSSI/RAMSAR/SAC/SPA) for assessment and 10kgN/ha/yr for Ancient Woodland sites.

A summary of the results is provided is as follows:

- Ancient Woodlands
 - The nutrient nitrogen process contribution did not exceed 100% of the assessment level at any receptor location. The maximum process contribution was predicted to be 0.1% (0.01 kgN/ha/y) of the most sensitive woodland assessment level (10kgN/ha/y).

- SSSI, SAC, SPA & Ramsar sites
 - The nutrient nitrogen process contribution did not exceed 1% of the assessment level at the ecological receptors within 2km of the site except for a portion of the area covered by the shared boundary of all four identified ecological designations. The maximum process contribution was predicted to be 1.6% (0.13kgN/ha/yr) of the assessment level (8kgN/ha/yr).
 - The acid deposition process contribution did not exceed 1% of the assessment level at any sensitive designated ecological receptor location. The maximum process contribution was predicted to be 0.65% (0.009kgeqN/ha/yr) compared to the assessment level at the most sensitive designation (1.38kgeqN/ha/yr).

The impact of acid deposition was considered insignificant as the process contribution at all sensitive ecological receptors were below the screening criteria provided by the Environment Agency. Nutrient nitrogen critical loads were investigated further at locations which were predicted to exceed 1% of the assessment criteria of the most sensitive habitat.

The results of the detailed assessment of NO_x at ecological receptor locations are provided in **Table 13**. The predicted critical loads represent the highest predicted concentration within the boundary of each identified ecological site that breached the EA detailed assessment screening criteria.

Table 14: Critical Load Assessment – Deposited pollutants at Ecological Receptor Locations

Receptor	Background NO _x (kgN.ha ⁻¹ .yr ⁻¹)	Max PC	Max PEC	Percentage PC of Critical Load (%)	Percentage PEC of Critical Load (%)
Nutrient Nitrogen – 8 kgN.ha ⁻¹ .yr ⁻¹					
Boundary of ecological site with multiple designations*	13.86	0.13	13.99	1.6%	174.9%

*includes the shared boundary of SSSI, SAC, SPA and RAMSAR sites within the same area

The area which was in exceedance of the 1% assessment level for nutrient nitrogen was approximately 5 hectares.

The maximum development contribution of nutrient nitrogen deposition was 1.6% of the critical load for the most sensitive identified habitat within the ecological site. The most sensitive habitats within the SSSI were associated with breeding grounds for *Sterna Albifrons* (little Tern) and *Sterna Hirundo* (Common Tern). Evaluation of aerial mapping and the MAGIC map tool indicated that the area predicted to exceed 1% of the critical load were coastal mudflats, which are unlikely to be breeding/nesting areas for birds.

The area was also a designated SPA (Chichester and Langstone Harbours) and SAC (Solent Maritime) with a minimum nutrient nitrogen critical load of 10kgN/ha/yr. This designation is in relation to coastal sand dunes with calcareous grassland and shifting sand dunes. Evaluation of aerial mapping and the MAGIC map tool indicated that there were no coastal sand dunes within the area predicted to exceed 1% of the critical load.

Critical loads for all other habitats within the ecological site (excluding breeding grounds) are in excess of 20kgN/ha/yr and therefore the development contribution would not exceed 1% of the critical load. In accordance with the Environment Agency screening criteria, the impact of the development can be considered to be negligible and no further consideration of impacts is required.

5.3 Impact Significance

Predicted background pollutant concentrations and process contributions at human receptors were compared to the IAQM & EPUK significance criteria¹⁸ provided in **Section 3.11**. The assessment of significance is summarised below.

5.3.1 Annual Mean Assessment Criteria

A **negligible impact** was predicted at all of the receptor locations. The maximum total NO₂ concentration was predicted to be 33.04µg.m⁻³, below the annual mean Air Quality Objective of 40µg.m⁻³. The assessment concluded that the development is unlikely to have a significant overall impact upon air quality at human receptor locations. The results showed that total concentrations of NO₂ as an annual mean were unlikely to exceed the Air Quality Objective of 40µg.m⁻³.

The assessment concludes that the impact of air quality pollutants upon human receptors is **not significant**.

5.3.2 Short Term Assessment Criteria

Short term concentration predictions for the proposed facility are not directly comparable to the Air Quality Objectives as it was not appropriate to represent the generator compound as operating continuously for a whole year.

As described in **Section 3.10**, a conservative representation of potential emissions was made by modelling all potential operating periods. This represents a situation where the facility would operate for 16 hours per day. This is considered to overstate impacts, as the facility is unlikely to operate at all times during this period. This scenario considered 5,840 hours of operation compared to the approximate 2,000 hours of expected development operation per year.

Assuming that operation occurs on the conservative modelled basis, the predicted environmental concentrations do not breach any of the Air Quality Objectives at locations representative of relevant public exposure.

As the total predicted short term pollutant concentrations at all receptor locations were below the relevant short term Air Quality Objectives, this assessment considers that impacts upon human receptors are unlikely to be significant.

5.3.3 Ecological Assessment Criteria

The assessment of ecological receptors predicted that:

- Critical Levels - The Environment Agency significance criteria were not exceeded at any identified ecological receptor. At the point of maximum impact at this site:
 - The annual mean NO_x concentration was predicted to be 1.23µg.m⁻³, well below the assessment level of 30µg.m⁻³; and
 - The maximum daily mean NO_x concentration was predicted to be 16.5µg.m⁻³, well below the assessment level of 75µg.m⁻³.
- Critical Loads
 - Nutrient Nitrogen - The Environment Agency significance criteria were only exceeded at one area which had multiple ecological designations. The maximum predicted nutrient nitrogen development contribution at an ecological receptor was 0.13µg.m⁻³, 1.6% of the

most sensitive habitat's critical load. Nutrient Nitrogen impacts were considered to be **not significant**.

- Acid Deposition - Impacts of acid deposition were considered to be **not significant** as concentration at nearest ecological receptors did not exceed the Environment Agency 1% screening criterion.

Conclusions

This air quality assessment considered the potential for emissions from the proposed facility operation to affect local air quality at identified existing human and ecological receptor locations, using an atmospheric dispersion modelling study. The results were compared to the relevant Air Quality Objectives.

The findings of the assessment were that:

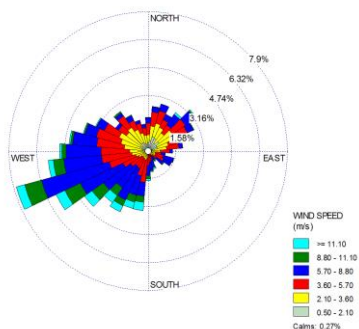
- Predicted concentrations at positions of relevant public exposure were below relevant Air Quality Objectives;
- The predicted critical levels and critical loads at ecological receptors did not breach the appropriate environmental assessment levels;
- A conservative representation of potential operation, assuming more hours of operation than would occur in reality, showed that short term pollutant concentrations would not breach relevant Air Quality Objective levels.

The conclusion of this assessment is that there would be no significant air quality effects from operation of the proposed peak power generator compound at Harts Farm Way.

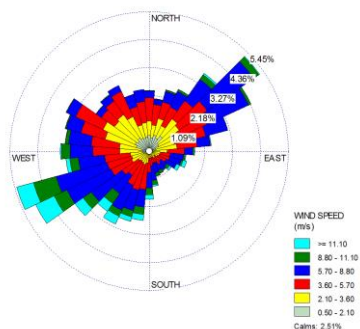
The assessment is based upon conservative operational assumptions which are likely to overstate impacts. This includes the assumption that emissions occur across the full possible operational window of 5,820 hours, rather than the predicted number of operational hours per year, approximately 2,000. This would potentially overstate the impact of the development when compared to the short term Air Quality Objectives.

Appendix A – Thorney Island Recording Station - Wind Roses 2012 - 2016

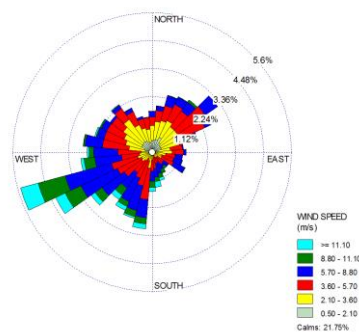
2012 Wind Rose



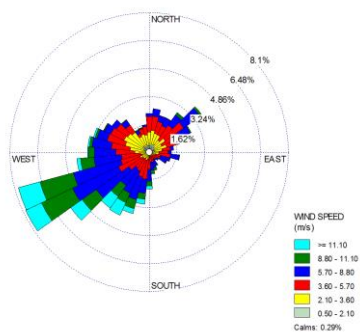
2013 Wind Rose



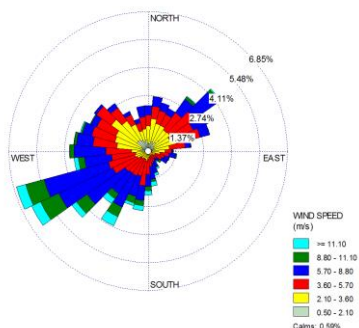
2014 Wind Rose



2015 Wind Rose



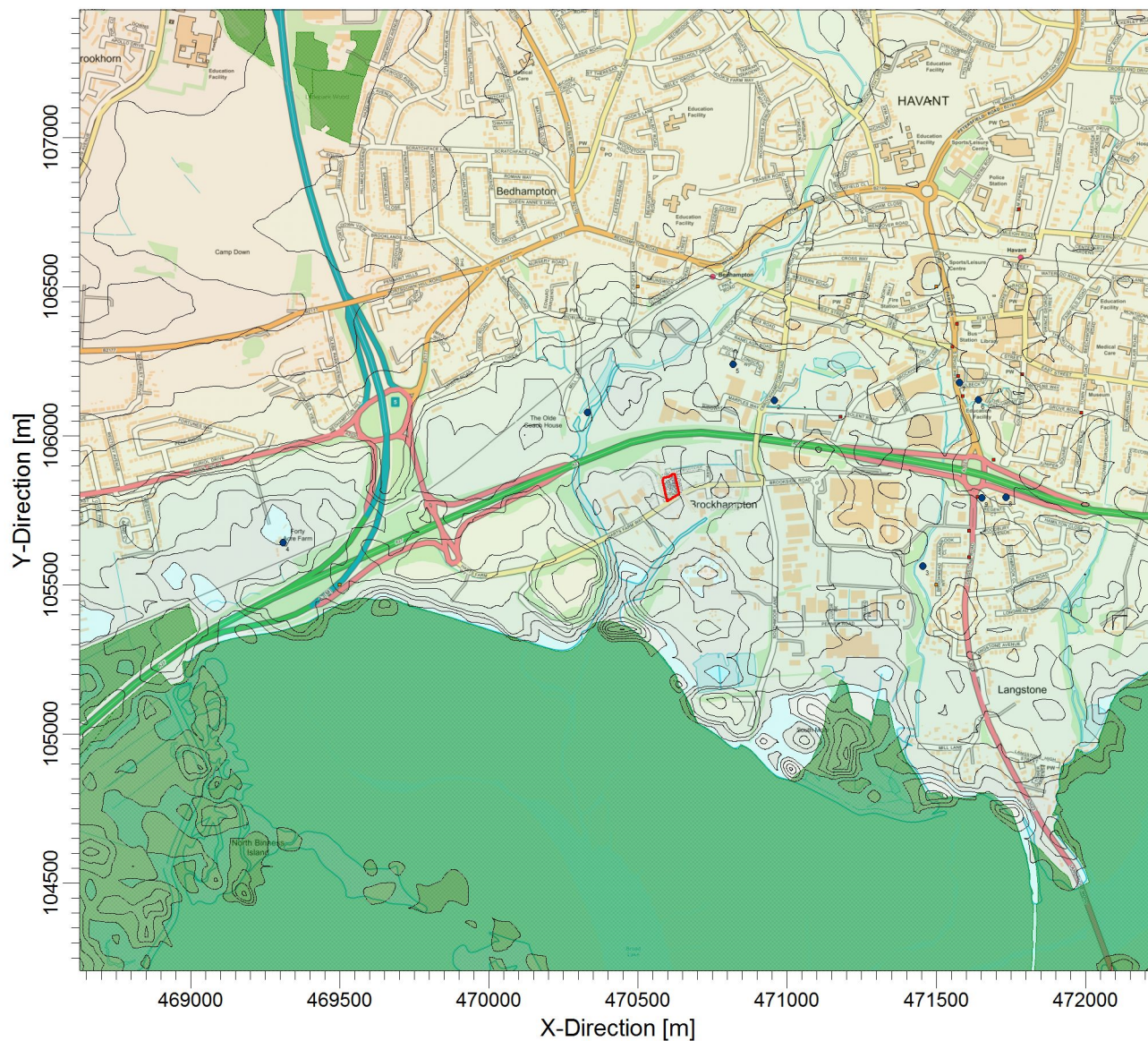
2016 Wind Rose



Appendix B – Terrain

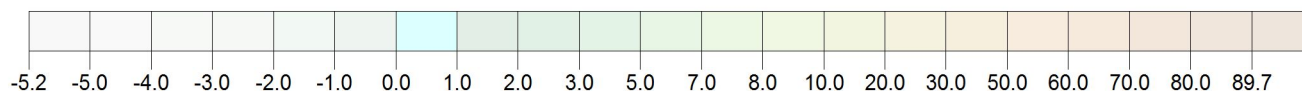
PROJECT TITLE:

**PB5588-111 Harts Farm Way
Air Quality Assessment**



Terrain Contours

meters



COMMENTS:

Appendix B.1: Terrain Contours

SOURCES:

14

COMPANY NAME:

Royal HaskoningDHV

RECEPTORS:

2169

MODELER:

DA

SCALE:

1:22,701

0 0.5 km

DATE:

14/07/2017

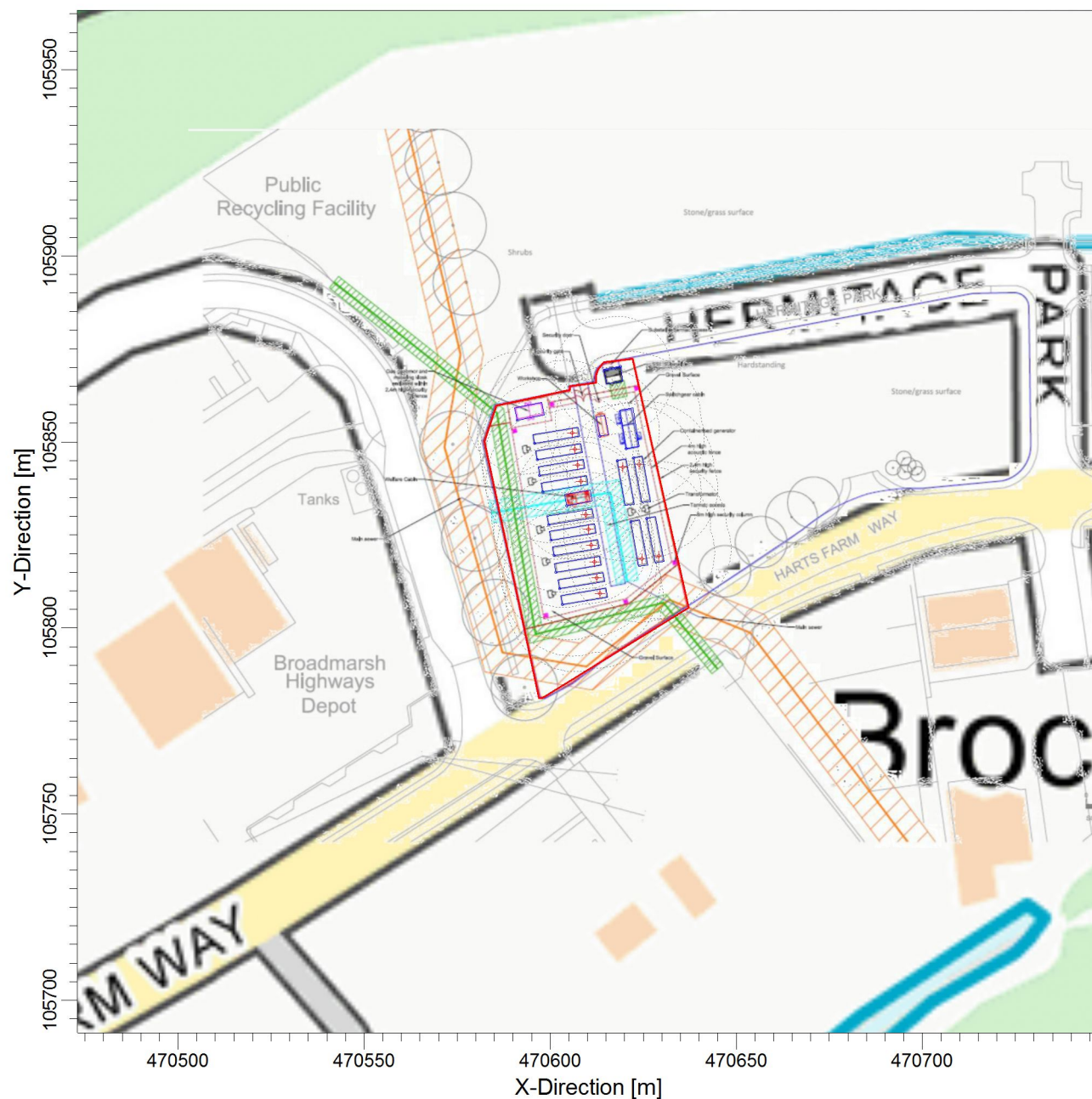
PROJECT NO.:

PB5588-111



Appendix C – Model Input Visualisation and Receptor Locations

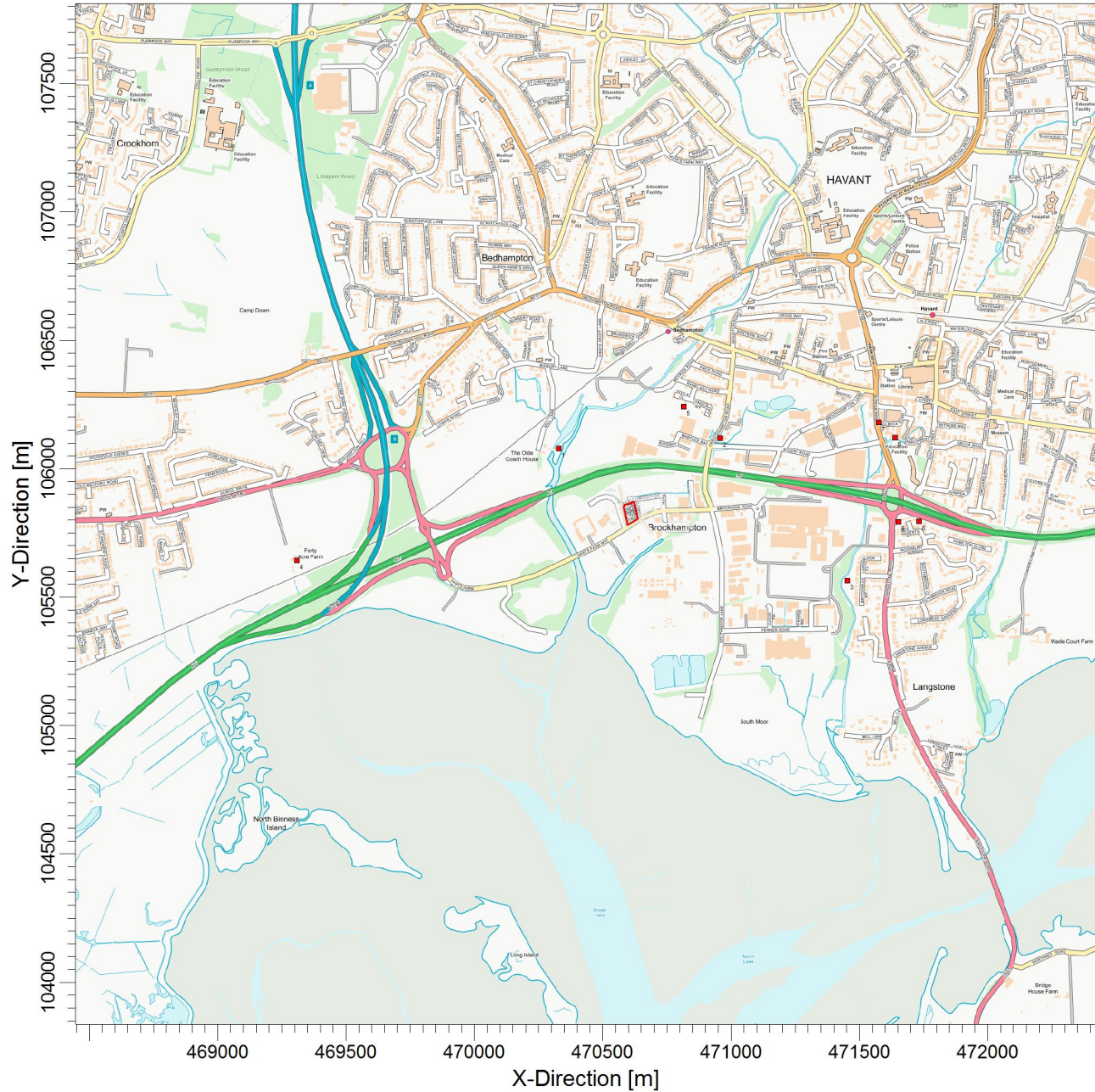
**PB5588-111 Harts Farm Way
Air Quality Assessment**



COMMENTS: Appendix C.1: Model Inputs	SOURCES: 14	COMPANY NAME: Royal HaskoningDHV	
	RECEPTORS: 2169	MODELER: DA	 Royal HaskoningDHV <i>Enhancing Society Together</i>
		SCALE: 1:1,728  0.05 km	
		DATE: 14/07/2017	PROJECT NO.: PB5588-111

PROJECT TITLE:

**PB5588-111 Harts Farm Way
Air Quality Assessment**



COMMENTS:

Appendix C.2: Selected Human
Receptor Location

SOURCES:

14

RECEPTORS:

2169

COMPANY NAME:

Royal HaskoningDHV

MODELER:

DA

SCALE:

1:25,000

0



DATE:

20/07/2017

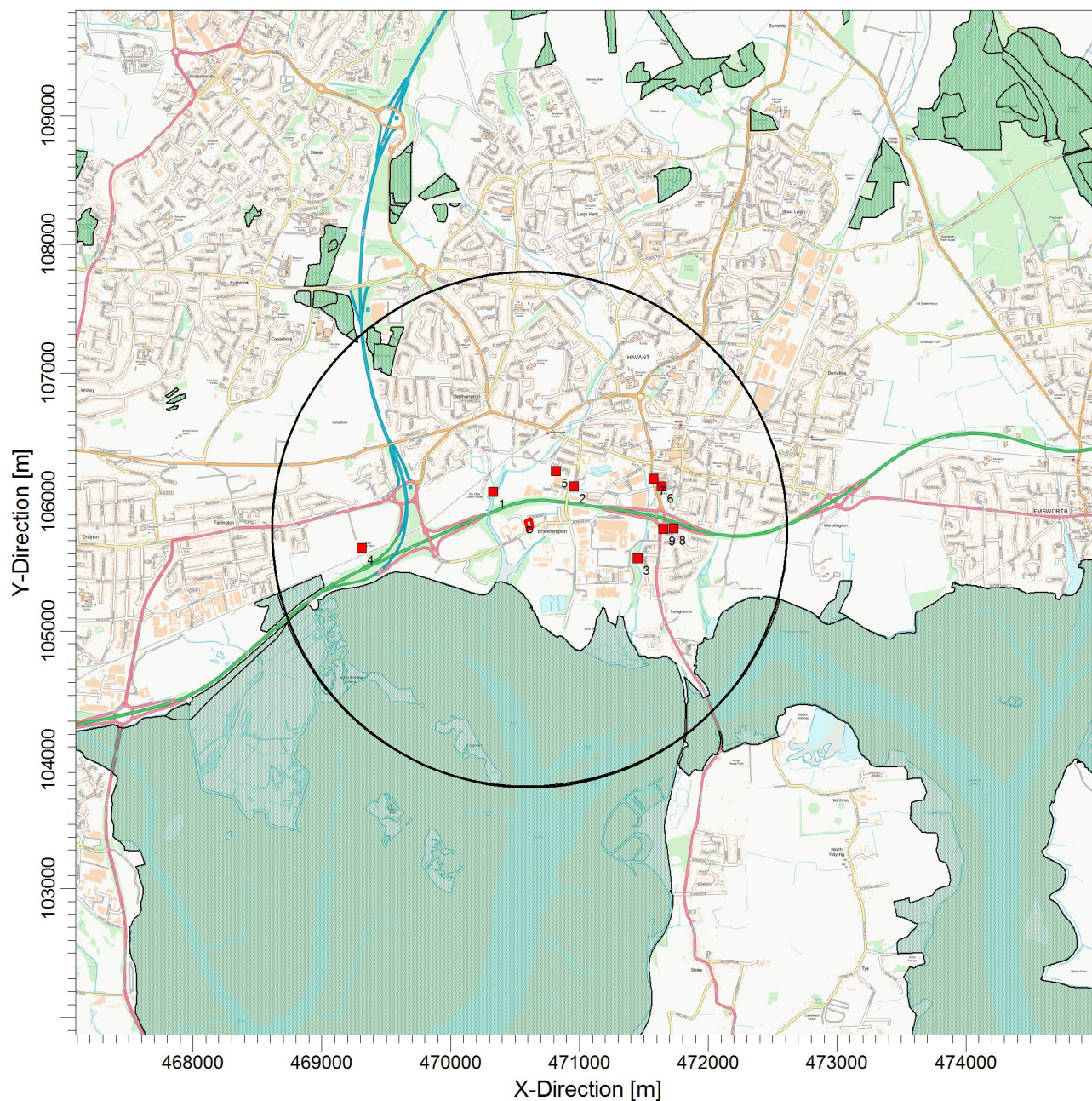
PROJECT NO.:

PB5588-111



PROJECT TITLE:

**PB5588-111 Harts Farm Way
Air Quality Assessment**



COMMENTS:

Appendix C.3: Ecological
receptors Location

SOURCES:

14

RECEPTORS:

2169

COMPANY NAME:

Royal HaskoningDHV

MODELER:

DA

SCALE:

1:50,000

0

2 km

DATE:

20/07/2017



**Royal
HaskoningDHV**
Enhancing Society Together

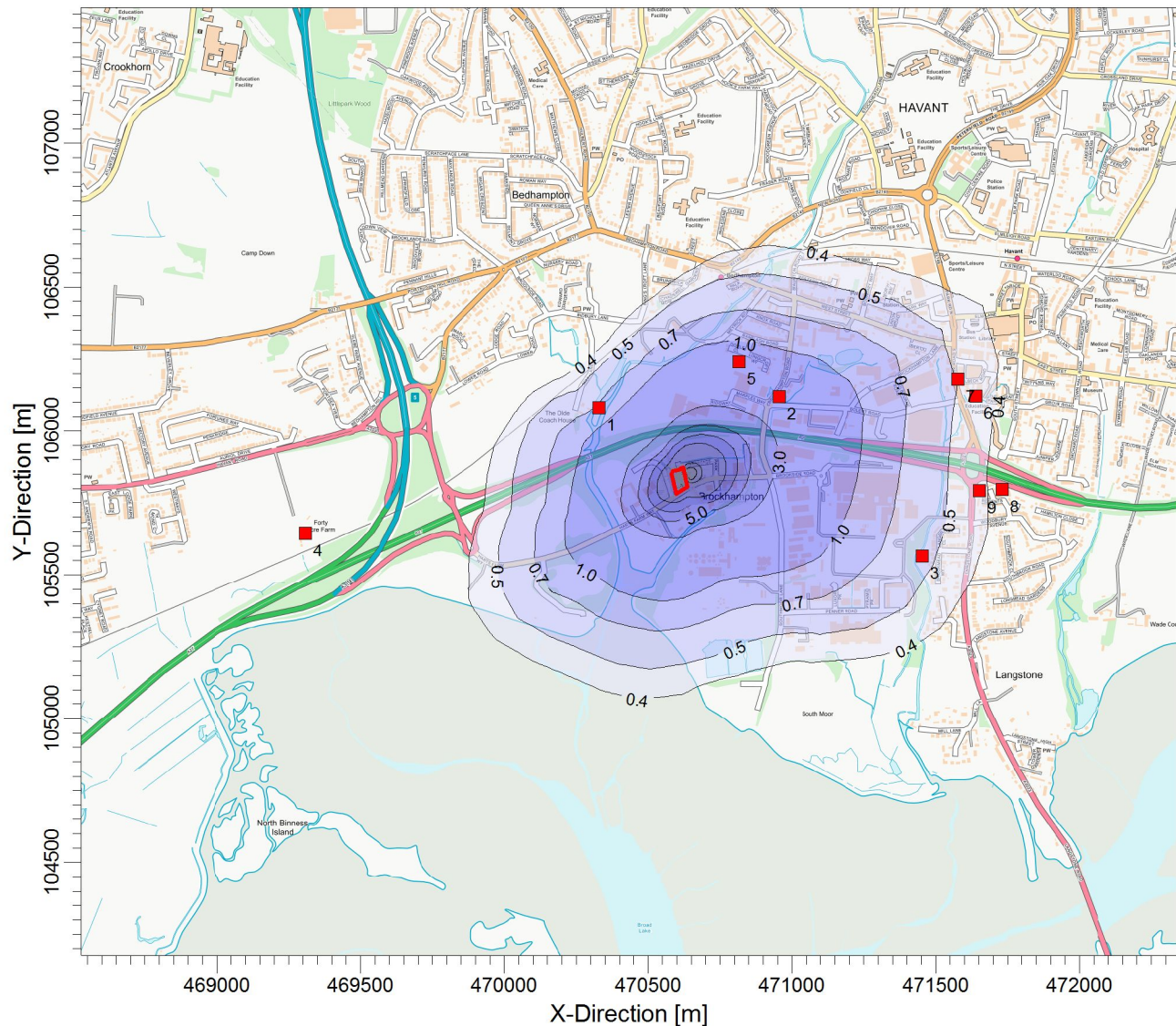
PROJECT NO.:

PB5588-111

Appendix D – Disperison Model Process Contribution Contour Plots

PROJECT TITLE:

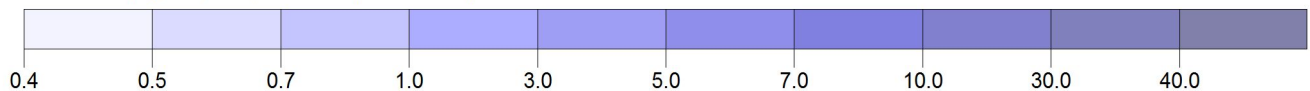
**PB5588-111 Harts Farm Way
Air Quality Assessment**



PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 1 YEARS FOR SOURCE GROUP: ALL

ug/m³

Max: 50.6 [ug/m³] at (470642.08, 105851.45)



COMMENTS:

Appendix D.1: NO₂ Annual
Mean(mg.mg³)
2015 Meteorological data

SOURCES:

14

COMPANY NAME:

Royal HaskoningDHV

RECEPTORS:

2169

MODELER:

DA

OUTPUT TYPE:

Concentration

SCALE:

1:23,969

0 0.5 km



MAX:

50.6 ug/m³

DATE:

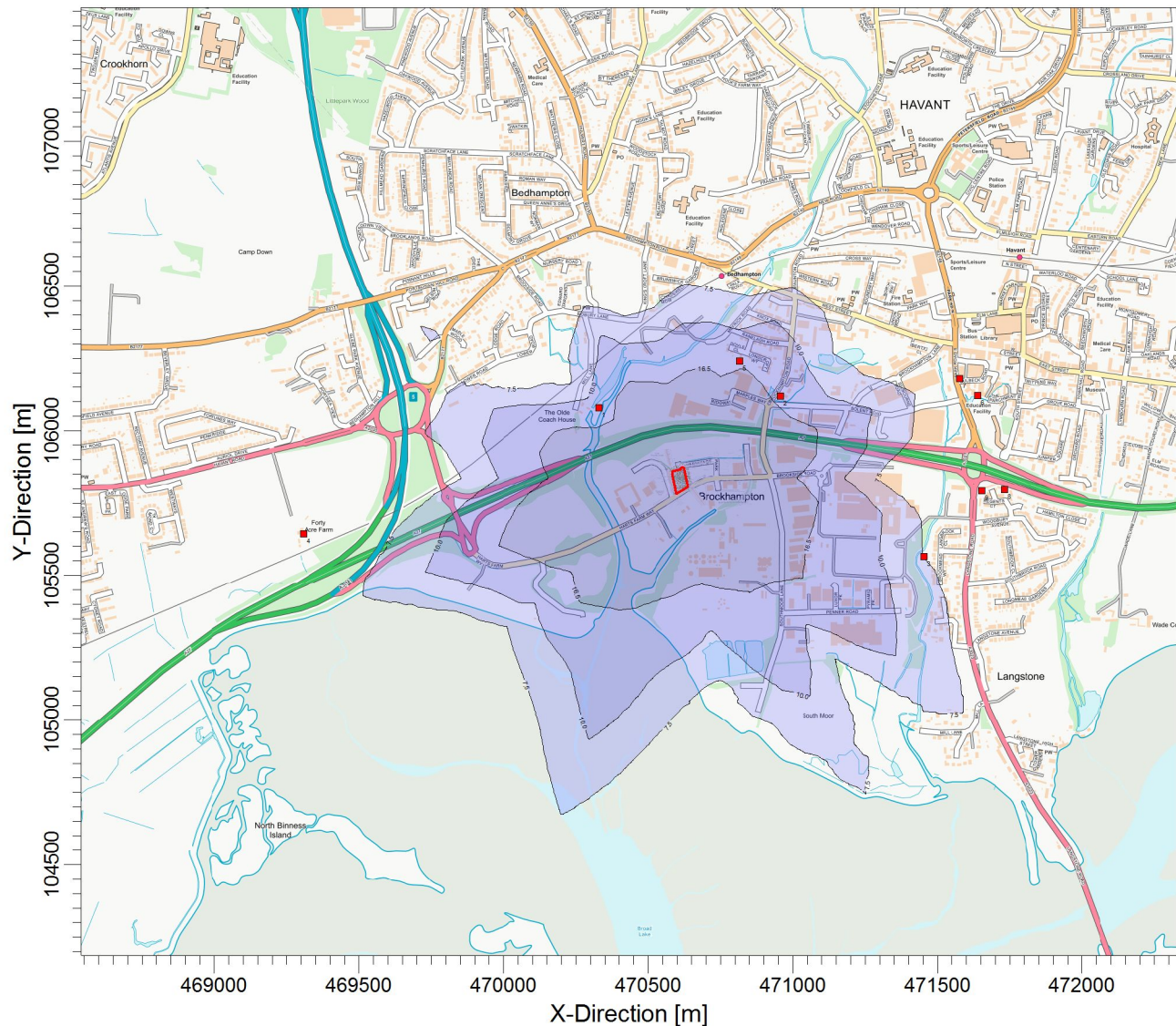
16/07/2017

PROJECT NO.:

PB5588-111

PROJECT TITLE:

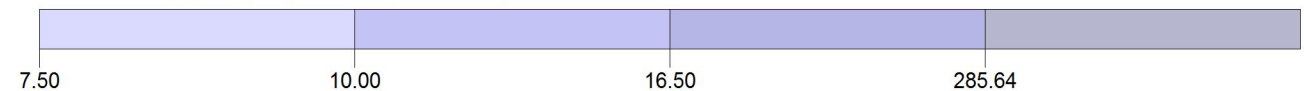
**PB5588-111 Harts Farm Way
Air Quality Assessment**

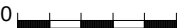


PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL

ug/m³

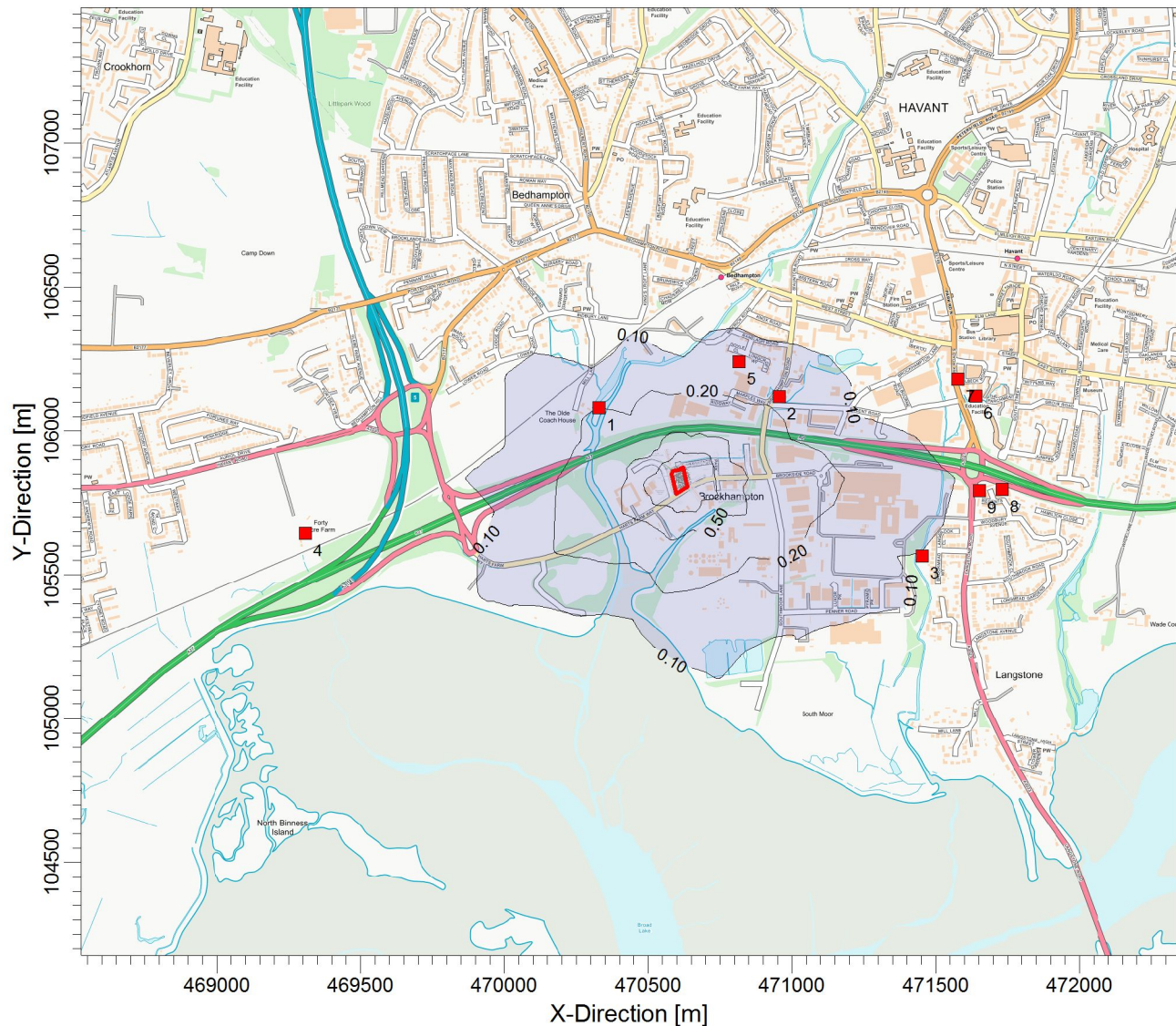
Max: 285.65 [ug/m³] at (470644.58, 105847.88)



COMMENTS: Appendix D.1: No2- 99.79 Percentile of Hourly Averages (mg.mg3) 2016 Meteorological data 2016 Meteorological Data	SOURCES: 14	COMPANY NAME: Royal HaskoningDHV	
	RECEPTORS: 2169	MODELER: DA	 Royal HaskoningDHV <i>Enhancing Society Together</i>
	OUTPUT TYPE: Concentration	SCALE: 1:23,828 0  0.5 km	
	MAX: 285.65 ug/m^3	DATE: 14/07/2017	PROJECT NO.: PB5588-111

PROJECT TITLE:

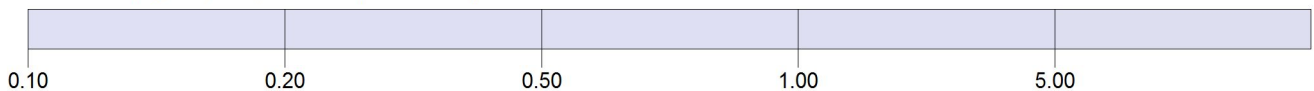
**PB5588-111 Harts Farm Way
Air Quality Assessment**



PLOT FILE OF HIGH 1ST HIGH 8-HR VALUES FOR SOURCE GROUP: ALL

ug/m³

Max: 2.87 [ug/m³] at (470605.83, 105788.40)



COMMENTS: Appendix D.1: CO Max 8HR Mean(mg.mg3) 2012 Meteorological data	SOURCES: 14	COMPANY NAME: Royal HaskoningDHV	
	RECEPTORS: 2169	MODELER: DA	
	OUTPUT TYPE: Concentration	SCALE: 1:23,969 0 0.5 km	 Royal HaskoningDHV Enhancing Society Together
	MAX: 2.87 ug/m³	DATE: 16/07/2017	
			PROJECT NO.: PB5588-111