Avonmouth Bioresources Centre

Air Emissions Risk Assessment

On behalf of

Wessex Water
YTL GROUP

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Third Issue	November 2025	Minor updates to Table 3-5	ER	ER	ER

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1 Introduction

1.1 Background

1.1.1 Wessex Water Services Ltd has commissioned Stantec UK Ltd (Stantec) to undertake an Air Emission Risk Assessment (AERA) to support the Environmental Permit (EP) application under the Industrial Emissions Directive (IED) for Anaerobic Digestion (AD) activities at the Avonmouth Bioresources Centre (ABC).

1.1.2 The Installation is located within the administrative boundary of Bristol City Council (BCC). The location of the Installation is shown in **Figure 1, Appendix E**.

1.1.3 The Installation includes biogas combustion plant comprising five Combined Heat and Power (CHP) plant units and one boiler.

1.2 Report Scope

1.2.1 The scope of this assessment is limited to the point source combustion emissions to air associated with the AD process at the Installation (as defined above). Consistent with Environment Agency (EA) guidance (Environment Agency, 2023), for plant fired on biogas, the principal release of oxides of nitrogen (NOx) have been assessed alongside sulphur dioxide (SO_2) due to the potential sulphur content of biogas.

1.2.2 Emissions of NOx (in the form of nitrogen dioxide (NO_2)) and SO_2 have been assessed against the relevant Air Quality Standards for NO_2 and SO_2 for the protection of human health. An assessment has also been carried against the relevant Critical Levels (C_{Le}) for NOx and SO_2, and Critical Loads (C_{Lo}) for nitrogen and acid deposition which are designed for the protection of designated ecological sites.

1.2.3 The assessment of pollutants such as fine particulate matter (PM, comprising PM_{10} and $PM_{2.5}$), carbon monoxide (CO) and Volatile Organic Compounds (VOCs) is not considered necessary in relation to the risk of local air quality impacts which the AERA relates to. Specifically, CO and VOCs are primarily a measure of combustion efficiency and plant 'tuning', and PM_{10} is not a potential pollutant from gaseous combustion processes. However, in order to provide clarity as to the risk presented by these pollutants, this AERA has included the assessment of their potential emission and impacts at human receptors.

1.2.4 When modelling and assessing Volatile Organic Compounds (VOCs), it is important to note that benzene (C_6H_6) has been identified as a standard substitute that adequately represents a worst-case scenario. In reality, C_6H_6 is unlikely to comprise more than 1% of the Non-Methane VOC (NMVOC) fraction.

1.2.5 This report outlines the approach, methodology and results of the AERA that has been undertaken, utilising atmospheric dispersion modelling, to support the EP application.

1.2.6 The results of the assessment have been interpreted in accordance with the requirements of the EA to identify if impacts represent 'significant pollution' as required by the EA to determine an EP application.

1.2.7 The AERA has been undertaken in accordance with relevant legislation, policy and guidance.

2 Legislation and Relevant Guidance

2.1 Environmental Permitting Guidance

2.1.1 Guidance notes produced by the Department for Environment, Food and Rural Affairs (DEFRA) provide a framework for regulation of installations and additional technical guidance produced by the EA are used to provide the basis for permit conditions.

2.1.2 Of particular relevance to the assessment is the '*Air emissions risk assessment for your environmental permit*', also known as the AERA Guidance (Environment Agency, 2023). The purpose of the AERA Guidance is to assist operators to assess risks to the environment and human health when applying for a permit under the Environmental Permitting Regulations (EPR). Included in the AERA guidance are:

- an approach to screening assessment;
- guidance on when detailed atmospheric dispersion modelling is required; and
- Environmental Assessment Levels (EALs) for a range of pollutants not covered by other regulations, against which impact may be assessed.

2.2 National Air Quality Legislation and Guidance

Air Quality Standards

2.2.1 The Air Quality Standards Regulations 2010 (the AQSR) transposed the Air Quality Directive (2008/50/EC) and Fourth Daughter Directive (2004/107/EC). The Regulations include Limit Values, Target Values, Objectives, Critical Levels and Exposure Reduction Targets for the protection of human health and the environment.

2.2.2 Following the Transition Period after the UK's departure from the EU in January 2020, the Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019 (and subsequent amendments for the devolved administrations) have amended the AQ Standards Regulations 2010 to reflect the fact that the UK has left the EU, but do not change the pollutants assessed or the numerical thresholds.

National Air Pollution Plan for NO_2 in the UK

2.2.3 The national Air Quality Plan for NO_2 (DEFRA, 2018) sets out how the Government plans to deliver reductions in NO_2 throughout the UK, with a focus on reducing concentrations to below the EU Limit Values throughout the UK within the 'shortest possible time'.

2.2.4 The plan requires all Local Authorities (LAs) in England which DEFRA identified as having exceedances of the Limit Values in their areas past 2020 to develop local plans to improve air quality and identify measures to deliver reduced emissions, with the aim of meeting the Limit Values within their area within "*the shortest time possible*". Potential measures include changing road layouts, encouraging public and private ultra-low emission vehicle (ULEV) uptake, the use of retrofitting technologies and new fuels and encouraging public transport. In cases where these measures are not sufficient to bring about the required change within 'the shortest time possible' then LAs may consider implementing access restrictions on more polluting vehicles (e.g. Clean Air Zones (CAZs)).

Air Quality Strategy

2.2.5 The Air Quality Strategy (AQS) 2007 for England, Scotland, Wales and Northern Ireland sets out a comprehensive strategic framework within which air quality policy will be taken forward in the short to medium term, and the roles that Government, industry, the Environment Agency, local government, business, individuals and transport have in protecting and improving air quality

(DEFRA, 2007). The AQS contains Air Quality Objectives (AQOs) based on the protection of both human health and vegetation (ecosystems). The AQOs are maximum ambient pollutant concentrations that are not to be exceeded, either without exception or with a permitted number of exceedances allowable over a specified timescale. The AQOs are generally in accordance with the Limit Values specified in the AQSRs, however requirements for compliance differ slightly.

2.2.6 The Environment Act 2021 required an updated Air Quality Strategy (DEFRA, 2023) which sets out priorities including focusing on enforcement of industrial activities in close proximity to residential areas, and closer alignment between Local Air Quality Management (LAQM) and permitting regimes. The Air Quality Strategy sets out the Government policy on achieving the AQOs, including new targets for $PM_{2.5}$.

2.2.7 The Clean Air Strategy (2019) aims to lower national emissions of pollutants, thereby reducing background pollution and minimising human exposure to harmful concentrations of pollution. The Strategy aims to create a stronger and more coherent framework for action to tackle air pollution (DEFRA, 2019).

2.2.8 The Environment Agency's role in relation to the AQS is as follows:

"The Environment Agency is committed to ensuring that any industrial installation or waste operation we regulate will not contribute significantly to breaches of an AQS objective.

It is a mandatory requirement of EPR legislation that we ensure that no single industrial installation or waste operation we regulate will be the sole cause of a breach of an EU air quality limit value. Additionally, we have committed that no installation or waste operation will contribute significantly to a breach of an EU air quality limit value." (Environment Agency, 2008)

2.3 Standards for Air Quality

2.3.1 The standards applied in this assessment are taken from the AERA Guidance which are in accordance with the AQS and AQSR. The EALs that have been applied in this assessment are provided in **Table 2-1**.

Table 2-1 Applied EALs

Pollutant	Averaging Period	EAL (µg/m^3)	Source
Nitrogen dioxide (NO_2)	Annual Mean	40	AQS and AQSR
	1-hour Mean	200 (1-hour) not to be exceeded more than 18 times per year	AQS and AQSR
Sulphur Dioxide (SO_2)	15 minutes	266 µg/m^3 not to be exceed more than 35 times a year	AQS
	1-hour	350 µg/m^3 not to be exceeded more than 24 times a year	AQS and AQSR
	24-hour	125 µg/m^3 not to be exceeded more than 3 times a year	AQS and AQSR

Fine particulate matter (PM_{10})	Annual Mean	40	AQS and AQSR
	24-hour	50 (24-hour) not to be exceeded more than 35 times per year	AQS and AQSR
Fine particulate matter ($PM_{2.5}$)	Annual Mean	20	AQSR
Carbon monoxide (CO)	1-hour Mean	10,000	EA AERA
	8-hour Running Mean	30,000	EA AERA
Benzene (C_6H_6)	Annual Mean	5	EA AERA
	24-hour Mean	30	EA AERA

2.3.2 DEFRA has published technical guidance for use in Local Air Quality Management (LAQM). According to LAQM.TG (22) (DEFRA, 2022), air quality strategy objectives should only apply to 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*". Authorities should not consider exceedances of the objectives at any location where relevant public exposure would not be realistic. Thus, short term objectives such as the 1-hour objective should apply to footpaths and other areas which may be regularly frequented by the public even for a short period of time. Longer term objectives such as annual means, 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.

Table 2-2 Relevant Public Exposure

Averaging Period	**Air quality objectives should apply at:**	**Air quality objectives don't apply at:**
Annual mean	All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes etc.	Building façades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.

Averaging Period	Air quality objectives should apply at:	Air quality objectives don't apply at:
24-hour and 8-hour mean	All locations where the annual mean NAQO would apply, together with hotels and gardens of residences.	Kerbside sites Any other location where public exposure is expected to be short term.
1-hour mean	Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer.	Kerbside sites where public would not be expected to have regular access
15-minute mean	All locations where members of the public might reasonably be regularly exposed for a period of 15 minutes or longer.	Locations where members of the public would not reasonably be expected to be regularly exposed for a period of 15 minutes or longer.

2.4 Protection of Ecological Receptors

2.4.1 Sites of nature conservation importance at a national and local level, are provided environmental protection from developments, including from atmospheric emissions. EALs for the protection of ecological receptors are known as Critical Levels (C_{Le}) for airborne concentrations and Critical Loads (C_{Lo}) for deposition to land from air.

2.4.2 The AERA Guidance requires that ecological habitats should be screened against relevant standards if they are located within the following set distances from the facility:

- Special Protection Areas (SPAs), Special Areas of Conservation (SACs) or Ramsar sites within 10km of the Installation; and
- Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNR), Local Nature Reserves (LNR), Local Wildlife Sites (LWS) and Ancient Woodland (AW) within 2km of the Installation.

Critical Levels (C_{Le})

2.4.3 C_{Le} are a quantitative estimate of exposure to one or more airborne pollutants in gaseous form, below which significant harmful effects on sensitive elements of the environment do not occur, according to present knowledge. The relevant C_{Le} for the protection of vegetation and ecosystems are specified within the UK Air Quality Regulations and AERA Guidance (see **Table 2-3**).

Table 2-3 Relevant C_{Le} for the Protection of Vegetation and Ecosystems

Pollutant	Concentration (µg/m^3)	Habitat and Averaging Period	Source
Nitrogen Oxides (NOx)	30	Annual mean (all ecosystems)	AQSR
	75[a]	Daily mean (all ecosystems)	AERA
Sulphur Dioxide (SO_2)	10	Annual Mean (lichens and bryophytes)	AERA
	20	Annual Mean	AQSR

[a] 200 µg/m^3 where ozone (O_3) is below the AOT40 critical level of 6000 µg/m^3 and SO_2 is below the lower critical level of 10 µg/m^3.

Critical Loads (C_{Lo})

2.4.4 C_{Lo} are a quantitative estimate of exposure to deposition of one or more pollutants, below which significant harmful effects on sensitive elements of the environment do not occur, according to present knowledge. Critical loads are set for the deposition of various substances to sensitive ecosystems. In relation to combustion emissions critical loads for eutrophication and acidification are relevant which can occur via both wet and dry deposition; however, on a local scale only dry (direct deposition) is considered significant.

2.4.5 Empirical C_{Lo} for eutrophication (derived from a range of experimental studies) are assigned based for different habitats, including grassland ecosystems, mire, bog and fen habitats, freshwaters, heathland ecosystems, coastal and marine habitats, and forest habitats and can be obtained from the UK Air Pollution Information System (APIS) website (UK Centre for Ecology & Hydrology (CEH), 2023).

2.4.6 C_{Lo} for acidification have been set in the UK using an empirical approach for non-woodland habitats on a 1km grid square based upon the mineralogy and chemistry of the dominant soil series present in the grid square, and the simple mass balance (SMB) equation for both managed and unmanaged woodland habitats.

3 Assessment Methodology

3.1 Model Setup

3.1.1 Detailed atmospheric dispersion modelling has been undertaken using the most recent version (v.19191) of the AERMOD dispersion model which has been developed in conjunction with, and approved for use by, the US EPA. The dispersion modelling has been undertaken with due consideration to relevant guidance. The modelling approach is based upon the following stages:

- identification of sensitive receptors;
- review of process design and emission sources;
- compilation of the existing air quality baseline and review of LAQM status; and
- calculation of process contribution to ground level concentrations and evaluation against relevant environmental standards for both human and ecological receptors.

3.1.2 The AERMOD model calculates time-averaged ground level concentrations over any set of distances from the source. A variable density Cartesian grid with 15m spacing up to 1.5km and 30m spacing up to 3km was used to predict the maximum predicted contribution to ground level (1.5m flagpole receptor height) concentrations. The pollutant concentrations were also predicted at specific human and ecological receptor locations.

3.1.3 The model requires inputs for:

- building effects;
- nature of the surface;
- physical characteristics of the emissions; and
- meteorology.

Building Effects

3.1.4 Buildings can influence the dispersion of pollutants from sources and can increase the maximum predicted ground level concentrations. The main effect of a building is to entrain pollutants into the cavity region in the immediate leeward side of the building, bringing them rapidly down to ground level. Therefore, concentrations near the building are increased but further away concentrations are decreased.

3.1.5 The buildings that are nearest (or attached) to the sources have been considered in the model. Buildings located horizontally within the distance equivalent to five stack heights of the stack and taller than approximately a third of the stack height have been included, in accordance with advice from the software provider. Details of buildings input to the model are provided in **Table 3-1** and **Table 3-2** below and shown in **Figure 2, Appendix E**. Building heights were obtained from OS Mastermap.

Table 3-1 Building Parameters – Rectangular Buildings

Building ID	X	Y	X Length (m)	Y Length (m)	Height above Ground (m)
B02	353322.9	179394.6	9.8	32.8	10.7
B04	353312.9	179425.9	6.9	3.4	5.3
B05	353299.4	179427.6	6.9	7	5.5
B06	353287	179332	26.1	37.6	13.4
B08	353326.6	179350.4	12.1	5.8	7.2
B09	353387.6	179348.6	16.4	6.6	4.7
B10	353352.4	179376.1	2.6	4.4	4.6
B20	353357.6	179377	4.2	4.3	5.7
B21	353360.8	179380	4.1	4.2	8.4
B22	353372.2	179386.2	1	3.9	8.3
B23	353423	179433.1	1.4	4.9	8.2

Table 3-2 Building Parameters – Polygon Buildings

Building ID	X	Y	Height above Ground (m)
B01	353404.5	179434.2	8.8
B03	353318.9	179374.6	4.9
B07	353373.8	179416.5	8.8
B11	353258.7	179401.5	9.5
B12	353273.7	179379.8	6.5

Table 3-3 Building Parameters – Circular Buildings

Building ID	X	Y	Radius (m)	Height above Ground (m)
B13	353264.6	179375.9	9.6	11.9
B14	353281.3	179391.3	9.6	11.8
B15	353265.7	179408.6	9.7	11.6
B16	353285.3	179352.7	8.4	13.1
B17	353301.4	179366.2	8.2	12.9
B18	353345.2	179360.1	5.2	12.7
B19	353356.7	179366.5	5.2	6.3
B24	353288.9	179429.9	9.6	11.9
B25	353304.5	179412.4	10.0	11.9

Terrain

3.1.6 Topographical data covering the extent of the receptor grid and specific receptor locations has been included in the model and was obtained from the OS Land-Form Panorama dataset.

Meteorology

3.1.7 The model utilises a meteorological dataset that contains hourly values for wind speed, wind direction, and atmospheric stability to compute the dispersion of the emissions.

3.1.8 The assessment has used the five-year (2016 to 2020) sequential meteorological dataset from Avonmouth meteorological station (located at 350472,178806, approximately 2.78 km west of the Installation) which is considered to be representative of meteorological conditions at the Site. The 2016 to 2020 windroses from Avonmouth meteorological station are provided in **Appendix A**.

3.2 Emissions to Atmosphere

3.2.1 The technical specifications of the combustion plant are:

- five Caterpillar G3516 LE CHP plants (1.15MWe heat output and 3.636MW thermal input); and
- one Viessman Vitomax 200LW, Burner Dunphy boiler (3.7MW heat output and 4MW thermal input)

3.2.2 The quantification of the pollutant emission rates for the CHPs has been based on physical discharge characteristics and stack emission monitoring data. The emission monitoring flow data for CHP 4 have been applied to all CHPs as CHP 4 exhibited the greater flow rates and therefore represents a worst-case scenario.

3.2.3 As a worst-case scenario, the boiler and CHP plants have been assumed to operate throughout the year for 24-hours a day (8,760 hours per annum). This assumption is considered conservative as CHP operating hours are typically <5,500 hours/annum and all plant are periodically taken off-line for servicing which would also reduce total available annual operating hours.

Calculation of Emission Rates

3.2.4 The emission release rates for the combustion plant have been calculated from the relevant Emission Limit Values (ELVs) as per **Table 3-1** and the 'normalised' flue gas flow rates (see **Table 3-5**). Emissions from the CHP plant and the boilers are discharged via individual stacks (i.e. five stacks in total).

Table 3-1 Applied Emission Limits Values

Pollutant	Emission Limit Value
CHP	
NO_x	190 mg/Nm^3 @15% O_2 as set out in the Medium Combustion Plant Directive (MCPD).
SO_2	60 mg/Nm^3 @15% O_2 as set out in the MCPD.
PM	20 mg/Nm^3 @15% O_2 from the EA Combustion Activities EPR 1.01 guidance (EA, 2009)
CO	1400 mg/Nm^3 @5% O_2 from Standard Rules Environmental Permit (SR2021 No.6), adjusted to 519.5 mg/Nm^3 @ 15% O_2. (EA, 2022)
NMVOC	75 mg/Nm^3 @5% O_2 from LFTGN08 'Guidance for monitoring landfill gas engine emissions' (2004 version) adjusted to 27.8 mg/Nm^3 @ 15% O_2. (EA, 2004)
Boilers	
NO_x	250 mg/Nm^3 @3% O_2 as set out in the MCPD.
SO_2	200 mg/Nm^3 @3% O_2 as set out in the MCPD.
PM	5 mg/Nm^3 @3% O_2 from the EA Combustion Activities EPR 1.01 guidance (EA, 2009)
CO	100 mg/Nm^3 @3% O_2 taken from Process Guidance Note PG 1/03 (12) - Statutory Guidance for Boilers and Furnaces 20- 50 MW thermal input. (DEFRA et al., 2012)
NMVOC	25 mg/Nm^3 derived from the ratio of the emission factors for NO_x and NMVOC in the EMEP/EEA air pollutant emission inventory guidebook, Chapter 1.A.4 Small combustion 2019 (EMEP/EEA, 2019), which show NMVOC emissions 20-fold lower than NO_x; modelled as 10-times lower.

3.2.5 The dispersion model requires input relating to the emissions. The source parameters and emission rates used for the assessment of emissions are shown in **Table 3-5**. Emissions from each CHP plant and the boiler are discharged via individual stacks (i.e. six stacks in total).

Table 3-5 Applied Physical Discharge Characteristics to Estimate Emissions and Estimated Emission Rates.

Parameter / Source	CHP1 Flue	CHP2 Flue	CHP3 Flue	CHP4 Flue	CHP5 Flue	Boiler Flue
Stack Locations (x, y)	353348.4, 179404.1	353345.3, 179401.2	353342.1, 179398.3	353336.6, 179393.3	353333.6, 179390.5	353335.7, 179380.7
Stack Height (m AGL)	14	14	14	14	14	14
Emission Temperature (ºC)	252	201	224	325	301	120
Stack Internal Diameter (m)	0.45	0.45	0.45	0.45	0.45	0.45
Emission Velocity (m/s)	17.2	19.3	20.5	24.8	20.2	17.4

Actual flow rate (Am^3/s)	2.74	3.07	3.27	3.94	3.22	2.76
Normalised flow rate, dry, 15% oxygen (Nm^3/s)	2.58	3.07	3.32	3.32	2.75	-
Normalised flow rate, dry, 3% oxygen (Nm^3/s)	-	-	-	-	-	1.16
Moisture content (%)	11.2	12.5	12.6	10.7	13.8	10.0
Oxygen content (%)	7.9	7.9	7.3	7.8	7.4	8.0
NOx Emission Rate (g/s)	0.6	0.6	0.6	0.6	0.6	0.3
SO_2 Emission Rate (g/s)	0.2	0.2	0.2	0.2	0.2	0.2
CO Emission Rate (g/s)	1.7	1.7	1.7	1.7	1.7	0.1
NMVOC Emission Rate (g/s)	0.1	0.1	0.1	0.1	0.1	0.1
PM Emission Rate (g/s)	0.07	0.07	0.07	0.07	0.07	0.006

3.3 Assessment of Impacts on Air Quality

NOx to NO_2 Conversion

3.3.1 Emissions of NOx from combustion sources include both NO_2 and NO, with the majority being in the form of NO. In ambient air, NO is oxidised to form NO_2, and it is NO_2 which has the greater potential health impacts. For this assessment, the conversion of NO to NO_2 has been estimated using the worst-case assumptions set out in EA AERA guidance, namely that:

- For the assessment of long term (annual mean) impacts at receptors, 70% of NOx is NO_2; and
- For the assessment of short term (hourly mean) impacts at receptors, 35% of NOx is NO_2.

3.3.2 The oxidation of NO to NO_2 is not, however, an instantaneous process and where the maximum impacts occur within up to 1km of the stacks the EA AERA guidance assumptions lead to a conservative assessment.

Particulate Matter Size Apportionment

3.3.3 All PM has been assumed to be PM_{10} when calculating annual mean and 24-hour mean PM_{10} concentrations, and all PM has been assumed to be $PM_{2.5}$ when calculating annual mean $PM_{2.5}$ concentrations. This is considered to be a conservative assessment of PM impacts as in reality, PM_{10} and $PM_{2.5}$ will form a smaller portion of the total PM concentration.

15-minute SO_2 Concentrations

3.3.4 In this assessment, the 99.9th percentiles of 1-hour mean SO_2 concentrations have been converted into 99.9th percentiles of 15-minute mean concentrations using a conversion factor 1.34, as recommended in the AERA guidance.

Assessment of Impact and Significance

3.3.5 To assess the potential impact on air quality, the predicted exposure is compared to the EALs, and the results of the dispersion modelling have been presented in the form of:

- tabulated concentrations at discrete receptor locations to facilitate the discussion of results; and
- illustrations of the impact as isopleths (contours of concentration) for the criteria selected enabling determination of impact at any locations within the study area.

3.3.6 In accordance with the AERA guidance, the impact is considered to be insignificant or negligible if:

- the long-term process contribution is <1% of the long term EAL; and
- the short-term process contribution is <10% of the short term EAL.

3.3.7 For process contributions that cannot be considered insignificant further assessment has been undertaken and the Predicted Environmental Concentration (PEC: Process Contribution (PC) + existing background pollutant concentration) determined for comparison as a percentage of the relevant EAL. For human receptors, DEFRA's 2018-based background maps for 2022 (DEFRA, 2020) have been applied to calculate the NO_2, PM_{10} and $PM_{2.5}$ PECs at receptor locations, the 2001-based background maps for 2001 (DEFRA, 2001) have been applied to calculate CO PECs, and the 2001-based background maps for 2010 (DEFRA, 2001) have been applied to calculate the NMVOC PECs at receptor locations. Background monitoring data from APIS has been applied to calculate the SO_2 PECs at receptor locations.

3.3.8 The AERA guidance indicates that no further assessment is required, and impacts do not constitute 'significant pollution' if the resulting PEC is below the EAL, and the applied emission levels comply with the Best Available Technique (BAT) requirements.

3.4 Assessment of Impacts on Vegetation and Ecosystems

Calculation of Deposition Rates

3.4.1 Deposition rates were calculated using empirical methods recommended by the EA AQTAG06 (EA, 2014). Dry deposition flux was calculated using the following equation:

Dry deposition flux ($\mu g/m^2/s$) = ground level concentration ($\mu g/m^3$) x deposition velocity (m/s)

3.4.2 Wet deposition occurs via the incorporation of the pollutant into water droplets which are then removed in rain or snow and is not considered significant over short distances (AQTAG06) compared with dry deposition. Therefore, for the purposes of this assessment, wet deposition has not been considered.

3.4.3 The dry deposition velocities and conversion factors for NO_2 and SO_2 were taken from the EA's guidance document AQTAG 06 (EA, 2014) and are set out in **Table 3-6**.

Table 3-6 Applied Deposition Velocities

Chemical Species	Habitat	Recommended deposition velocity (m/s)	Conversion µg/m²/s to kgN/ha/yr	Conversion µg/m²/s to keq/ha/yr
NO_2	Grassland	0.0015	96.0	6.84
	Woodland	0.003		
SO_2	Grassland	0.012	-	9.84
	Woodland	0.024		

Assessment of Impact and Significance

3.4.4 In addition to the AERA guidance, the EA's Operational Instruction 66_12 (EA, 2012a) details how the air quality impacts on ecological sites should be assessed. This guidance provides risk-based screening criteria to determine whether impacts will have 'no likely significant effects (alone and in-combination)' for European sites, 'no likely damage' for SSSI's and 'no significant pollution' for other sites, as follows:

- PC <1% long-term C_{Le} and/or C_{Lo} or that the PEC <70% long-term C_{Le} and/or C_{Lo} for European sites and SSSIs;
- PC <10% short-term C_{Le} for NOx for European sites and SSSIs;
- PC <100% long-term C_{Le} and/or C_{Lo} other conservation sites; and
- PC <100% short-term C_{Le} for NOx (if applicable) for other conservation sites.

3.4.5 Where impacts cannot be classified as resulting in 'no likely significant effect', more detailed assessment may be required depending on the sensitivity of the feature in accordance with EAs Operational Instruction 67_12 (EA, 2012b). This can require the consideration of the potential for in-combination effects, the actual distribution of sensitive features within the site, and local factors (such as the water table).

3.4.6 The guidance provides the following further criteria:

- if the PEC<100% of the appropriate limit, it can be assumed there will be no adverse effect;
- if the background is below the limit, but a small PC leads to an exceedance – decision based on local considerations;
- if the background is currently above the limit and the additional PC will cause a small increase – decision based on local considerations;
- if the background is below the limit, but a significant PC leads to an exceedance – cannot conclude no adverse effect; and
- if the background is currently above the limit and the additional PC is large - cannot conclude no adverse effect.

4 Baseline Environment

4.1 Site Setting and Sensitive Receptors

4.1.1 The Site location is shown in **Figure 1, Appendix E**. ABC is predominantly surrounded by industrial and commercial land, particularly directly to the north, south and west. Beyond these are areas of residential use.

4.1.2 The majority of sensitive human receptors are located south, south-east, and south-west of the Installation. There are also a number of schools in the area, the closest to the Installation being St Bede's Roman Catholic College, located approximately 1.3km south-east of the modelled stack locations.

4.1.3 A key sensitive ecological receptor close to the site is the Severn Estuary, a SSSI, SAC, SPA and LWS. In addition, a number of LWSs are located within close proximity to the site, including the Avonmouth Sewage Works LWS and Hoar Gout LWS located directly north-west of the Installation. Lawrence Weston Road Rhines LWS and Kings Weston Lane Rhine LWS are located approximately 330m north-east and 340m south-west of the modelled stack locations, respectively.

4.1.4 The modelled sensitive human and ecological receptor locations in proximity to the Site are detailed in the following sections.

Human Receptors

4.1.5 According to LAQM.TG(22), air quality standards should apply to locations where members of the public may be reasonably likely to be exposed to air pollution for the duration of the relevant limit value. The dispersion modelling has been completed using a receptor grid which allows the maximum ground level impact to be assessed including potential short-term exposure locations. As such, the impact has been assessed at all potential exposure locations surrounding the Installation. In addition, sensitive existing residential properties and a school have been modelled, details of which are shown in **Table B-1, Appendix B** and their locations are shown in **Figure 3, Appendix E**.

Ecological Receptors

4.1.6 Designated sites within the relevant AERA screening distances are presented in **Table B-2, Appendix B** and shown in **Figure 4, Appendix E**. There are fourteen Local Wildlife Sites (LWSs), also known as Sites of Nature Conservation Interest (SNCIs) and no SSSIs with 2km of the Installation, and 2 Special Areas of Conservation (SACs) within 10 km of the Installation; it is worth noting that these SACs are also Special Protection Areas (SPAs) and SSSIs.

4.2 Ambient Air Quality

Local Air Quality Management

4.2.1 BCC has investigated air quality within its area as part of its responsibilities under the LAQM regime. The Council currently has one AQMA: the Bristol AQMA, which has been declared due to exceedances of the 1-hour and annual mean NO_2 AQO, as well as the 24-hour mean PM_{10} AQO

4.2.2 The Bristol AQMA is the closest to the Site, located approximately 6.6 km away. In addition, the Bristol Clean Air Zone (CAZ) to be introduced in summer of 2022 will be located approximately 6.1 km from the Installation at its closest point. Therefore, given this distance, any impacts from the ABC are not considered to have the potential to be significant.

Local Air Quality Monitoring Data

4.2.3 BCC carries out monitoring of NO_2 concentrations at a number of locations; the closest and most representative locations are described below and shown in **Figure 1, Appendix E**. 2017 to 2022 monitoring data for these sites are presented in **Table 4-1**. Whilst 2020 and 2021 monitoring data

have been included in **Table 4-1**, it should be noted that these are not representative due to Covid-19 restrictions in place during 2020 and to lesser extent in 2021.

4.2.4 **Table 4-1** shows that there were no exceedances of the annual mean NO_2 AQO between 2017 and 2022 at the closest monitoring locations to the Installation.

Table 4-1 Measured NO_2 concentrations, 2017 – 2022

Site ID	Site Type	Annual Mean (µg/m³)					
		2017	2018	2019	2020	2021	2022
16 – Third Way	Roadside	35.2	32.6	28.6	23.2	24.9	25.8
489 – Avonmouth Road Outside No. 12	Roadside	37.7	35.5	28.6	-	-	-
490 – Avon School Barrack's Lane	Roadside	31	26.7	22.4	-	-	-
491 – Avonmouth Road Outside No. 76	Roadside	34.4	33.5	27.3	-	-	-
AQO		**40**					

BCC data obtained from the BCC 2022 Air Quality Annual Status Report (BCC, 2023).

4.3 Predicted Background Concentrations

4.3.1 Modelled background pollutant concentration data on a 1km x 1km spatial resolution is provided by DEFRA through the UK AIR website (DEFRA, 2020) and are routinely used to support LAQM and Air Quality Assessments.

4.3.2 The latest available background pollutant concentrations for NO_2 are based upon a 2018 base year and projected to future years. The projected 2022 background concentrations for the grid squares containing the Installation and modelled receptor locations have been applied in this AERA and are shown in **Table 4-2**. Background NO_2 concentrations are well below the AQO.

Table 4-2 Estimated Annual Mean NO_x ,NO_2, PM_{10} and $PM_{2.5}$ Background Concentrations 2022 (µg/m³)

Location (x_y)	Annual Mean (µg/m³)			
	NOx	NO_2	PM_{10}	$PM_{2.5}$
354_184	12.6	9.7	13.1	8.3
355_179	17.4	13.0	14.1	8.9
354_178	16.8	12.6	13.3	8.6
353_178	26.6	19.0	14.5	9.0
353_177	16.3	12.3	13.3	8.6
352_177	26.7	19.0	15.1	9.5
351_177	18.8	13.8	12.6	8.0
351_178	19.5	14.2	13.6	8.4
354_178	16.8	12.6	13.3	8.6
354_180	14.5	11.0	12.7	8.0
356_183	12.0	9.3	12.0	7.7

356_184	12.4	9.5	12.3	7.7
355_184	12.9	9.8	12.4	7.9
355_185	14.7	11.2	14.1	8.7
354_179	20.3	15.0	14.2	8.8

4.3.3 The latest available modelled background pollutant data for SO_2 available from DEFRA is for 2001. Therefore, it has been considered more appropriate to use more recent SO_2 background monitoring data available from the APIS.

4.3.4 The 2022 annual mean SO_2 concentration from APIS is provided in **Table 4-3**. The measured annual mean SO_2 background concentration from APIS has been applied to all modelled human receptor locations in this AERA.

Table 4-3 Annual Mean SO_2 Measured Background Concentration

Location (x,y)	**2022 Annual Mean SO_2 Concentration (µg/m^3)**
353335,179380	1.24

4.4 Baseline Air Quality at Ecological Receptors

4.4.1 The APIS website, a support tool for assessment of potential effects of air pollutants on habitats and species developed in partnership by the UK conservation agencies and regulatory agencies and the UK CEH, has been used to provide information on relevant C_{Lo} and current deposition rates for nutrient nitrogen and for acidity. These are provided in **Table 4-4** and **Table 4-5**. Baseline concentrations of NO_x and SO_2 are provided in **Table 4-6** and have also been obtained from the APIS website (UK CEH, 2023).

Table 4-4 Nitrogen and Acid Deposition Critical Loads

Receptor	**Designated Site**	**Assigned Habitat**	**Critical Load**	
			Nitrogen Deposition (kgN/ha/yr)	**Acid Deposition – CLMaxN (keqN/ha/yr)**
LWS1a	Avonmouth Sewage Works and Hoar Gout LWS	Broadleaved, Mixed and Yew Woodland	10	11.195
LWS1b	Avonmouth Sewage Works and Hoar Gout LWS	Broadleaved, Mixed and Yew Woodland	10	11.195
LWS1c	Avonmouth Sewage Works and Hoar Gout LWS	Broadleaved, Mixed and Yew Woodland	10	11.195
LWS1d	Avonmouth Sewage Works and Hoar Gout LWS	Broadleaved, Mixed and Yew Woodland	10	11.195
LWS2c	Lawrence Weston Road Rhines LWS	Coastal and Floodplain Grazing Marsh	10	4
LWS2b	Lawrence Weston Road Rhines LWS	Coastal and Floodplain Grazing Marsh	10	4

Receptor	Designated Site	Assigned Habitat	Critical Load	
			Nitrogen Deposition (kgN/ha/yr)	Acid Deposition – CLMaxN (keqN/ha/yr)
LWS2a	Lawrence Weston Road Rhines LWS	Coastal and Floodplain Grazing Marsh	10	4
LWS2d	Lawrence Weston Road Rhines LWS	Coastal and Floodplain Grazing Marsh	10	4
LWS2e	Lawrence Weston Road Rhines LWS	Coastal and Floodplain Grazing Marsh	10	4
LWS2f	Lawrence Weston Road Rhines LWS	Coastal and Floodplain Grazing Marsh	10	4
LWS2g	Lawrence Weston Road Rhines LWS	Coastal and Floodplain Grazing Marsh	10	4
LWS5d	Long Cross Tip LWS	Coastal and Floodplain Grazing Marsh	10	4
LWS5c	Long Cross Tip LWS	Coastal and Floodplain Grazing Marsh	10	4
LWS5b	Long Cross Tip LWS	Coastal and Floodplain Grazing Marsh	10	4
LWS5a	Long Cross Tip LWS	Coastal and Floodplain Grazing Marsh	10	4
LWS4d	Kings Weston Lane Rhine LWS	Coastal and Floodplain Grazing Marsh	10	4
LWS4c	Kings Weston Lane Rhine LWS	Coastal and Floodplain Grazing Marsh	10	4
LWS4b	Kings Weston Lane Rhine LWS	Coastal and Floodplain Grazing Marsh	10	4
LWS4a	Kings Weston Lane Rhine LWS	Coastal and Floodplain Grazing Marsh	10	4
LWS3a	Fields along M5, Hallen LWS	Coastal and Floodplain Grazing Marsh	10	4
LWS3c	Fields along M5, Hallen LWS	Coastal and Floodplain Grazing Marsh	10	4
LWS3b	Fields along M5, Hallen LWS	Coastal and Floodplain Grazing Marsh	10	4
LWS6	Lawrence Weston Moor LWS	Coastal and Floodplain Grazing Marsh	10	4
LWS8	Moorhouse Farm and Stuppill Rhines	Coastal and Floodplain Grazing Marsh	10	4
LWS9	Salt Rhine and Moorhouse Rhine LWS	Coastal and Floodplain Grazing Marsh	10	4
LWS10	Hallen Marsh Junction LWS	Coastal and Floodplain Grazing Marsh	10	4

Receptor	Designated Site	Assigned Habitat	Critical Load	
			Nitrogen Deposition (kgN/ha/yr)	Acid Deposition – CLMaxN (keqN/ha/yr)
LWS12	St. Andrews Road Rhine LWS	Coastal and Floodplain Grazing Marsh	10	4
LWS7	Fields above Lawrence Weston Moor LWS	Coastal and Floodplain Grazing Marsh	10	4
LWS13	Thirty Acre Woodland LWS	Broadleaved, Mixed and Yew Woodland	10	11.066
LWS14	Penpole Wood and Quarry LWS	Broadleaved, Mixed and Yew Woodland	10	11.069
SAC1c	Severn Estuary SAC	Coastal saltmarsh	10	4
LWS11	Severn Estuary SAC/LWS	Coastal saltmarsh	10	4
SAC1a	Severn Estuary SAC	Coastal saltmarsh	10	4
SAC1b	Severn Estuary SAC	Coastal saltmarsh	10	4
SAC2	Avon Gorge Woodlands SAC	Broadleaved, Mixed and Yew Woodland	10	2.729

Table 4-5 Baseline Deposition Rates

Receptor	Nitrogen Deposition (kgN/ha/yr)	Acid Deposition	
		Nitrogen (keq N/ha/yr)	Sulphur (keq S/ha/yr)
LWS1a	22.75	1.62	0.17
LWS1b	22.75	1.62	0.17
LWS1c	22.75	1.62	0.17
LWS1d	22.75	1.62	0.17
LWS2c	13.21	0.94	0.14
LWS2b	13.21	0.94	0.14
LWS2a	13.21	0.94	0.14
LWS2d	13.21	0.94	0.14
LWS2e	13.21	0.94	0.14
LWS2f	13.21	0.94	0.14
LWS2g	13.21	0.94	0.14
LWS5d	13.67	0.98	0.15
LWS5c	13.67	0.98	0.15

Receptor	Nitrogen Deposition (kgN/ha/yr)	Acid Deposition	
		Nitrogen (keq N/ha/yr)	Sulphur (keq S/ha/yr)
LWS5b	13.67	0.98	0.15
LWS5a	13.67	0.98	0.15
LWS4d	13.20	0.94	0.14
LWS4c	13.20	0.94	0.14
LWS4b	13.21	0.94	0.14
LWS4a	12.80	0.91	0.13
LWS3a	13.63	0.97	0.15
LWS3c	13.63	0.97	0.15
LWS3b	13.63	0.97	0.15
LWS6	13.67	0.98	0.15
LWS8	13.58	0.97	0.15
LWS9	13.23	0.94	0.14
LWS10	12.87	0.92	0.13
LWS12	12.76	0.91	0.13
LWS7	13.63	0.97	0.15
LWS13	23.59	1.68	0.19
LWS14	22.80	1.63	0.17
SAC1c	13.25	0.95	0.14
LWS11	13.25	0.95	0.14
SAC1a	13.25	0.95	0.14
SAC1b	13.25	0.95	0.14
SAC2	24.20	1.73	0.20

Table 4-6 Baseline NOx and SO_2 Concentrations

Receptor	Annual Mean Concentration (µg/m^3)	
	NOx	SO_2
LWS1a	16.74	1.24
LWS1b	16.74	1.24
LWS1c	16.74	1.24
LWS1d	16.74	1.24

Receptor	Annual Mean Concentration (µg/m^3)	
	NOx	SO_2
LWS2c	16.74	1.24
LWS2b	16.74	1.24
LWS2a	16.74	1.24
LWS2d	16.74	1.24
LWS2e	16.74	1.24
LWS2f	16.74	1.24
LWS2g	16.74	1.24
LWS5d	16.97	1.34
LWS5c	16.97	1.34
LWS5b	16.97	1.34
LWS5a	16.97	1.34
LWS4d	24.22	1.36
LWS4c	24.22	1.36
LWS4b	16.74	1.24
LWS4a	15.19	1.22
LWS3a	19.51	1.17
LWS3c	19.51	1.17
LWS3b	19.51	1.17
LWS6	16.97	1.34
LWS8	14.6	1.19
LWS9	13.81	1.23
LWS10	17.52	1.60
LWS12	16.49	1.34
LWS7	19.10	1.17
LWS13	14.71	1.33
LWS14	16.43	1.37
SAC1c	19.31	1.44
LWS11	11.98	1.06
SAC1a	12.51	1.07
SAC1b	15.64	1.48
SAC2	12.13	1.16

5 Assessment Results

5.1.1 Dispersion modelling has been undertaken using the input data specified in this report. **Figure 5** to **Figure 10, Appendix E** should be referred to for graphical visualisations of modelling results. The impacts at modelled human and ecological receptor locations are described in the following sections.

5.1.2 Impact predictions have been based on a worst-case assessment scenario of the boiler and CHP plant operating constantly throughout the year and emitting at the stated emission concentrations for NOx, SO_2, PM, CO and NMVOC. Therefore, the predicted concentrations presented in this report are likely to be overestimations of the actual impacts of the Installation.

5.2 Impacts on Sensitive Human Receptors

Nitrogen Dioxide (NO_2)

5.2.1 **Figure 6, Appendix E** illustrates the predicted annual mean NO_2 PC contour whilst **Figure 7, Appendix E** shows the 1-hour mean NO_2 PC contour. Contours are presented for the year of the maximum PC which is 2017 for annual mean NO_2 and 2019 for 1-hour mean NO_2. Predicted annual mean NO_2 concentrations at sensitive receptor locations are summarised in **Table C-1, Appendix C,** whilst predicted 1-hour mean NO_2 concentrations are provided in **Table C-2, Appendix C**. Results for the worst-case meteorological year of the five years assessed (2016 - 2020) are presented.

5.2.2 The predicted annual mean NO_2 PC exceeds 1% of the EAL at sensitive receptors R03 – R13, R30, and R40 – R49. For all remaining receptors, the predicted annual mean NO_2 PC is less than 1% of the EAL and can therefore be considered as 'insignificant'.

5.2.3 At sensitive receptors where the annual mean NO_2 PC exceeds 1% of the EAL, the predicted annual mean NO_2 concentrations are below the relevant EAL at all sensitive human receptor locations, therefore the predicted annual mean NO_2 impacts do not constitute 'significant pollution'.

5.2.4 The predicted 1-hour mean NO_2 PC only exceeds 10% of the EAL at one receptor location, R30. For all remaining receptors, the predicted 1-hour mean NO_2 PC is less than 10% of the EAL and can therefore be considered 'insignificant'.

5.2.5 For R30, the predicted 1-hour mean NO_2 concentration is below the relevant EAL. Therefore, the predicted 1-hour mean NO_2 impacts do not constitute 'significant pollution'.

Sulphur Dioxide (SO_2)

5.2.6 **Figure 8, Appendix E** illustrates the predicted 24-hour mean SO_2 PC contour, **Figure 9, Appendix E** shows the 1-hour mean SO_2 PC contour and **Figure 10, Appendix E** shows the 15-minute mean SO_2 contour. Contours are presented for the year of the maximum PC which is 2020 for 24-hour mean SO_2, 2017 for 1-hour mean SO_2 and 2019 for 15-minute mean SO_2. Predicted SO_2 concentrations at sensitive receptor locations are summarised in **Table C-3 – C-5, Appendix C**. Results for the worst-case meteorological year of the five years assessed (2016 - 2020) are presented.

5.2.7 The predicted 24-hour mean, and 1-hour mean SO_2 PCs, do not exceed 10% of the EAL at any of the modelled sensitive receptor locations, and can therefore be considered as being 'insignificant'.

5.2.8 The predicted 15-minute mean SO_2 PCs exceed 10% of the EAL at receptor R30. However, the predicted 15-minute mean SO_2 PECs are well below the relevant EAL and therefore do not constitute 'significant pollution'.

Carbon Monoxide (CO)

5.2.9 Predicted 1-hour mean CO concentrations at sensitive receptor locations are summarised in **Table C-6, Appendix C,** whilst predicted 8-hour average CO concentrations are provided in **Table C-7, Appendix C**. Results for the worst-case meteorological year of the five years assessed (2016 - 2020) are presented.

5.2.10 The predicted 1-hour mean, and 8-hour average CO PCs are less than 10% of the EAL at all modelled sensitive receptor locations and are therefore considered to be insignificant in accordance with EA guidance.

NMVOC assessed as Benzene (C_6H_6)

5.2.11 Predicted annual mean NMVOC concentrations at sensitive receptor locations are summarised in **Table C-8, Appendix C**, whilst predicted 24-hour mean NMVOC concentrations are provided in **Table C-9, Appendix C**. Results for the worst-case meteorological year of the five years assessed (2016 - 2020) are presented.

5.2.12 The predicted annual mean NMVOC PCs exceed 1% of the EAL for C_6H_6 at 33 out of the 58 modelled sensitive receptor locations. However, only a small fraction of the NMVOC emission would be C_6H_6 and the predicted PECs do not exceed the EAL at any of the modelled receptor locations and therefore the impacts do not constitute 'significant pollution'.

5.2.13 The predicted 24-hour mean NMVOC PCs exceed 10% of the EAL for C_6H_6 at modelled receptor location R30. At the remaining receptor locations, the PCs are less than 10% of the EAL and therefore can be considered 'insignificant' in accordance with EA guidance. However, only a small fraction of the NMVOC emission would be C_6H_6 and the predicted PECs do not exceed the EAL at any of the modelled receptor locations and therefore the impacts do not constitute 'significant pollution'.

Particulate Matter (PM_{10} and $PM_{2.5}$)

5.2.14 Predicted annual mean PM_{10} concentrations at sensitive receptor locations are summarised in **Table C-10, Appendix C**, predicted 24-hour mean (90.41%ile) PM_{10} concentrations are provided in **Table C-11, Appendix C**, and predicted annual mean $PM_{2.5}$ concentrations are provided in **Table C-12, Appendix C**. Results for the worst-case meteorological year of the five years assessed (2016 - 2020) are presented for each receptor.

5.2.15 The predicted annual mean PM_{10} PCs are less than 1% of the EAL and predicted 24-hour mean PM_{10} PCs are less than 10% of the EAL, at all modelled sensitive human receptor locations and are therefore considered to be 'insignificant' in accordance with the AERA guidance.

5.2.16 The predicted annual mean $PM_{2.5}$ PCs are less than 1% of the EAL at all modelled human receptor locations and are therefore considered to be 'insignificant' in accordance with the AERA guidance.

5.3 Impacts on Ecological Receptors

Nitrogen Oxides (NO_x)

5.3.1 Predicted annual and 24-hour mean NO_x concentrations at sensitive ecological receptor locations are summarised in **Table D-1** and **Table D-2, Appendix D.** Results for the worst-case meteorological year of the five years assessed (2016 - 2020) are presented.

5.3.2 The predicted annual mean NOx PCs are less than 100% of the C_{Le} at all locally designated ecological sites and can therefore be considered 'insignificant'. Regarding European designated sites (i.e. SACs), although the annual mean NOx PC is greater than 1% at one receptor location (SACb) within the Severn Estuary SAC, the PEC at this location is less than 100% and therefore no adverse effect is likely to occur on the SAC as a result of NOx concentrations.

5.3.3 The predicted 24-hr NOx PCs are less than 100% of the C_{Le} at all ecological receptor locations within locally designated sites, aside from at one receptor location (LWS1b) at the Avonmouth Sewage Works and Hoar Gout LWS. At European designated sites, the 24-hour NOx PCs are all less than 10% of the C_{LE} and are therefore considered to be 'insignificant' in accordance with EA guidance.

5.3.4 Regarding the 24-hour NOx PC at receptor location LWS1b (Avonmouth Sewage Treatment Works and Hoar Gout LWS), the effects of nitrogen on vegetation are additive over long periods of time and therefore vegetation is affected by long-term changes in nitrogen deposition (and NOx concentrations) (Institute of Air Quality Management, 2020). Vegetation is much less likely to be affected by short-term (i.e. 24-hour) changes in NOx concentrations, and resulting nitrogen deposition. In addition, the C_{Le} for short-term NOx concentrations was reduced from 200 µg/m^3 to 75 µg/m^3 in 2000 to reflect the fact that elevated short-term NOx concentrations often coincide with elevated SO_2 and O_3 concentrations globally, however, this is not the case in the study area or the UK in general where SO_2 and O_3 concentrations generally remain low. Therefore, it is considered that the predicted 24-hour NOx PC is unlikely to result in a significant effect at the Avonmouth Sewage Treatment Works and Hoar Gout LWS.

Sulphur Dioxide (SO_2)

5.3.5 Predicted annual mean SO_2 concentrations at sensitive ecological receptor locations are summarised in **Table D-3, Appendix D.**

5.3.6 The predicted annual mean SO_2 PCs are less than 100% of the C_{Le} at all of the locally designated ecological receptor locations and less than 1% at all European designated ecological receptor locations. The impacts on annual mean SO_2 concentrations at ecological receptor locations can therefore be considered 'insignificant' in accordance with EA guidance.

Nitrogen and Acid Deposition

5.3.7 Predicted annual mean nitrogen and acid deposition rates at sensitive ecological receptor locations are summarised in **Table D-4** and **Table D-5, Appendix D.**

5.3.8 The predicted annual nitrogen and acid deposition PCs are less than 100% of the C_{Lo} at all modelled ecological receptor locations and less than 1% at all European designated ecological receptor locations. The impacts on nitrogen and acid deposition can therefore be considered 'insignificant' in accordance with EA guidance.

6 Summary and Conclusions

6.1.1 An Air Emission Risk Assessment utilising atmospheric dispersion modelling has been undertaken to support the EP application under the IED for Anaerobic Digestion activities at ABC. The Installation includes biogas combustion plant comprising five CHP plant units and one boiler.

6.1.2 In relation to human receptors, where impacts are not classified as 'insignificant' (i.e. PC less than 1% of the EAL for long-term concentrations or 10% for short-term) the predicted impacts of the Installation do not lead to any exceedances of EALs and therefore do not constitute 'significant pollution'.

6.1.3 In relation to the impact of the Installation on ecologically sensitive sites, at the majority of receptor locations within locally designated sites, the predicted PCs from the Installation are less than 100% of the applicable annual C_{Le} or C_{Lo} and are therefore considered to be 'insignificant' in accordance with EA guidance. The 24-hour mean NO_x PC exceeds 100% of the C_{Le} at one receptor location within the Avonmouth Sewage Treatment Works and Hoar Gout LWS. However, the C_{Le} applied is considered to be conservative and the 24-hour NOx PC is therefore considered to be unlikely to result in a significant effect at the Avonmouth Sewage Treatment Works and Hoar Gout LWS.

6.1.4 At the majority of ecological receptor locations within European designated ecological sites, the annual mean NOx and SO_2, and nitrogen and acid deposition PCs are less the 1% of the relevant C_{Le} or C_{Lo} and are therefore considered to be 'insignificant' in accordance with EA guidance. The annual mean NOx PC exceeds 1% of the C_{Le} at one receptor locations within the Severn Estuary SAC, however the PEC is less than 100% at this location and therefore no adverse effect is likely to occur on the SAC. The 24-hour mean NOx PCs are also less than 10% of the C_{Le} at all European designated ecological sites and are therefore considered to be 'insignificant' in accordance with EA guidance.

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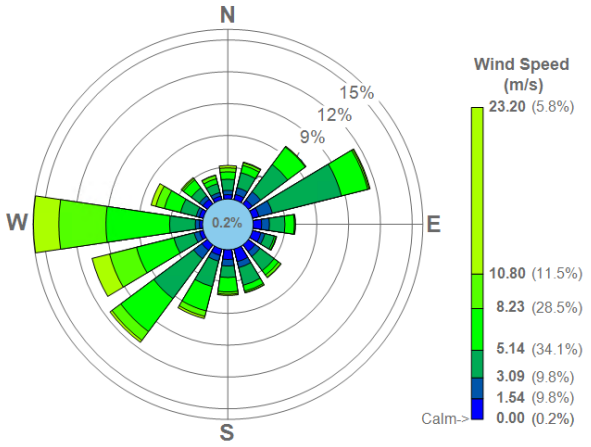
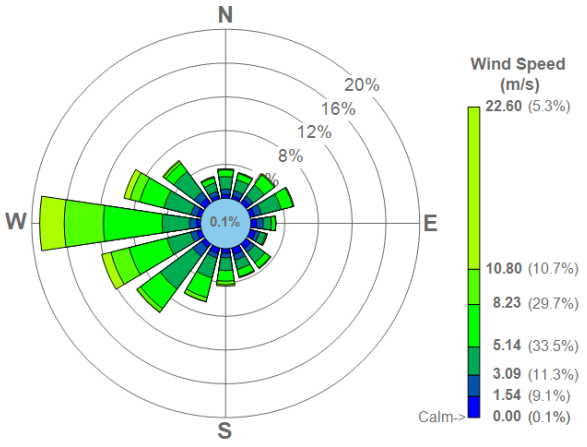
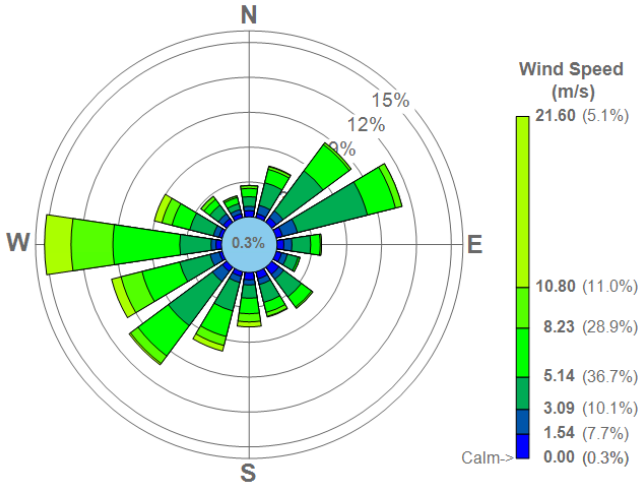
Appendix A Avonmouth 2016 – 2020 Windroses



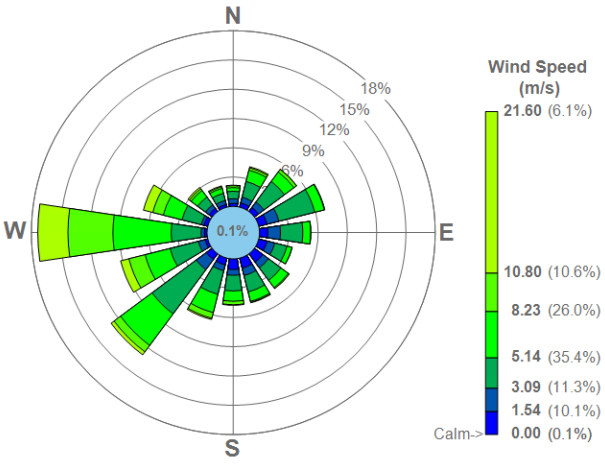
2016



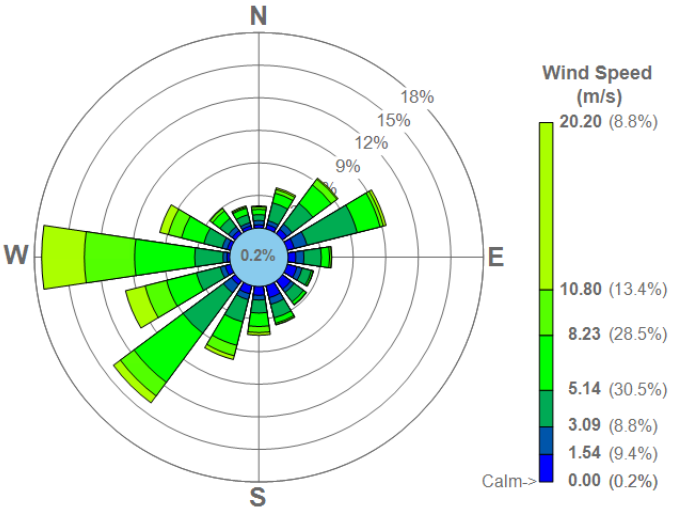
2017



2018



2019


N
E
S
W
18%
15%
12%
9%
0.2%
Wind Speed
(m/s)
20.20 (8.8%)
10.80 (13.4%)
8.23 (28.5%)
5.14 (30.5%)
3.09 (8.8%)
1.54 (9.4%)
0.00 (0.2%)
Calm->

2020

Appendix B Modelled Receptor Locations

Table B-1 Modelled Human Receptor Locations

Receptor	Description	X Coordinate	Y Coordinate	Height (m)	Approximate Distance from Installation (m)
R01	6 Severnwood Gardens	354377.6	184169.1	1.5	4,700
R02	St Peters Primary School	355883.8	184892.9	1.5	5,900
R03	16 Moorhouse	354395.2	179714.7	1.5	1,200
R04	Wellinghouse Farm	354851.2	179683.6	1.5	1,600
R05	6 Windsor Crescent	355282.8	179663.4	1.5	1,800
R06	1 Dog Lane	355348.9	179552.6	1.5	1,800
R07	22 Blaisedell View	355581.2	179332.9	1.5	2,000
R08	12 Hill End Drive	355523.7	179218.5	1.5	2,000
R09	9 Convernt Close	355481.9	179090.3	1.5	1,900
R10	Bank Leaze Primary School	354933.8	178944.0	1.5	1,400
R11	St Bede's Roman Catholic College	354436.5	178668.8	1.5	1,100
R12	St Bede's Roman Catholic College	354436.5	178598.9	1.5	1,100
R13	St Bede's Roman Catholic College	354501.8	178727.2	1.5	1,100
R14	89a Saltmarsh Drive	354298.3	178482.5	1.5	1,100
R15	79 Saltmarsh Drive	354255.3	178436.8	1.5	1,100
R16	67a Saltmarsh Drive	354185.5	178383.9	1.5	1,100
R17	49 Saltmarsh Drive	354096.0	178310.0	1.5	1,100
R18	33 Saltmarsh Drive	354052.4	178239.4	1.5	1,100
R19	10 Elm Close	353972.1	178207.0	1.5	1,100
R20	7 Campbell Farm Drive	353866.4	178113.5	1.5	1,100
R21	Our Lady of the Rosary Roman Catholic Primary School	354111.2	178001.0	1.5	1,300
R22	Oasis Academy Long Cross	353794.8	177862.6	1.5	1,400
R23	27A Long Cross	353645.6	177828.9	1.5	1,400
R24	45 Henacre Road	353527.5	177773.5	1.5	1,400

Receptor	Description	X Coordinate	Y Coordinate	Height (m)	Approximate Distance from Installation (m)
R25	40 Humberstan Walk	353347.6	177625.8	1.5	1,600
R26	105 Kings Weston Avenue	353189.6	177589.8	1.5	1,600
R27	Avon Primary School	352767.8	177755.7	1.5	1,600
R28	22 Merrimans Road	352927.8	177620.0	1.5	1,700
R29	73 Kings Weston Avenue	353071.2	177584.7	1.5	1,700
R30	St Anthony's Park Traveller's Site	353415.8	178766.3	1.5	400
R31	31 Avonmouth Road	352501.9	177700.3	1.5	1,800
R32	47 Avonmouth Road	352430.5	177749.8	1.5	1,800
R33	63 Avonmouth Road	352359.5	177802.6	1.5	1,800
R34	90 Avonmouth Road	352293.1	177874.3	1.5	1,700
R35	16 Marsh Street	352103.0	177761.1	1.5	1,900
R36	1 Cook Street	352089.1	177861.6	1.5	1,800
R37	158 Avonmouth Road	352063.3	177960.8	1.5	1,800
R38	174 Avonmouth Road	351996.2	177992.7	1.5	1,800
R39	Beaumont Court	351870.6	178047.0	1.5	1,900
R40	2 St Andrew's Road	351790.9	178121.1	1.5	1,900
R41	12 St Andrew's Road	351763.5	178172.3	1.5	1,900
R42	26 St Andrew's Road	351737.2	178227.9	1.5	1,900
R43	52 St Andrew's Road	351697.8	178306.9	1.5	1,900
R44	88 McLaren Road	351681.8	178451.3	1.5	1,800
R45	1 Atwood Drive	354552.0	178855.5	1.5	1,100
R46	17 Atwood Drive	354624.0	178873.5	1.5	1,100
R47	33 Atwood Drive	354692.6	178883.4	1.5	1,200
R48	Yew Tree Cottage	354512.6	178805.8	1.5	1,100
R49	Hallen Farm	354650.2	180365.9	1.5	1,600
R50	104 Marsh Common Road	356202.9	183524.6	1.5	4,900
R51	71 Marsh Common Road	356256.2	183972.9	1.5	5,300
R52	49 Marsh Common Road	356085.4	184274.5	1.5	5,500
R53	21 Marsh Common Road	355937.8	184439.6	1.5	5,500
R54	Marsh Cottage	355851.8	184566.0	1.5	5,600

Receptor	Description	X Coordinate	Y Coordinate	Height (m)	Approximate Distance from Installation (m)
R55	36 Cranmoor Green	355712.6	184919.8	1.5	5,900
R56	32 Wainbridge Crescent	355484.8	185050.3	1.5	5,900
R57	45 Redwick Road	355279.6	185175.7	1.5	5,900
R58	Beaumont Court	351870.6	178047.0	4.5	1,900

Table B-2 Modelled Ecological Sites

Receptor	Grid Reference		Site Name (Designation)	Interest Status	Approximate Distance and Direction from Installation (m)
	X	Y			
LWS1a	353055.689	179484.8849	Avonmouth Sewage Works and Hoar Gout LWS	Local	90 W
LWS1b	353160.9818	179579.0725	Avonmouth Sewage Works and Hoar Gout LWS	Local	15 NW
LWS1c	353252.2775	179662.2065	Avonmouth Sewage Works and Hoar Gout LWS	Local	70 N
LWS1d	353314.6152	179720.3669	Avonmouth Sewage Works and Hoar Gout LWS	Local	150 N
LWS2c	353549.9399	179664.335	Lawrence Weston Road Rhines LWS	Local	280 NE
LWS2b	353558.5031	179768.5661	Lawrence Weston Road Rhines LWS	Local	360 NE
LWS2a	353444.4317	179822.5492	Lawrence Weston Road Rhines LWS	Local	310 NE
LWS2d	353667.7546	179553.5977	Lawrence Weston Road Rhines LWS	Local	310 E
LWS2e	353783.1516	179444.6273	Lawrence Weston Road Rhines LWS	Local	300 NE
LWS2f	353909.6745	179337.1832	Lawrence Weston Road Rhines LWS	Local	360 E
LWS2g	354038.2737	179215.4041	Lawrence Weston Road Rhines LWS	Local	480 E
LWS5d	354178.4887	178976.728	Long Cross Tip LWS	Local	680 SE
LWS5c	354012.1322	178831.4674	Long Cross Tip LWS	Local	620 SE
LWS5b	353841.9708	178659.0458	Long Cross Tip LWS	Local	630 S

LWS5a	353756.4599	178408.4286	Long Cross Tip LWS	Local	820 S
LWS4d	353365.1981	178744.6486	Kings Weston Lane Rhine LWS	Local	470 S
LWS4c	353247.8565	178921.2758	Kings Weston Lane Rhine LWS	Local	370 S
LWS4b	353111.3718	179120.759	Kings Weston Lane Rhine LWS	Local	250 SW
LWS4a	352930.0673	179357.9979	Kings Weston Lane Rhine LWS	Local	260 W
LWS3a	354140.516	179150.9202	Fields along M5, Hallen LWS	Local	590 E
LWS3c	354336.4069	179429.4242	Fields along M5, Hallen LWS	Local	800 E
LWS3b	354372.1946	179321.1192	Fields along M5, Hallen LWS	Local	820 E
LWS6	354416.718	178949.2527	Lawrence Weston Moor LWS	Local	930 E
LWS8	354312.334	180000.054	Moorhouse Farm and Stuppill Rhines	Local	1,100 NE
LWS9	353210.8964	180672.6485	Salt Rhine and Moorhouse Rhine LWS	Local	1,100 N
LWS10	352449.8273	180654.7592	Hallen Marsh Junction LWS	Local	1,300 NW
LWS12	351947.1499	179833.3398	St. Andrews Road Rhine LWS	Local	1,200 W
LWS7	354822.5778	179011.5906	Fields above Lawrence Weston Moor LWS	Local	1,300 E
LWS13	354712.8025	177935.4766	Thirty Acre Woodland LWS	Local	1,700 SE
LWS14	353278.5862	177397.9496	Penpole Wood and Quarry LWS	Local	1,800 S
SAC1c	351805.7628	177297.0885	Severn Estuary SAC	Local	2,500 SW
LWS11	351937.8239	180589.596	Severn Estuary LWS / SAC	Local	1,600 NW
SAC1a	353250.8994	182524.1523	Severn Estuary SAC	Local	2,900 N
SAC1b	349455.9698	177713.1194	Severn Estuary SAC	Local	4,100 W
SAC2	354805.1102	175658.3602	Avon Gorge Woodlands SAC	Local	3,800 S

Appendix C Modelled Human Receptor Results

Table C-1 Predicted Annual Mean NO_2 Concentrations

Receptor	Annual Mean NO_2 Concentration (µg/m^3)			
	PC	PC as % of EAL	PEC	PEC as % of EAL
R01	0.13	0.3%	9.8	24.6%
R02	0.15	0.4%	10.0	25.0%
R03	1.30	**3.2%**	16.3	40.7%
R04	1.21	**3.0%**	16.2	40.5%
R05	0.88	**2.2%**	13.9	34.8%
R06	0.80	**2.0%**	13.8	34.6%
R07	0.68	**1.7%**	13.7	34.3%
R08	0.57	**1.4%**	13.6	34.0%
R09	0.54	**1.4%**	13.6	33.9%
R10	0.64	**1.6%**	13.3	33.1%
R11	0.50	**1.3%**	13.1	32.8%
R12	0.45	**1.1%**	13.1	32.7%
R13	0.56	**1.4%**	13.2	32.9%
R14	0.36	0.9%	13.0	32.4%
R15	0.34	0.9%	13.0	32.4%
R16	0.31	0.8%	12.9	32.3%
R17	0.26	0.7%	12.9	32.2%
R18	0.23	0.6%	12.8	32.1%
R19	0.21	0.5%	19.2	48.0%
R20	0.19	0.5%	19.2	47.9%
R21	0.20	0.5%	12.8	32.0%
R22	0.15	0.4%	12.4	31.1%
R23	0.15	0.4%	12.4	31.1%
R24	0.16	0.4%	12.4	31.1%
R25	0.18	0.4%	12.5	31.2%
R26	0.21	0.5%	12.5	31.2%
R27	0.26	0.6%	19.3	48.2%
R28	0.22	0.5%	19.3	48.2%
R29	0.23	0.6%	12.5	31.3%

Receptor	Annual Mean NO_2 Concentration (µg/m^3)			
	PC	PC as % of EAL	PEC	PEC as % of EAL
R30	0.80	**2.0%**	19.8	49.5%
R31	0.22	0.6%	19.3	48.2%
R32	0.21	0.5%	19.3	48.1%
R33	0.21	0.5%	19.3	48.1%
R34	0.23	0.6%	19.3	48.2%
R35	0.22	0.5%	19.3	48.2%
R36	0.25	0.6%	19.3	48.2%
R37	0.29	0.7%	19.3	48.3%
R38	0.32	0.8%	14.1	35.3%
R39	0.36	0.9%	14.5	36.4%
R40	0.40	**1.0%**	14.6	36.5%
R41	0.43	**1.1%**	14.6	36.6%
R42	0.47	**1.2%**	14.7	36.7%
R43	0.54	**1.3%**	14.7	36.8%
R44	0.66	**1.7%**	14.9	37.1%
R45	0.63	**1.6%**	13.2	33.1%
R46	0.62	**1.6%**	13.2	33.1%
R47	0.61	**1.5%**	13.2	33.1%
R48	0.61	**1.5%**	13.2	33.1%
R49	0.70	**1.7%**	11.7	29.2%
R50	0.27	0.7%	9.5	23.8%
R51	0.22	0.5%	9.5	23.7%
R52	0.19	0.5%	9.7	24.2%
R53	0.18	0.4%	10.0	25.1%
R54	0.17	0.4%	10.0	25.0%
R55	0.14	0.3%	10.0	25.0%
R56	0.13	0.3%	11.3	28.3%
R57	0.13	0.3%	11.3	28.3%
R58	0.35	0.9%	14.5	36.3%

PCs >1% of the EAL are highlighted in bold.

Table C-2 Predicted 1-hour Mean NO_2 Concentrations

Receptor	99.79%ile 1-hour Mean NO_2 Concentration (µg/m^3)			
	PC	PC as % of EAL	PEC	PEC as % of EAL
R01	4.3	2.1%	23.7	11.8%
R02	4.3	2.1%	24.0	12.0%
R03	12.4	6.2%	42.3	21.2%
R04	10.6	5.3%	40.5	20.3%
R05	9.0	4.5%	35.0	17.5%
R06	8.9	4.5%	35.0	17.5%
R07	14.9	7.4%	40.9	20.5%
R08	10.5	5.3%	36.5	18.3%
R09	12.4	6.2%	38.4	19.2%
R10	10.5	5.2%	35.7	17.9%
R11	10.7	5.4%	36.0	18.0%
R12	10.3	5.1%	35.5	17.8%
R13	10.3	5.1%	35.5	17.8%
R14	9.2	4.6%	34.4	17.2%
R15	9.5	4.7%	34.7	17.4%
R16	8.7	4.3%	33.9	17.0%
R17	9.0	4.5%	34.2	17.1%
R18	8.9	4.4%	34.1	17.1%
R19	8.2	4.1%	46.1	23.1%
R20	8.9	4.5%	46.9	23.4%
R21	8.3	4.1%	33.5	16.7%
R22	6.2	3.1%	30.8	15.4%
R23	7.3	3.7%	31.9	15.9%
R24	6.9	3.5%	31.5	15.8%
R25	7.8	3.9%	32.4	16.2%
R26	8.5	4.3%	33.1	16.5%
R27	8.6	4.3%	46.7	23.4%
R28	8.2	4.1%	46.3	23.1%
R29	8.4	4.2%	33.0	16.5%
R30	34.5	**17.2%**	72.4	36.2%
R31	7.8	3.9%	45.9	23.0%

Receptor	99.79%ile 1-hour Mean NO_2 Concentration (µg/m^3)			
	PC	PC as % of EAL	PEC	PEC as % of EAL
R32	6.5	3.3%	44.6	22.3%
R33	6.0	3.0%	44.1	22.1%
R34	6.1	3.1%	44.2	22.1%
R35	5.9	2.9%	43.9	22.0%
R36	6.2	3.1%	44.3	22.2%
R37	6.3	3.1%	44.4	22.2%
R38	6.3	3.2%	33.9	16.9%
R39	6.5	3.3%	34.9	17.5%
R40	6.8	3.4%	35.2	17.6%
R41	6.8	3.4%	35.2	17.6%
R42	6.9	3.4%	35.3	17.6%
R43	7.3	3.6%	35.7	17.8%
R44	7.5	3.8%	35.9	17.9%
R45	10.9	5.5%	36.2	18.1%
R46	10.8	5.4%	36.1	18.0%
R47	10.3	5.2%	35.6	17.8%
R48	10.8	5.4%	36.1	18.0%
R49	9.8	4.9%	31.8	15.9%
R50	5.1	2.6%	23.6	11.8%
R51	4.7	2.4%	23.2	11.6%
R52	4.7	2.4%	23.7	11.8%
R53	4.8	2.4%	24.5	12.2%
R54	4.6	2.3%	24.3	12.2%
R55	4.1	2.0%	23.8	11.9%
R56	4.2	2.1%	26.6	13.3%
R57	4.3	2.1%	26.6	13.3%
R58	6.6	3.3%	34.9	17.5%

PCs >10% of the EAL are highlighted in bold.

Table C-3 Predicted 24-hour Mean SO_2 Concentrations

Receptor	99.19%ile 24-hour Mean SO_2 Concentration (µg/m^3)			
	PC	PC as % of EAL	PEC	PEC as % of EAL
R01	0.8	0.6%	2.2	1.8%
R02	0.7	0.6%	2.2	1.8%
R03	5.0	4.0%	6.5	5.2%
R04	3.6	2.9%	5.1	4.1%
R05	2.7	2.1%	4.1	3.3%
R06	2.4	1.9%	3.8	3.1%
R07	3.1	2.5%	4.6	3.7%
R08	2.0	1.6%	3.4	2.7%
R09	1.8	1.5%	3.3	2.6%
R10	2.6	2.1%	4.1	3.2%
R11	2.9	2.3%	4.3	3.5%
R12	3.1	2.4%	4.5	3.6%
R13	3.0	2.4%	4.4	3.6%
R14	2.3	1.8%	3.7	3.0%
R15	2.4	1.9%	3.8	3.1%
R16	2.0	1.6%	3.5	2.8%
R17	1.9	1.6%	3.4	2.7%
R18	1.6	1.3%	3.1	2.4%
R19	1.5	1.2%	3.0	2.4%
R20	1.8	1.5%	3.3	2.6%
R21	1.5	1.2%	3.0	2.4%
R22	1.3	1.1%	2.8	2.2%
R23	1.7	1.3%	3.1	2.5%
R24	1.5	1.2%	3.0	2.4%
R25	1.6	1.3%	3.1	2.5%
R26	2.2	1.7%	3.6	2.9%
R27	2.7	2.2%	4.2	3.4%
R28	1.7	1.4%	3.2	2.6%
R29	2.5	2.0%	3.9	3.1%
R30	5.9	4.8%	7.4	5.9%
R31	2.0	1.6%	3.5	2.8%

Receptor	99.19%ile 24-hour Mean SO_2 Concentration (µg/m^3)			
	PC	PC as % of EAL	PEC	PEC as % of EAL
R32	1.7	1.4%	3.2	2.6%
R33	1.4	1.1%	2.8	2.3%
R34	1.6	1.3%	3.1	2.5%
R35	1.3	1.1%	2.8	2.2%
R36	1.2	1.0%	2.7	2.1%
R37	1.5	1.2%	2.9	2.3%
R38	1.6	1.3%	3.0	2.4%
R39	1.6	1.3%	3.0	2.4%
R40	1.7	1.4%	3.2	2.5%
R41	1.7	1.4%	3.2	2.5%
R42	1.8	1.4%	3.3	2.6%
R43	2.2	1.7%	3.6	2.9%
R44	2.7	2.1%	4.1	3.3%
R45	3.6	2.9%	5.1	4.1%
R46	4.0	3.2%	5.4	4.3%
R47	4.1	3.2%	5.5	4.4%
R48	3.9	3.1%	5.3	4.3%
R49	3.2	2.6%	4.7	3.8%
R50	1.2	0.9%	2.6	2.1%
R51	1.0	0.8%	2.5	2.0%
R52	1.0	0.8%	2.4	1.9%
R53	0.9	0.7%	2.4	1.9%
R54	0.9	0.7%	2.3	1.9%
R55	0.7	0.5%	2.1	1.7%
R56	0.7	0.6%	2.2	1.7%
R57	0.7	0.6%	2.2	1.7%
R58	1.6	1.3%	3.0	2.4%

Table C-4 Predicted 1-Hour Mean SO_2 Concentrations

Receptor	99.73%ile 1-hour Mean SO_2 Concentration (µg/m^3)			
	PC	PC as % of EAL	PEC	PEC as % of EAL
R01	4.7	1.3%	7.2	2.1%
R02	4.6	1.3%	7.1	2.0%
R03	13.3	3.8%	15.8	4.5%
R04	11.3	3.2%	13.8	3.9%
R05	9.7	2.8%	12.2	3.5%
R06	9.7	2.8%	12.1	3.5%
R07	12.5	3.6%	15.0	4.3%
R08	9.1	2.6%	11.6	3.3%
R09	11.1	3.2%	13.6	3.9%
R10	11.9	3.4%	14.4	4.1%
R11	11.6	3.3%	14.0	4.0%
R12	11.0	3.2%	13.5	3.9%
R13	11.1	3.2%	13.5	3.9%
R14	10.1	2.9%	12.5	3.6%
R15	10.4	3.0%	12.9	3.7%
R16	9.8	2.8%	12.3	3.5%
R17	9.9	2.8%	12.4	3.5%
R18	9.0	2.6%	11.5	3.3%
R19	9.9	2.8%	12.4	3.5%
R20	9.8	2.8%	12.3	3.5%
R21	9.7	2.8%	12.2	3.5%
R22	7.3	2.1%	9.8	2.8%
R23	7.8	2.2%	10.3	3.0%
R24	7.6	2.2%	10.1	2.9%
R25	8.6	2.5%	11.1	3.2%
R26	9.3	2.7%	11.8	3.4%
R27	9.3	2.7%	11.8	3.4%
R28	8.6	2.4%	11.0	3.2%
R29	9.1	2.6%	11.6	3.3%
R30	31.0	8.9%	33.5	9.6%
R31	8.0	2.3%	10.5	3.0%

Receptor	99.73%ile 1-hour Mean SO_2 Concentration (µg/m^3)			
	PC	PC as % of EAL	PEC	PEC as % of EAL
R32	6.8	1.9%	9.3	2.6%
R33	6.3	1.8%	8.7	2.5%
R34	6.5	1.9%	9.0	2.6%
R35	6.6	1.9%	9.0	2.6%
R36	6.8	2.0%	9.3	2.7%
R37	6.5	1.9%	9.0	2.6%
R38	6.7	1.9%	9.2	2.6%
R39	7.0	2.0%	9.5	2.7%
R40	7.1	2.0%	9.6	2.7%
R41	7.2	2.0%	9.6	2.8%
R42	7.0	2.0%	9.5	2.7%
R43	7.9	2.3%	10.4	3.0%
R44	8.2	2.3%	10.7	3.0%
R45	11.7	3.3%	14.1	4.0%
R46	11.5	3.3%	14.0	4.0%
R47	10.9	3.1%	13.3	3.8%
R48	11.7	3.3%	14.2	4.0%
R49	10.6	3.0%	13.0	3.7%
R50	5.6	1.6%	8.1	2.3%
R51	5.2	1.5%	7.6	2.2%
R52	5.1	1.5%	7.6	2.2%
R53	5.3	1.5%	7.8	2.2%
R54	4.9	1.4%	7.4	2.1%
R55	4.6	1.3%	7.1	2.0%
R56	4.5	1.3%	7.0	2.0%
R57	4.7	1.4%	7.2	2.1%
R58	7.1	2.0%	9.5	2.7%

PCs >10% of the EAL are highlighted in bold.

Table C-5 Predicted 15-minute Mean SO_2 Concentrations

Receptor	99.90%ile 15-minute Mean SO_2 Concentration (µg/m^3)			
	PC	PC as % of EAL	PEC	PEC as % of EAL
R01	7.7	2.9%	11.1	4.2%
R02	7.4	2.8%	10.7	4.0%

Receptor	99.90%ile 15-minute Mean SO_2 Concentration (µg/m^3)			
	PC	PC as % of EAL	PEC	PEC as % of EAL
R03	18.8	7.1%	22.1	8.3%
R04	15.6	5.9%	18.9	7.1%
R05	13.7	5.2%	17.1	6.4%
R06	13.8	5.2%	17.1	6.4%
R07	26.3	9.9%	29.6	11.1%
R08	19.0	7.2%	22.3	8.4%
R09	20.8	7.8%	24.1	9.1%
R10	18.0	6.8%	21.3	8.0%
R11	16.4	6.2%	19.7	7.4%
R12	16.2	6.1%	19.5	7.3%
R13	16.2	6.1%	19.5	7.3%
R14	15.5	5.8%	18.8	7.1%
R15	15.9	6.0%	19.2	7.2%
R16	15.3	5.8%	18.6	7.0%
R17	15.9	6.0%	19.2	7.2%
R18	15.9	6.0%	19.3	7.2%
R19	15.2	5.7%	18.5	7.0%
R20	15.3	5.7%	18.6	7.0%
R21	15.2	5.7%	18.5	7.0%
R22	14.2	5.3%	17.5	6.6%
R23	14.1	5.3%	17.5	6.6%
R24	13.4	5.0%	16.7	6.3%
R25	14.3	5.4%	17.6	6.6%
R26	14.9	5.6%	18.3	6.9%
R27	14.5	5.5%	17.9	6.7%
R28	15.9	6.0%	19.3	7.2%
R29	14.4	5.4%	17.7	6.7%
R30	61.0	**22.9%**	64.3	24.2%
R31	12.8	4.8%	16.1	6.1%
R32	11.6	4.4%	14.9	5.6%
R33	10.5	4.0%	13.8	5.2%
R34	11.0	4.1%	14.3	5.4%

Receptor	99.90%ile 15-minute Mean SO_2 Concentration (µg/m^3)			
	PC	PC as % of EAL	PEC	PEC as % of EAL
R35	11.1	4.2%	14.4	5.4%
R36	11.2	4.2%	14.5	5.4%
R37	11.4	4.3%	14.7	5.5%
R38	11.1	4.2%	14.5	5.4%
R39	11.2	4.2%	14.5	5.5%
R40	10.9	4.1%	14.2	5.4%
R41	11.1	4.2%	14.5	5.4%
R42	11.1	4.2%	14.4	5.4%
R43	11.5	4.3%	14.9	5.6%
R44	11.9	4.5%	15.2	5.7%
R45	16.3	6.1%	19.7	7.4%
R46	16.0	6.0%	19.3	7.3%
R47	15.6	5.9%	19.0	7.1%
R48	16.6	6.2%	19.9	7.5%
R49	15.5	5.8%	18.8	7.1%
R50	8.1	3.1%	11.5	4.3%
R51	7.7	2.9%	11.0	4.2%
R52	7.9	3.0%	11.2	4.2%
R53	8.3	3.1%	11.6	4.4%
R54	7.7	2.9%	11.0	4.2%
R55	7.3	2.7%	10.6	4.0%
R56	7.0	2.6%	10.3	3.9%
R57	7.2	2.7%	10.6	4.0%
R58	11.6	4.4%	14.9	5.6%

Table C-6 Predicted 1-Hour Mean CO Concentrations

Receptor	1-hour Mean CO Concentrations (µg/m^3)			
	PC	PC as % of EAL	PEC	PEC as % of EAL
R01	45.0	0.1%	657.0	2.2%
R02	43.8	0.1%	655.8	2.2%
R03	117.4	0.4%	769.4	2.6%
R04	101.5	0.3%	753.5	2.5%
R05	96.8	0.3%	814.8	2.7%

Receptor	1-hour Mean CO Concentrations (µg/m^3)			
	PC	PC as % of EAL	PEC	PEC as % of EAL
R06	79.1	0.3%	797.1	2.7%
R07	224.3	0.7%	942.3	3.1%
R08	193.7	0.6%	911.7	3.0%
R09	215.5	0.7%	933.5	3.1%
R10	94.8	0.3%	746.8	2.5%
R11	99.1	0.3%	751.1	2.5%
R12	82.8	0.3%	734.8	2.4%
R13	93.8	0.3%	745.8	2.5%
R14	126.6	0.4%	778.6	2.6%
R15	104.9	0.3%	756.9	2.5%
R16	96.9	0.3%	748.9	2.5%
R17	104.8	0.3%	756.8	2.5%
R18	93.2	0.3%	745.2	2.5%
R19	105.9	0.4%	751.9	2.5%
R20	97.2	0.3%	743.2	2.5%
R21	85.2	0.3%	737.2	2.5%
R22	90.6	0.3%	736.6	2.5%
R23	85.5	0.3%	731.5	2.4%
R24	77.8	0.3%	723.8	2.4%
R25	80.3	0.3%	726.3	2.4%
R26	93.0	0.3%	739.0	2.5%
R27	83.6	0.3%	713.6	2.4%
R28	104.3	0.3%	734.3	2.4%
R29	111.0	0.4%	757.0	2.5%
R30	428.7	1.4%	1074.7	3.6%
R31	84.6	0.3%	714.6	2.4%
R32	67.4	0.2%	697.4	2.3%
R33	63.0	0.2%	693.0	2.3%
R34	67.1	0.2%	697.1	2.3%
R35	62.7	0.2%	692.7	2.3%
R36	63.6	0.2%	693.6	2.3%
R37	70.9	0.2%	700.9	2.3%

Receptor	1-hour Mean CO Concentrations (µg/m^3)			
	PC	PC as % of EAL	PEC	PEC as % of EAL
R38	65.8	0.2%	673.8	2.2%
R39	64.1	0.2%	672.1	2.2%
R40	64.0	0.2%	672.0	2.2%
R41	64.4	0.2%	672.4	2.2%
R42	65.3	0.2%	673.3	2.2%
R43	65.5	0.2%	673.5	2.2%
R44	69.8	0.2%	677.8	2.3%
R45	101.4	0.3%	753.4	2.5%
R46	85.4	0.3%	737.4	2.5%
R47	84.8	0.3%	736.8	2.5%
R48	93.7	0.3%	745.7	2.5%
R49	82.3	0.3%	694.3	2.3%
R50	45.0	0.2%	657.0	2.2%
R51	45.9	0.2%	657.9	2.2%
R52	40.5	0.1%	652.5	2.2%
R53	42.7	0.1%	654.7	2.2%
R54	49.7	0.2%	661.7	2.2%
R55	40.9	0.1%	652.9	2.2%
R56	43.1	0.1%	655.1	2.2%
R57	42.6	0.1%	654.6	2.2%
R58	63.2	0.2%	63.8	0.2%

Table C-7 Predicted 8-hr Average CO Concentrations

Receptor	8-hr Average CO Concentrations (µg/m^3)			
	PC	PC as % of EAL	PEC	PEC as % of EAL
R01	17.2	0.2%	445.6	4.5%
R02	17.2	0.2%	445.6	4.5%
R03	69.0	0.7%	525.4	5.3%
R04	53.2	0.5%	509.6	5.1%
R05	43.0	0.4%	545.6	5.5%
R06	39.8	0.4%	542.4	5.4%
R07	47.3	0.5%	549.9	5.5%

Receptor	8-hr Average CO Concentrations (µg/m^3)			
	PC	PC as % of EAL	PEC	PEC as % of EAL
R08	32.6	0.3%	535.2	5.4%
R09	50.3	0.5%	552.9	5.5%
R10	39.8	0.4%	496.2	5.0%
R11	40.4	0.4%	496.8	5.0%
R12	38.2	0.4%	494.6	4.9%
R13	45.6	0.5%	502.0	5.0%
R14	36.7	0.4%	493.1	4.9%
R15	38.4	0.4%	494.8	4.9%
R16	38.4	0.4%	494.8	4.9%
R17	38.3	0.4%	494.7	4.9%
R18	39.3	0.4%	495.7	5.0%
R19	39.3	0.4%	491.5	4.9%
R20	40.6	0.4%	492.8	4.9%
R21	32.5	0.3%	488.9	4.9%
R22	30.1	0.3%	482.3	4.8%
R23	31.8	0.3%	484.0	4.8%
R24	40.0	0.4%	492.2	4.9%
R25	26.5	0.3%	478.7	4.8%
R26	33.3	0.3%	485.5	4.9%
R27	54.8	0.5%	495.8	5.0%
R28	41.0	0.4%	482.0	4.8%
R29	36.4	0.4%	488.6	4.9%
R30	122.3	1.2%	574.5	5.7%
R31	37.6	0.4%	478.6	4.8%
R32	27.8	0.3%	468.8	4.7%
R33	22.6	0.2%	463.6	4.6%
R34	26.3	0.3%	467.3	4.7%
R35	26.9	0.3%	467.9	4.7%
R36	27.4	0.3%	468.4	4.7%
R37	26.5	0.3%	467.5	4.7%
R38	25.2	0.3%	450.8	4.5%
R39	26.5	0.3%	452.1	4.5%

Receptor	8-hr Average CO Concentrations (µg/m^3)			
	PC	PC as % of EAL	PEC	PEC as % of EAL
R40	27.6	0.3%	453.2	4.5%
R41	26.5	0.3%	452.1	4.5%
R42	27.6	0.3%	453.2	4.5%
R43	30.3	0.3%	455.9	4.6%
R44	35.3	0.4%	460.9	4.6%
R45	63.4	0.6%	519.8	5.2%
R46	50.5	0.5%	506.9	5.1%
R47	42.8	0.4%	499.2	5.0%
R48	66.4	0.7%	522.8	5.2%
R49	50.5	0.5%	478.9	4.8%
R50	23.3	0.2%	451.7	4.5%
R51	18.7	0.2%	447.1	4.5%
R52	20.1	0.2%	448.5	4.5%
R53	17.9	0.2%	446.3	4.5%
R54	16.2	0.2%	444.6	4.4%
R55	16.3	0.2%	444.7	4.4%
R56	15.1	0.2%	443.5	4.4%
R57	16.1	0.2%	444.5	4.4%
R58	25.8	0.3%	26.2	0.3%

Table C-8 Predicted Annual Mean NMVOC Concentrations

Receptor	Annual Mean NMVOC Concentrations (µg/m^3)			
	PC	PC as % of EAL for C_6H_6	PEC	PEC as % of EAL for C_6H_6
R01	0.0	0.5%	0.3	6.7%
R02	0.0	0.6%	0.3	6.8%
R03	0.3	**5.3%**	0.6	12.3%
R04	0.2	**4.9%**	0.6	12.0%
R05	0.2	**3.6%**	0.6	12.0%
R06	0.2	**3.3%**	0.6	11.7%
R07	0.1	**2.8%**	0.6	11.2%
R08	0.1	**2.4%**	0.5	10.8%
R09	0.1	**2.2%**	0.5	10.6%

Receptor	Annual Mean NMVOC Concentrations (µg/m^3)			
	PC	PC as % of EAL for C_6H_6	PEC	PEC as % of EAL for C_6H_6
R10	0.1	**2.6%**	0.5	9.6%
R11	0.1	**2.0%**	0.5	9.1%
R12	0.1	**1.8%**	0.4	8.8%
R13	0.1	**2.3%**	0.5	9.3%
R14	0.1	**1.4%**	0.4	8.5%
R15	0.1	**1.4%**	0.4	8.4%
R16	0.1	**1.3%**	0.4	8.3%
R17	0.1	**1.0%**	0.4	8.1%
R18	0.0	0.9%	0.4	8.0%
R19	0.0	0.8%	0.4	8.9%
R20	0.0	0.8%	0.4	8.8%
R21	0.0	0.8%	0.4	7.8%
R22	0.0	0.6%	0.4	8.6%
R23	0.0	0.6%	0.4	8.6%
R24	0.0	0.6%	0.4	8.7%
R25	0.0	0.7%	0.4	8.7%
R26	0.0	0.9%	0.4	8.9%
R27	0.1	**1.0%**	0.4	8.7%
R28	0.0	0.9%	0.4	8.6%
R29	0.0	1.0%	0.4	9.0%
R30	0.2	**3.3%**	0.6	11.3%
R31	0.0	0.9%	0.4	8.6%
R32	0.0	0.9%	0.4	8.5%
R33	0.0	0.9%	0.4	8.6%
R34	0.0	0.9%	0.4	8.6%
R35	0.0	0.9%	0.4	8.6%
R36	0.1	**1.0%**	0.4	8.7%
R37	0.1	**1.2%**	0.4	8.9%
R38	0.1	**1.3%**	0.4	8.6%
R39	0.1	**1.5%**	0.4	8.8%
R40	0.1	**1.7%**	0.4	9.0%
R41	0.1	**1.8%**	0.5	9.1%

Receptor	Annual Mean NMVOC Concentrations (µg/m^3)			
	PC	PC as % of EAL for C_6H_6	PEC	PEC as % of EAL for C_6H_6
R42	0.1	**1.9%**	0.5	9.2%
R43	0.1	**2.2%**	0.5	9.5%
R44	0.1	**2.7%**	0.5	10.0%
R45	0.1	**2.6%**	0.5	9.6%
R46	0.1	**2.5%**	0.5	9.6%
R47	0.1	**2.5%**	0.5	9.5%
R48	0.1	**2.5%**	0.5	9.5%
R49	0.1	**2.8%**	0.5	9.0%
R50	0.1	**1.1%**	0.4	7.3%
R51	0.0	0.9%	0.4	7.1%
R52	0.0	0.8%	0.3	7.0%
R53	0.0	0.7%	0.3	6.9%
R54	0.0	0.7%	0.3	6.9%
R55	0.0	0.6%	0.3	6.8%
R56	0.0	0.5%	0.3	6.7%
R57	0.0	0.5%	0.3	6.7%
R58	0.1	**1.4%**	0.4	8.7%

Table C-9 Predicted 24-hour Mean NMVOC Concentrations

Receptor	24-hour Mean NMVOC Concentrations (µg/m^3)			
	PC	PC as % of EAL for C_6H_6	PEC	PEC as % of EAL for C_6H_6
R01	0.4	1.3%	0.8	2.6%
R02	0.4	1.3%	0.8	2.6%
R03	2.5	8.5%	3.0	9.9%
R04	2.1	7.1%	2.5	8.5%
R05	1.5	5.1%	2.0	6.8%
R06	1.5	5.2%	2.0	6.8%
R07	1.4	4.7%	1.9	6.4%
R08	0.9	3.2%	1.4	4.8%
R09	0.9	3.1%	1.4	4.8%
R10	1.4	4.7%	1.8	6.1%
R11	1.6	5.2%	2.0	6.6%

Receptor	24-hour Mean NMVOC Concentrations (µg/m^3)			
	PC	PC as % of EAL for C_6H_6	PEC	PEC as % of EAL for C_6H_6
R12	1.2	4.2%	1.7	5.5%
R13	1.6	5.3%	2.0	6.7%
R14	1.4	4.8%	1.8	6.2%
R15	1.2	3.9%	1.6	5.3%
R16	1.2	4.0%	1.6	5.4%
R17	1.4	4.7%	1.8	6.1%
R18	1.3	4.4%	1.7	5.8%
R19	1.0	3.3%	1.5	4.9%
R20	1.1	3.7%	1.6	5.3%
R21	0.9	2.9%	1.3	4.3%
R22	0.8	2.7%	1.3	4.3%
R23	0.8	2.8%	1.3	4.4%
R24	1.0	3.2%	1.4	4.8%
R25	0.8	2.6%	1.3	4.2%
R26	1.2	4.2%	1.7	5.7%
R27	1.8	5.9%	2.2	7.4%
R28	1.2	3.8%	1.6	5.4%
R29	1.3	4.2%	1.7	5.8%
R30	3.1	10.3%	3.6	11.9%
R31	0.9	3.1%	1.4	4.6%
R32	0.8	2.5%	1.2	4.0%
R33	0.6	2.1%	1.1	3.6%
R34	0.7	2.3%	1.2	3.8%
R35	0.7	2.2%	1.1	3.7%
R36	0.7	2.4%	1.2	3.9%
R37	0.8	2.5%	1.2	4.1%
R38	0.7	2.5%	1.2	3.9%
R39	0.9	3.0%	1.3	4.5%
R40	1.0	3.2%	1.4	4.7%
R41	1.0	3.3%	1.4	4.7%
R42	1.0	3.2%	1.4	4.7%
R43	1.2	3.8%	1.6	5.3%

Receptor	24-hour Mean NMVOC Concentrations (µg/m^3)			
	PC	PC as % of EAL for C_6H_6	PEC	PEC as % of EAL for C_6H_6
R44	1.4	4.5%	1.8	6.0%
R45	1.9	6.2%	2.3	7.6%
R46	1.8	6.0%	2.2	7.4%
R47	1.7	5.6%	2.1	7.0%
R48	1.5	5.2%	2.0	6.6%
R49	1.6	5.4%	2.0	6.6%
R50	0.6	2.0%	1.0	3.2%
R51	0.5	1.7%	0.9	2.9%
R52	0.6	1.9%	0.9	3.1%
R53	0.5	1.7%	0.9	3.0%
R54	0.4	1.5%	0.8	2.7%
R55	0.4	1.2%	0.7	2.4%
R56	0.4	1.2%	0.7	2.4%
R57	0.4	1.2%	0.7	2.4%
R58	0.9	3.1%	1.4	4.5%

Table C-10 Predicted Annual Mean PM_{10} Concentrations

Receptor	Annual Mean PM_{10} Concentration (µg/m^3)			
	PC	PC as % of EAL	PEC	PEC as % of EAL
R01	0.0	0.0%	13.1	32.7%
R02	0.0	0.0%	12.4	30.9%
R03	0.2	0.4%	14.4	35.9%
R04	0.2	0.4%	14.3	35.9%
R05	0.1	0.3%	14.2	35.5%
R06	0.1	0.3%	14.2	35.5%
R07	0.1	0.2%	14.2	35.5%
R08	0.1	0.2%	14.2	35.4%
R09	0.1	0.2%	14.2	35.4%
R10	0.1	0.2%	13.4	33.6%
R11	0.1	0.2%	13.4	33.5%
R12	0.1	0.1%	13.4	33.5%
R13	0.1	0.2%	13.4	33.5%

Receptor	Annual Mean PM_{10} Concentration ($\mu g/m^3$)			
	PC	PC as % of EAL	PEC	PEC as % of EAL
R14	0.0	0.1%	13.4	33.4%
R15	0.0	0.1%	13.4	33.4%
R16	0.0	0.1%	13.4	33.4%
R17	0.0	0.1%	13.4	33.4%
R18	0.0	0.1%	13.4	33.4%
R19	0.0	0.1%	14.5	35.3%
R20	0.0	0.1%	14.5	34.5%
R21	0.0	0.1%	13.4	31.1%
R22	0.0	0.0%	13.3	30.3%
R23	0.0	0.0%	13.3	29.6%
R24	0.0	0.0%	13.3	29.0%
R25	0.0	0.0%	13.3	28.4%
R26	0.0	0.1%	13.3	27.8%
R27	0.0	0.1%	15.1	30.9%
R28	0.0	0.1%	15.1	30.2%
R29	0.0	0.1%	13.3	26.1%
R30	0.1	0.2%	14.6	28.0%
R31	0.0	0.1%	15.1	28.5%
R32	0.0	0.1%	15.1	28.0%
R33	0.0	0.1%	15.1	27.5%
R34	0.0	0.1%	15.1	27.0%
R35	0.0	0.1%	15.1	26.5%
R36	0.0	0.1%	15.1	26.1%
R37	0.0	0.1%	15.1	25.6%
R38	0.0	0.1%	12.7	21.1%
R39	0.0	0.1%	13.7	22.5%
R40	0.1	0.1%	13.7	22.1%
R41	0.1	0.1%	13.7	21.8%
R42	0.1	0.1%	13.7	21.4%
R43	0.1	0.1%	13.7	21.1%
R44	0.1	0.1%	13.7	20.8%
R45	0.1	0.1%	13.4	20.0%

Receptor	Annual Mean PM_{10} Concentration ($\mu g/m^3$)			
	PC	PC as % of EAL	PEC	PEC as % of EAL
R46	0.1	0.1%	13.4	19.7%
R47	0.1	0.1%	13.4	19.4%
R48	0.1	0.1%	13.4	19.2%
R49	0.1	0.1%	12.8	18.1%
R50	0.0	0.0%	12.0	16.7%
R51	0.0	0.0%	12.0	16.4%
R52	0.0	0.0%	12.4	16.7%
R53	0.0	0.0%	12.4	16.5%
R54	0.0	0.0%	12.4	16.3%
R55	0.0	0.0%	12.4	16.1%
R56	0.0	0.0%	14.1	18.0%
R57	0.0	0.0%	14.1	17.8%
R58	0.0	0.1%	13.7	17.1%

Table C-11 Predicted 24-hour Mean PM_{10} Concentrations

Receptor	90.41%ile 24-Hour Mean PM_{10} Concentration (µg/m^3)			
	PC	PC as % of EAL	PEC	PEC as % of EAL
R01	0.1	0.1%	26.2	52.3%
R02	0.1	0.1%	26.2	52.3%
R03	0.5	1.0%	26.6	53.2%
R04	0.5	1.0%	26.6	53.2%
R05	0.4	0.7%	26.5	52.9%
R06	0.3	0.7%	26.4	52.9%
R07	0.3	0.5%	26.4	52.7%
R08	0.2	0.5%	26.3	52.7%
R09	0.2	0.4%	26.3	52.6%
R10	0.3	0.5%	26.4	52.7%
R11	0.2	0.4%	26.3	52.6%
R12	0.2	0.4%	26.3	52.6%
R13	0.2	0.4%	26.3	52.6%
R14	0.1	0.3%	26.2	52.5%
R15	0.1	0.3%	26.2	52.5%
R16	0.1	0.2%	26.2	52.4%
R17	0.1	0.2%	26.2	52.4%
R18	0.1	0.2%	26.2	52.4%
R19	0.1	0.1%	26.2	51.3%
R20	0.1	0.1%	26.2	50.3%
R21	0.1	0.1%	26.2	49.4%
R22	0.1	0.1%	26.2	48.4%
R23	0.0	0.1%	26.1	47.5%
R24	0.1	0.1%	26.2	46.7%
R25	0.1	0.1%	26.2	45.9%
R26	0.1	0.1%	26.2	45.1%
R27	0.1	0.1%	26.2	44.4%
R28	0.1	0.1%	26.2	43.6%
R29	0.1	0.1%	26.2	42.9%
R30	0.4	0.6%	26.5	42.7%
R31	0.1	0.2%	26.2	41.6%

Receptor	90.41%ile 24-Hour Mean PM_{10} Concentration (µg/m^3)			
	PC	PC as % of EAL	PEC	PEC as % of EAL
R32	0.1	0.2%	26.2	40.9%
R33	0.1	0.1%	26.2	40.3%
R34	0.1	0.2%	26.2	39.7%
R35	0.1	0.2%	26.2	39.1%
R36	0.1	0.2%	26.2	38.6%
R37	0.1	0.2%	26.2	38.0%
R38	0.2	0.2%	26.3	37.5%
R39	0.2	0.3%	26.3	37.0%
R40	0.2	0.3%	26.3	36.6%
R41	0.2	0.3%	26.3	36.1%
R42	0.3	0.4%	26.4	35.6%
R43	0.3	0.4%	26.4	35.2%
R44	0.3	0.5%	26.4	34.8%
R45	0.2	0.3%	26.3	34.2%
R46	0.2	0.3%	26.3	33.8%
R47	0.2	0.3%	26.3	33.3%
R48	0.2	0.3%	26.3	32.9%
R49	0.3	0.3%	26.4	32.6%
R50	0.1	0.1%	26.2	32.0%
R51	0.1	0.1%	26.2	31.6%
R52	0.1	0.1%	26.2	31.2%
R53	0.1	0.1%	26.2	30.8%
R54	0.1	0.1%	26.2	30.4%
R55	0.1	0.1%	26.2	30.1%
R56	0.1	0.1%	26.2	29.7%
R57	0.1	0.1%	26.2	29.4%
R58	0.2	0.2%	26.3	29.2%

Table C-12 Predicted Annual Mean $PM_{2.5}$ Concentrations

Receptor	Annual Mean $PM_{2.5}$ Concentration (µg/m^3)			
	PC	PC as % of EAL	PEC	PEC as % of EAL
R01	0.0	0.1%	8.3	41.5%
R02	0.0	0.1%	7.9	39.4%
R03	0.2	0.9%	9.0	44.9%
R04	0.2	0.8%	9.0	44.8%
R05	0.1	0.6%	9.0	44.9%
R06	0.1	0.5%	9.0	44.8%
R07	0.1	0.5%	9.0	44.8%
R08	0.1	0.4%	8.9	44.7%
R09	0.1	0.4%	8.9	44.7%
R10	0.1	0.4%	8.7	43.4%
R11	0.1	0.3%	8.7	43.3%
R12	0.1	0.3%	8.6	43.2%
R13	0.1	0.3%	8.7	43.3%
R14	0.0	0.2%	8.6	43.2%
R15	0.0	0.2%	8.6	43.2%
R16	0.0	0.2%	8.6	43.2%
R17	0.0	0.2%	8.6	43.1%
R18	0.0	0.1%	8.6	43.1%
R19	0.0	0.1%	9.0	43.0%
R20	0.0	0.1%	9.0	41.0%
R21	0.0	0.1%	8.6	37.5%
R22	0.0	0.1%	8.6	35.8%
R23	0.0	0.1%	8.6	34.3%
R24	0.0	0.1%	8.6	33.0%
R25	0.0	0.1%	8.6	31.8%
R26	0.0	0.1%	8.6	30.7%
R27	0.0	0.1%	9.6	33.0%
R28	0.0	0.1%	9.6	31.8%
R29	0.0	0.1%	8.6	27.7%
R30	0.1	0.3%	9.1	28.5%
R31	0.0	0.1%	9.6	29.0%

Receptor	Annual Mean $PM_{2.5}$ Concentration (µg/m^3)			
	PC	PC as % of EAL	PEC	PEC as % of EAL
R32	0.0	0.1%	9.6	28.1%
R33	0.0	0.1%	9.6	27.3%
R34	0.0	0.1%	9.6	26.5%
R35	0.0	0.1%	9.6	25.8%
R36	0.0	0.1%	9.6	25.2%
R37	0.0	0.1%	9.6	24.5%
R38	0.0	0.1%	8.0	20.1%
R39	0.0	0.1%	8.4	20.5%
R40	0.1	0.1%	8.4	20.0%
R41	0.1	0.1%	8.4	19.6%
R42	0.1	0.1%	8.4	19.1%
R43	0.1	0.2%	8.4	18.7%
R44	0.1	0.2%	8.4	18.4%
R45	0.1	0.2%	8.7	18.5%
R46	0.1	0.2%	8.7	18.1%
R47	0.1	0.2%	8.7	17.7%
R48	0.1	0.2%	8.7	17.3%
R49	0.1	0.2%	8.1	16.0%
R50	0.0	0.1%	7.7	14.8%
R51	0.0	0.1%	7.7	14.5%
R52	0.0	0.0%	7.8	14.4%
R53	0.0	0.0%	7.9	14.3%
R54	0.0	0.0%	7.9	14.1%
R55	0.0	0.0%	7.9	13.8%
R56	0.0	0.0%	8.7	15.0%
R57	0.0	0.0%	8.7	14.8%
R58	0.0	0.1%	8.4	14.0%

Appendix D Modelled Ecological Receptor Results

Table D-1 Predicted Annual Mean NO_x Concentrations

Receptor	Designated Site	Annual Mean NOx Concentration (µg/m³)			
		PC	PC as % of C_{Le}	PEC	PEC as % of C_{Le}
LWS1a	Avonmouth Sewage Works and Hoar Gout LWS	2.99	10.0%	19.7	65.8%
LWS1b	Avonmouth Sewage Works and Hoar Gout LWS	6.32	21.1%	23.1	76.9%
LWS1c	Avonmouth Sewage Works and Hoar Gout LWS	3.93	13.1%	20.7	68.9%
LWS1d	Avonmouth Sewage Works and Hoar Gout LWS	2.37	7.9%	19.1	63.7%
LWS2c	Lawrence Weston Road Rhines LWS	5.87	19.6%	22.6	75.4%
LWS2b	Lawrence Weston Road Rhines LWS	3.61	12.0%	20.3	67.8%
LWS2a	Lawrence Weston Road Rhines LWS	2.75	9.2%	19.5	65.0%
LWS2d	Lawrence Weston Road Rhines LWS	3.53	11.8%	20.3	67.6%
LWS2e	Lawrence Weston Road Rhines LWS	6.64	22.1%	23.4	77.9%
LWS2f	Lawrence Weston Road Rhines LWS	3.90	13.0%	20.6	68.8%
LWS2g	Lawrence Weston Road Rhines LWS	2.00	6.7%	18.7	62.5%
LWS5d	Long Cross Tip LWS	1.11	3.7%	18.1	60.3%
LWS5c	Long Cross Tip LWS	0.81	2.7%	17.8	59.3%
LWS5b	Long Cross Tip LWS	0.64	2.1%	17.6	58.7%
LWS5a	Long Cross Tip LWS	0.37	1.2%	17.3	57.8%
LWS4d	Kings Weston Lane Rhine LWS	1.32	4.4%	25.5	85.1%
LWS4c	Kings Weston Lane Rhine LWS	2.65	8.8%	26.9	89.6%
LWS4b	Kings Weston Lane Rhine LWS	4.37	14.6%	21.1	70.4%
LWS4a	Kings Weston Lane Rhine LWS	4.33	14.4%	19.5	65.1%
LWS3a	Fields along M5, Hallen LWS	1.58	5.3%	21.1	70.3%
LWS3c	Fields along M5, Hallen LWS	2.54	8.5%	22.0	73.5%
LWS3b	Fields along M5, Hallen LWS	2.23	7.4%	21.7	72.5%
LWS6	Lawrence Weston Moor LWS	1.04	3.5%	18.0	60.0%
LWS8	Moorhouse Farm and Stuppill Rhines	1.12	3.7%	14.7	49.0%
LWS9	Salt Rhine and Moorhouse Rhine LWS	0.39	1.3%	14.2	47.3%
LWS10	Hallen Marsh Junction LWS	0.35	1.2%	17.9	59.6%
LWS12	St. Andrews Road Rhine LWS	0.31	1.0%	16.8	56.0%

Receptor	Designated Site	Annual Mean NOx Concentration (µg/m^3)			
		PC	PC as % of C_{Le}	PEC	PEC as % of C_{Le}
LWS7	Fields above Lawrence Weston Moor LWS	0.96	3.2%	20.1	66.9%
LWS13	Thirty Acre Woodland LWS	0.22	0.7%	14.9	49.8%
LWS14	Penpole Wood and Quarry LWS	0.30	1.0%	16.7	55.8%
SAC1c	Severn Estuary SAC	0.21	0.7%	19.5	65.1%
LWS11	Severn Estuary SAC / LWS	0.28	0.9%	12.3	40.9%
SAC1a	Severn Estuary SAC	0.20	0.7%	12.7	42.4%
SAC1b	Severn Estuary SAC	0.38	1.3%	16.0	53.4%
SAC2	Avon Gorge Woodlands SAC	0.10	0.4%	12.2	40.8%

PCs >1% (or 100% for LWS's) and PECs >100% of the EAL are highlighted in bold.

Table D-2 Predicted 24-hour Mean NOx Concentrations

Receptor	Designated Site	24-hour Mean NOx Concentration (µg/m^3)			
		PC	PC as % of C_{Le}	PEC	PEC as % of C_{Le}
LWS1a	Avonmouth Sewage Works and Hoar Gout LWS	43.8	58.5%	77.3	**103.1%**
LWS1b	Avonmouth Sewage Works and Hoar Gout LWS	128.5	**171.3%**	162.0	**215.9%**
LWS1c	Avonmouth Sewage Works and Hoar Gout LWS	47.0	62.6%	80.5	**107.3%**
LWS1d	Avonmouth Sewage Works and Hoar Gout LWS	37.9	50.5%	71.3	95.1%
LWS2c	Lawrence Weston Road Rhines LWS	62.8	83.7%	96.3	**128.3%**
LWS2b	Lawrence Weston Road Rhines LWS	48.3	64.4%	81.8	**109.1%**
LWS2a	Lawrence Weston Road Rhines LWS	47.2	62.9%	80.7	**107.5%**
LWS2d	Lawrence Weston Road Rhines LWS	44.6	59.4%	78.1	**104.1%**
LWS2e	Lawrence Weston Road Rhines LWS	43.5	58.0%	77.0	**102.6%**
LWS2f	Lawrence Weston Road Rhines LWS	28.9	38.6%	62.4	83.2%
LWS2g	Lawrence Weston Road Rhines LWS	19.9	26.5%	53.3	71.1%
LWS5d	Long Cross Tip LWS	15.0	19.9%	48.9	65.2%
LWS5c	Long Cross Tip LWS	13.1	17.5%	47.0	62.7%
LWS5b	Long Cross Tip LWS	14.0	18.7%	48.0	64.0%
LWS5a	Long Cross Tip LWS	9.9	13.2%	43.8	58.4%
LWS4d	Kings Weston Lane Rhine LWS	28.0	37.3%	76.4	**101.9%**
LWS4c	Kings Weston Lane Rhine LWS	54.9	73.2%	103.3	**137.7%**

Receptor	Designated Site	24-hour Mean NOx Concentration (µg/m³)			
		PC	PC as % of C_{Le}	PEC	PEC as % of C_{Le}
LWS4b	Kings Weston Lane Rhine LWS	46.3	61.8%	79.8	**106.4%**
LWS4a	Kings Weston Lane Rhine LWS	67.1	89.5%	97.5	**130.0%**
LWS3a	Fields along M5, Hallen LWS	18.5	24.7%	57.5	76.7%
LWS3c	Fields along M5, Hallen LWS	19.3	25.8%	58.3	77.8%
LWS3b	Fields along M5, Hallen LWS	16.5	22.0%	55.5	74.0%
LWS6	Lawrence Weston Moor LWS	15.0	20.1%	49.0	65.3%
LWS8	Moorhouse Farm and Stuppill Rhines	14.0	18.7%	41.1	54.9%
LWS9	Salt Rhine and Moorhouse Rhine LWS	11.7	15.6%	39.3	52.4%
LWS10	Hallen Marsh Junction LWS	9.5	12.6%	44.5	59.4%
LWS12	St. Andrews Road Rhine LWS	5.4	7.2%	38.4	51.2%
LWS7	Fields above Lawrence Weston Moor LWS	10.0	13.3%	48.2	64.2%
LWS13	Thirty Acre Woodland LWS	5.7	7.6%	35.1	46.8%
LWS14	Penpole Wood and Quarry LWS	6.4	8.5%	39.3	52.3%
SAC1c	Severn Estuary SAC	3.4	4.5%	42.0	56.0%
LWS11	Severn Estuary SAC / LWS	7.3	9.7%	31.2	41.6%
SAC1a	Severn Estuary SAC	4.6	6.1%	29.6	39.5%
SAC1b	Severn Estuary SAC	4.1	5.5%	35.4	47.2%
SAC2	Avon Gorge Woodlands SAC	3.1	4.2%	27.4	36.5%

PCs >1% (or 100% for LWS's) and PECs >100% of the EAL are highlighted in bold.

Table D-3 Predicted Annual Mean SO_2 Concentrations

Receptor	Designated Site	Annual Mean SO_2 Concentration (µg/m³)			
		PC	PC as % of C_{Le}	PEC	PEC as % of C_{Le}
LWS1a	Avonmouth Sewage Works and Hoar Gout LWS	1.208	6.0%	2.4	12.2%
LWS1b	Avonmouth Sewage Works and Hoar Gout LWS	2.335	11.7%	3.6	17.9%
LWS1c	Avonmouth Sewage Works and Hoar Gout LWS	1.591	8.0%	2.8	14.2%
LWS1d	Avonmouth Sewage Works and Hoar Gout LWS	1.061	5.3%	2.3	11.5%
LWS2c	Lawrence Weston Road Rhines LWS	2.657	13.3%	3.9	19.5%
LWS2b	Lawrence Weston Road Rhines LWS	1.611	8.1%	2.9	14.3%
LWS2a	Lawrence Weston Road Rhines LWS	1.193	6.0%	2.4	12.2%

Receptor	Designated Site	Annual Mean SO_2 Concentration (µg/m^3)			
		PC	PC as % of C_{Le}	PEC	PEC as % of C_{Le}
LWS2d	Lawrence Weston Road Rhines LWS	1.520	7.6%	2.8	13.8%
LWS2e	Lawrence Weston Road Rhines LWS	2.742	13.7%	4.0	19.9%
LWS2f	Lawrence Weston Road Rhines LWS	1.539	7.7%	2.8	13.9%
LWS2g	Lawrence Weston Road Rhines LWS	0.802	4.0%	2.0	10.2%
LWS5d	Long Cross Tip LWS	0.472	2.4%	1.8	9.1%
LWS5c	Long Cross Tip LWS	0.360	1.8%	1.7	8.5%
LWS5b	Long Cross Tip LWS	0.265	1.3%	1.6	8.0%
LWS5a	Long Cross Tip LWS	0.149	0.7%	1.5	7.4%
LWS4d	Kings Weston Lane Rhine LWS	0.498	2.5%	1.9	9.3%
LWS4c	Kings Weston Lane Rhine LWS	1.004	5.0%	2.4	11.8%
LWS4b	Kings Weston Lane Rhine LWS	1.747	8.7%	3.0	14.9%
LWS4a	Kings Weston Lane Rhine LWS	1.686	8.4%	2.9	14.5%
LWS3a	Fields along M5, Hallen LWS	0.645	3.2%	1.8	9.1%
LWS3c	Fields along M5, Hallen LWS	0.979	4.9%	2.1	10.7%
LWS3b	Fields along M5, Hallen LWS	0.845	4.2%	2.0	10.1%
LWS6	Lawrence Weston Moor LWS	0.423	2.1%	1.8	8.8%
LWS8	Moorhouse Farm and Stuppill Rhines	0.461	2.3%	1.7	8.3%
LWS9	Salt Rhine and Moorhouse Rhine LWS	0.175	0.9%	1.4	7.0%
LWS10	Hallen Marsh Junction LWS	0.156	0.8%	1.8	8.8%
LWS12	St. Andrews Road Rhine LWS	0.118	0.6%	1.5	7.3%
LWS7	Fields above Lawrence Weston Moor LWS	0.377	1.9%	1.5	7.7%
LWS13	Thirty Acre Woodland LWS	0.084	0.4%	1.4	7.1%
LWS14	Penpole Wood and Quarry LWS	0.123	0.6%	1.5	7.5%
SAC1c	Severn Estuary SAC	0.079	0.4%	1.5	7.6%
LWS11	Severn Estuary SAC / LWS	0.125	0.6%	1.2	5.9%
SAC1a	Severn Estuary SAC	0.092	0.5%	1.2	5.8%
SAC1b	Severn Estuary SAC	0.139	0.7%	1.6	8.1%
SAC2	Avon Gorge Woodlands SAC	0.042	0.2%	1.2	6.0%

Table D-4 Predicted Annual Nitrogen Deposition Rates

Receptor	Designated Site	Annual Nitrogen Deposition (kgN/ha/yr)			
		PC	PC as % of C_{Lo}	PEC	PEC as % of C_{Lo}
LWS1a	Avonmouth Sewage Works and Hoar Gout LWS	0.60	6.0%	23.4	**233.5%**
LWS1b	Avonmouth Sewage Works and Hoar Gout LWS	1.27	12.7%	24.0	**240.2%**
LWS1c	Avonmouth Sewage Works and Hoar Gout LWS	0.79	7.9%	23.5	**235.4%**
LWS1d	Avonmouth Sewage Works and Hoar Gout LWS	0.48	4.8%	23.2	**232.3%**
LWS2c	Lawrence Weston Road Rhines LWS	0.59	5.9%	13.8	**138.0%**
LWS2b	Lawrence Weston Road Rhines LWS	0.36	3.6%	13.6	**135.7%**
LWS2a	Lawrence Weston Road Rhines LWS	0.28	2.8%	13.5	**134.9%**
LWS2d	Lawrence Weston Road Rhines LWS	0.36	3.6%	13.6	**135.7%**
LWS2e	Lawrence Weston Road Rhines LWS	0.67	6.7%	13.9	**138.8%**
LWS2f	Lawrence Weston Road Rhines LWS	0.39	3.9%	13.6	**136.0%**
LWS2g	Lawrence Weston Road Rhines LWS	0.20	2.0%	13.4	**134.1%**
LWS5d	Long Cross Tip LWS	0.11	1.1%	13.8	**137.8%**
LWS5c	Long Cross Tip LWS	0.08	0.8%	13.8	**137.5%**
LWS5b	Long Cross Tip LWS	0.06	0.6%	13.7	**137.3%**
LWS5a	Long Cross Tip LWS	0.04	0.4%	13.7	**137.1%**
LWS4d	Kings Weston Lane Rhine LWS	0.13	1.3%	13.3	**133.3%**
LWS4c	Kings Weston Lane Rhine LWS	0.27	2.7%	13.5	**134.7%**
LWS4b	Kings Weston Lane Rhine LWS	0.44	4.4%	13.7	**136.5%**
LWS4a	Kings Weston Lane Rhine LWS	0.44	4.4%	13.2	**132.4%**
LWS3a	Fields along M5, Hallen LWS	0.16	1.6%	13.8	**137.9%**
LWS3c	Fields along M5, Hallen LWS	0.26	2.6%	13.9	**138.9%**
LWS3b	Fields along M5, Hallen LWS	0.22	2.2%	13.9	**138.5%**
LWS6	Lawrence Weston Moor LWS	0.11	1.1%	13.8	**137.8%**
LWS8	Moorhouse Farm and Stuppill Rhines	0.11	1.1%	13.7	**136.9%**
LWS9	Salt Rhine and Moorhouse Rhine LWS	0.04	0.4%	13.3	**132.7%**
LWS10	Hallen Marsh Junction LWS	0.04	0.4%	12.9	**129.1%**
LWS12	St. Andrews Road Rhine LWS	0.03	0.3%	12.8	**127.9%**

Receptor	Designated Site	Annual Nitrogen Deposition (kgN/ha/yr)			
		PC	PC as % of C_{Lo}	PEC	PEC as % of C_{Lo}
LWS7	Fields above Lawrence Weston Moor LWS	0.10	1.0%	13.7	**137.3%**
LWS13	Thirty Acre Woodland LWS	0.04	0.4%	23.6	**236.3%**
LWS14	Penpole Wood and Quarry LWS	0.06	0.6%	22.9	**228.6%**
SAC1c	Severn Estuary SAC	0.02	0.1%	13.3	**132.7%**
LWS11	Severn Estuary SAC / LWS	0.03	0.1%	13.3	**132.8%**
SAC1a	Severn Estuary SAC	0.02	0.1%	13.3	**132.7%**
SAC1b	Severn Estuary SAC	0.04	0.2%	13.3	**132.9%**
SAC2	Avon Gorge Woodlands SAC	0.02	0.2%	24.2	**242.2%**

PCs >1% (or 100% for LWS's) and PECs >100% of the EAL are highlighted in bold.

Table D-5 Predicted Annual Acid Deposition Rates

Receptor	Designated Site	Annual Acid Deposition (keq/ha/yr)			
		PC	PC as % of C_{Lo}	PEC	PEC as % of C_{Lo}
LWS1a	Avonmouth Sewage Works and Hoar Gout LWS	0.33	2.9%	2.1	18.9%
LWS1b	Avonmouth Sewage Works and Hoar Gout LWS	0.64	5.7%	2.4	21.7%
LWS1c	Avonmouth Sewage Works and Hoar Gout LWS	0.43	3.9%	2.2	19.9%
LWS1d	Avonmouth Sewage Works and Hoar Gout LWS	0.29	2.5%	2.1	18.5%
LWS2c	Lawrence Weston Road Rhines LWS	0.36	8.9%	1.4	35.9%
LWS2b	Lawrence Weston Road Rhines LWS	0.22	5.4%	1.3	32.4%
LWS2a	Lawrence Weston Road Rhines LWS	0.16	4.0%	1.2	31.0%
LWS2d	Lawrence Weston Road Rhines LWS	0.21	5.1%	1.3	32.1%
LWS2e	Lawrence Weston Road Rhines LWS	0.37	9.3%	1.5	36.3%
LWS2f	Lawrence Weston Road Rhines LWS	0.21	5.3%	1.3	32.3%
LWS2g	Lawrence Weston Road Rhines LWS	0.11	2.7%	1.2	29.7%
LWS5d	Long Cross Tip LWS	0.06	1.6%	1.2	29.8%
LWS5c	Long Cross Tip LWS	0.05	1.2%	1.2	29.5%
LWS5b	Long Cross Tip LWS	0.04	0.9%	1.2	29.1%
LWS5a	Long Cross Tip LWS	0.02	0.5%	1.2	28.8%
LWS4d	Kings Weston Lane Rhine LWS	0.07	1.7%	1.1	28.7%

Receptor	Designated Site	Annual Acid Deposition (keq/ha/yr)			
		PC	PC as % of C_{Lo}	PEC	PEC as % of C_{Lo}
LWS4c	Kings Weston Lane Rhine LWS	0.14	3.4%	1.2	30.4%
LWS4b	Kings Weston Lane Rhine LWS	0.24	6.0%	1.3	33.0%
LWS4a	Kings Weston Lane Rhine LWS	0.23	5.8%	1.3	31.8%
LWS3a	Fields along M5, Hallen LWS	0.09	2.2%	1.2	30.2%
LWS3c	Fields along M5, Hallen LWS	0.13	3.4%	1.3	31.4%
LWS3b	Fields along M5, Hallen LWS	0.12	2.9%	1.2	30.9%
LWS6	Lawrence Weston Moor LWS	0.06	1.4%	1.2	29.7%
LWS8	Moorhouse Farm and Stuppill Rhines	0.06	1.6%	1.2	29.6%
LWS9	Salt Rhine and Moorhouse Rhine LWS	0.02	0.6%	1.1	27.6%
LWS10	Hallen Marsh Junction LWS	0.02	0.5%	1.1	26.8%
LWS12	St. Andrews Road Rhine LWS	0.02	0.4%	1.1	26.4%
LWS7	Fields above Lawrence Weston Moor LWS	0.05	1.3%	1.2	29.3%
LWS13	Thirty Acre Woodland LWS	0.02	0.2%	1.9	17.1%
LWS14	Penpole Wood and Quarry LWS	0.03	0.3%	1.8	16.6%
SAC1c	Severn Estuary SAC	0.01	0.3%	1.1	27.5%
LWS11	Severn Estuary SAC / LWS	0.02	0.4%	1.1	27.7%
SAC1a	Severn Estuary SAC	0.01	0.3%	1.1	27.6%
SAC1b	Severn Estuary SAC	0.02	0.5%	1.1	27.7%
SAC2	Avon Gorge Woodlands SAC	0.01	0.4%	1.9	71.1%

PCs >1% (or 100% for LWS's) and PECs >100% of the EAL are highlighted in bold.

Appendix E Figures

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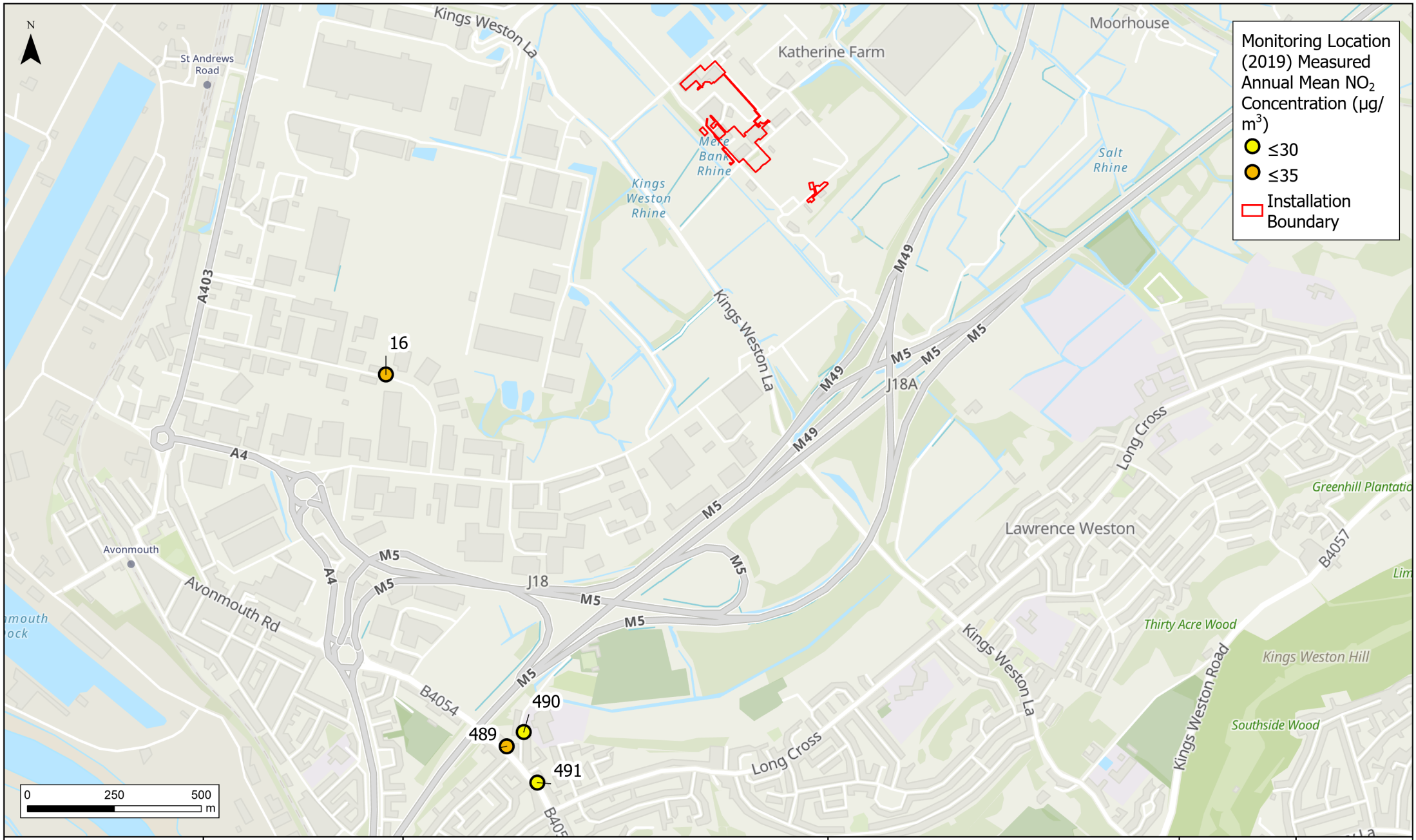

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Client: Wessex Water, a YTL company

Avonmouth Sewage Treatment Works

Bristol City Council Monitoring Locations

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Figure 01	Rev A

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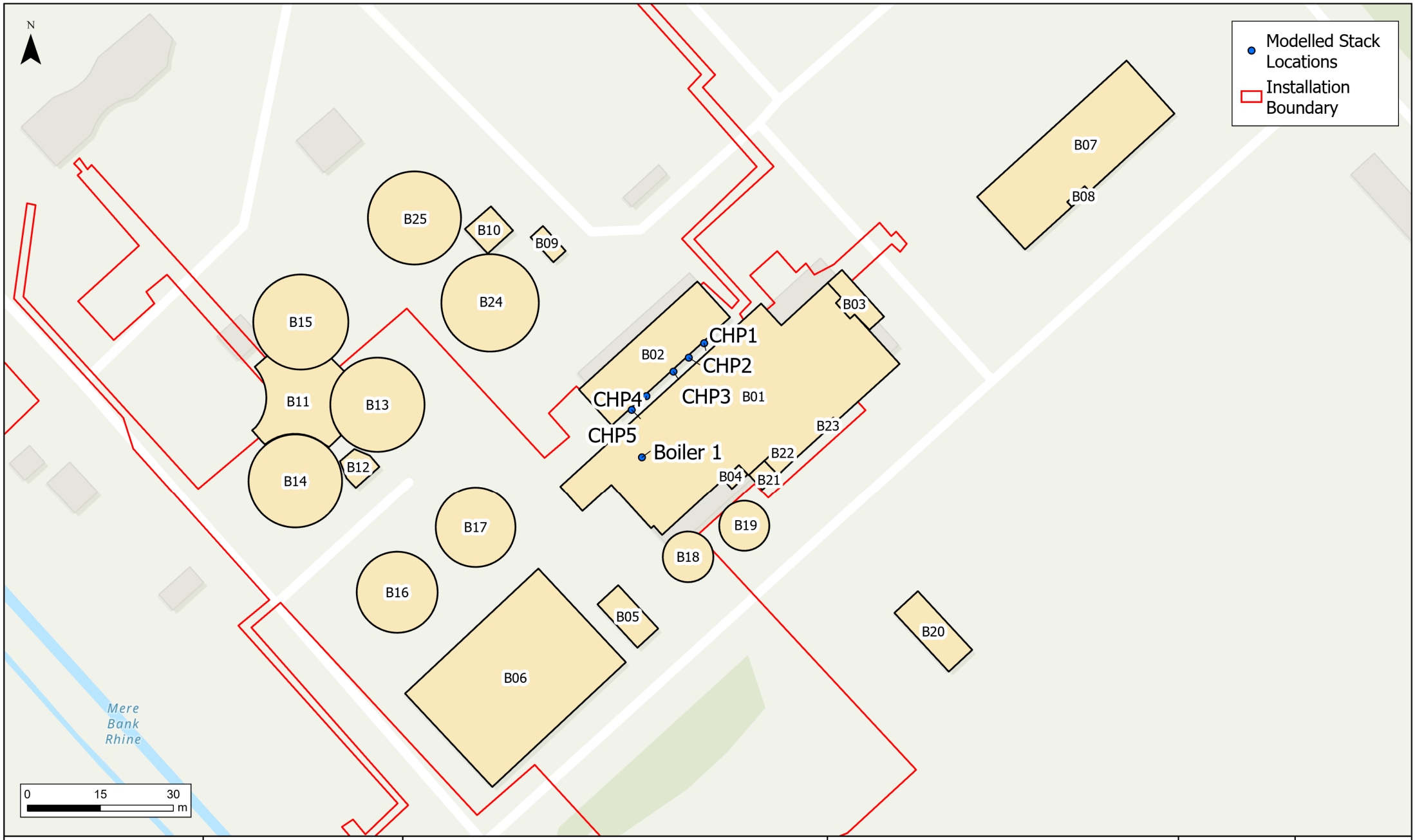

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Wessex Water
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Avonmouth Sewage Treatment Works

Modelled Building and Stack Locations

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Figure 02	Rev A

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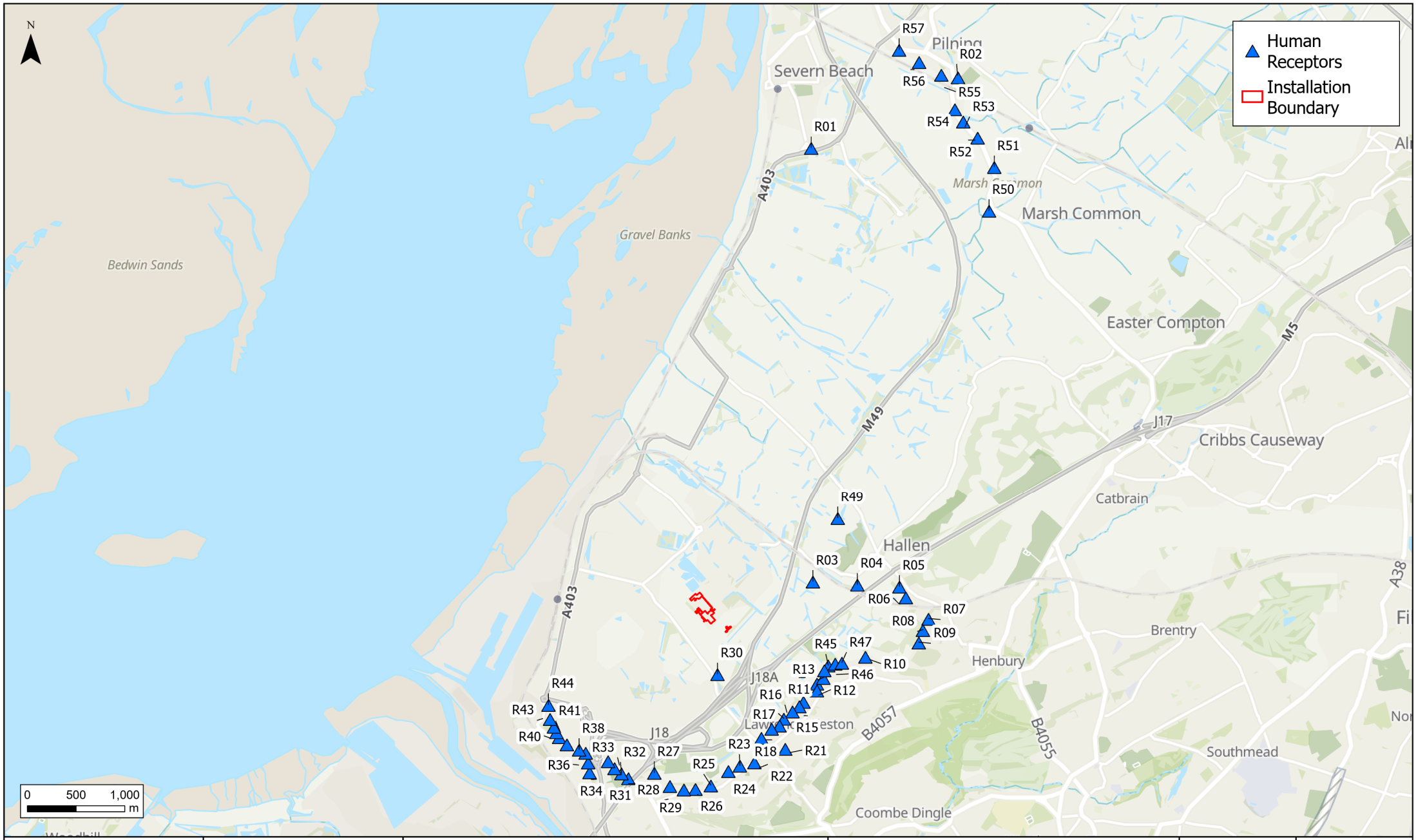

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Wessex Water
a YTL company

Avonmouth Sewage Treatment Works

Modelled Discrete Human Receptor Locations

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Figure 03	Rev A

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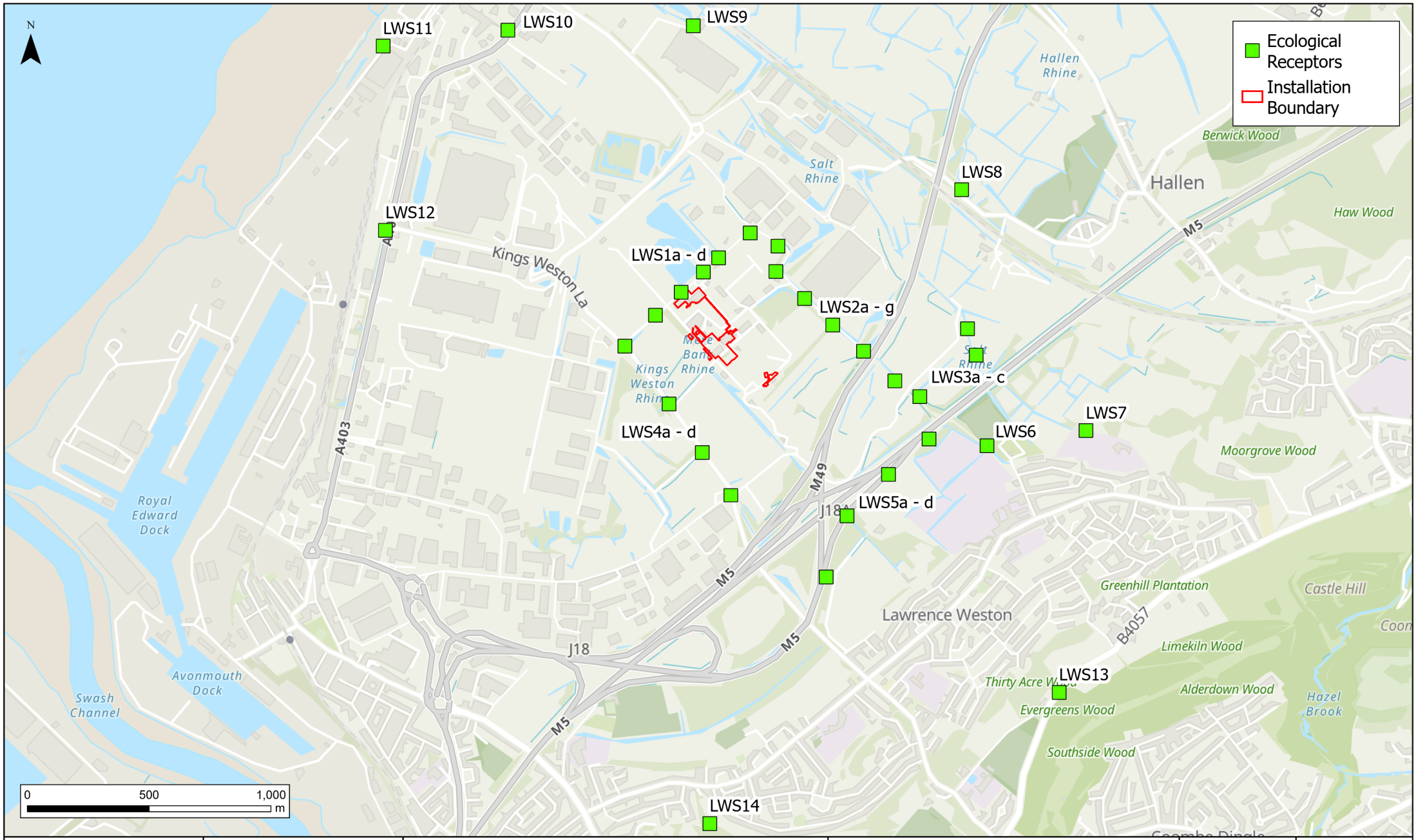

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Client: Wessex Water, a YTL company

Avonmouth Sewage Treatment Works

Ecological Receptors within 2 km of the Modelled Stack Locations

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Figure 04	Rev A

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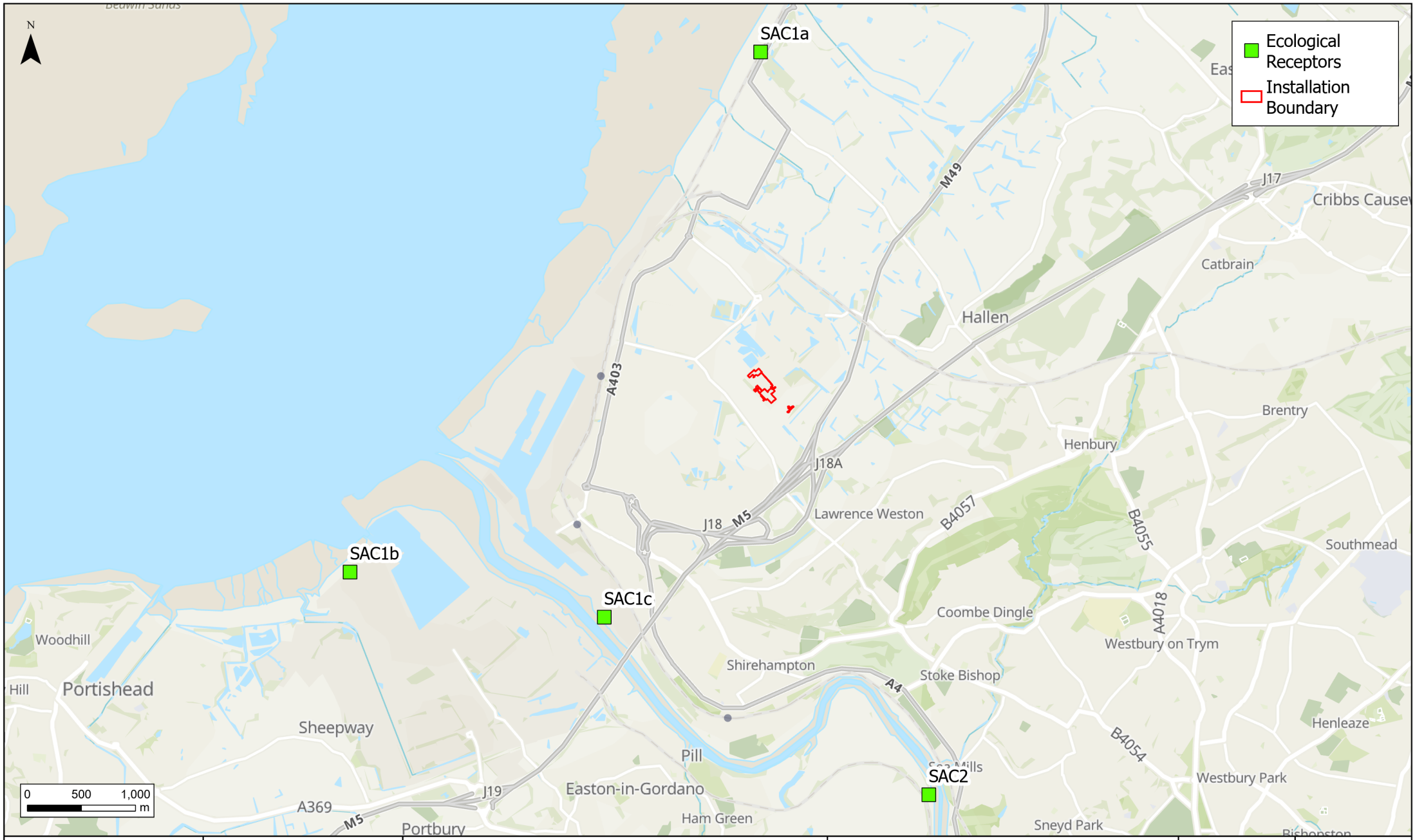

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Avonmouth Sewage Treatment Works

Ecological Receptors within 2 - 10km of the Installation

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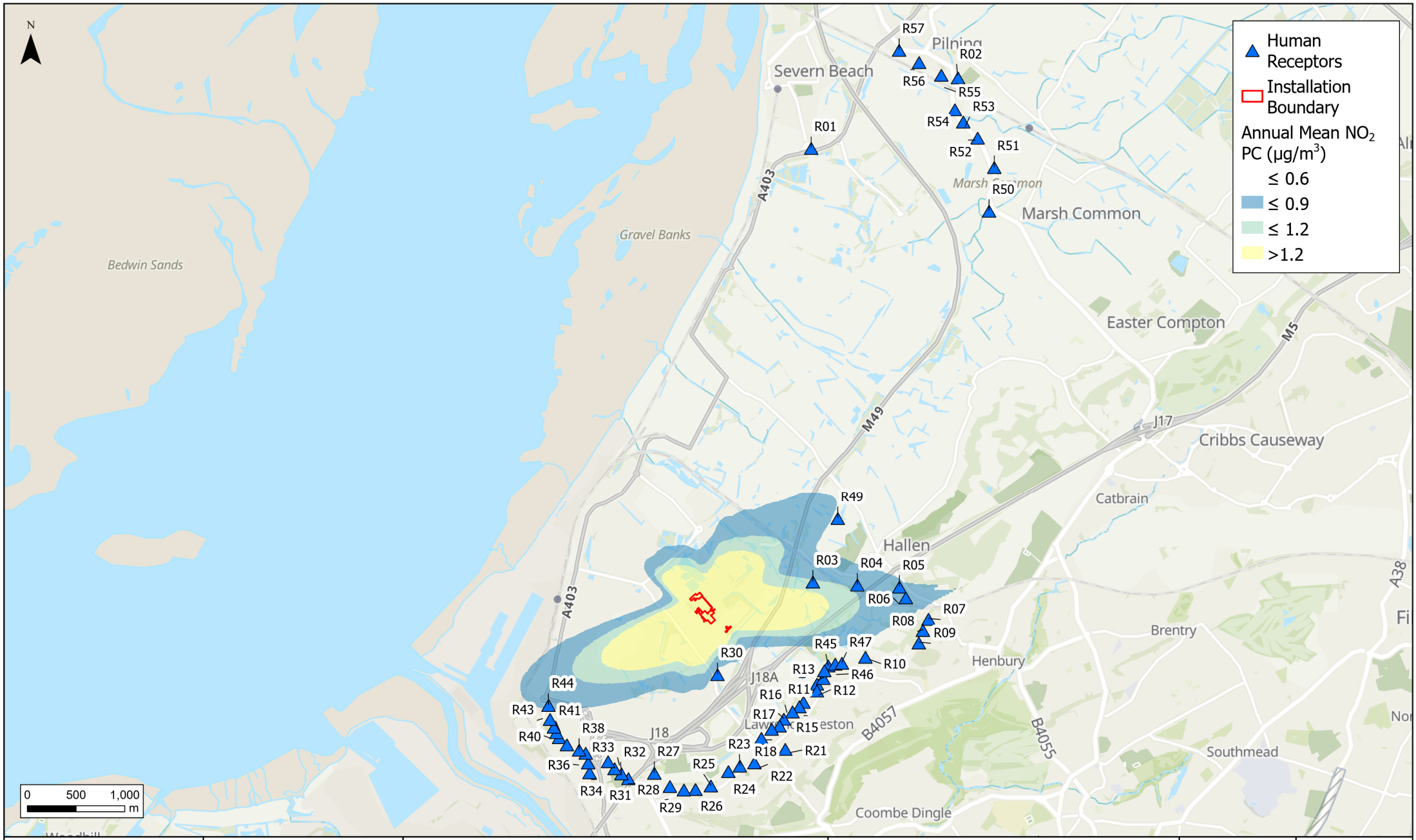

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Avonmouth Sewage Treatment Works

2018 Predicted Annual Mean NO_2 Process Contribution (PC) Contours

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Figure 06	Rev A

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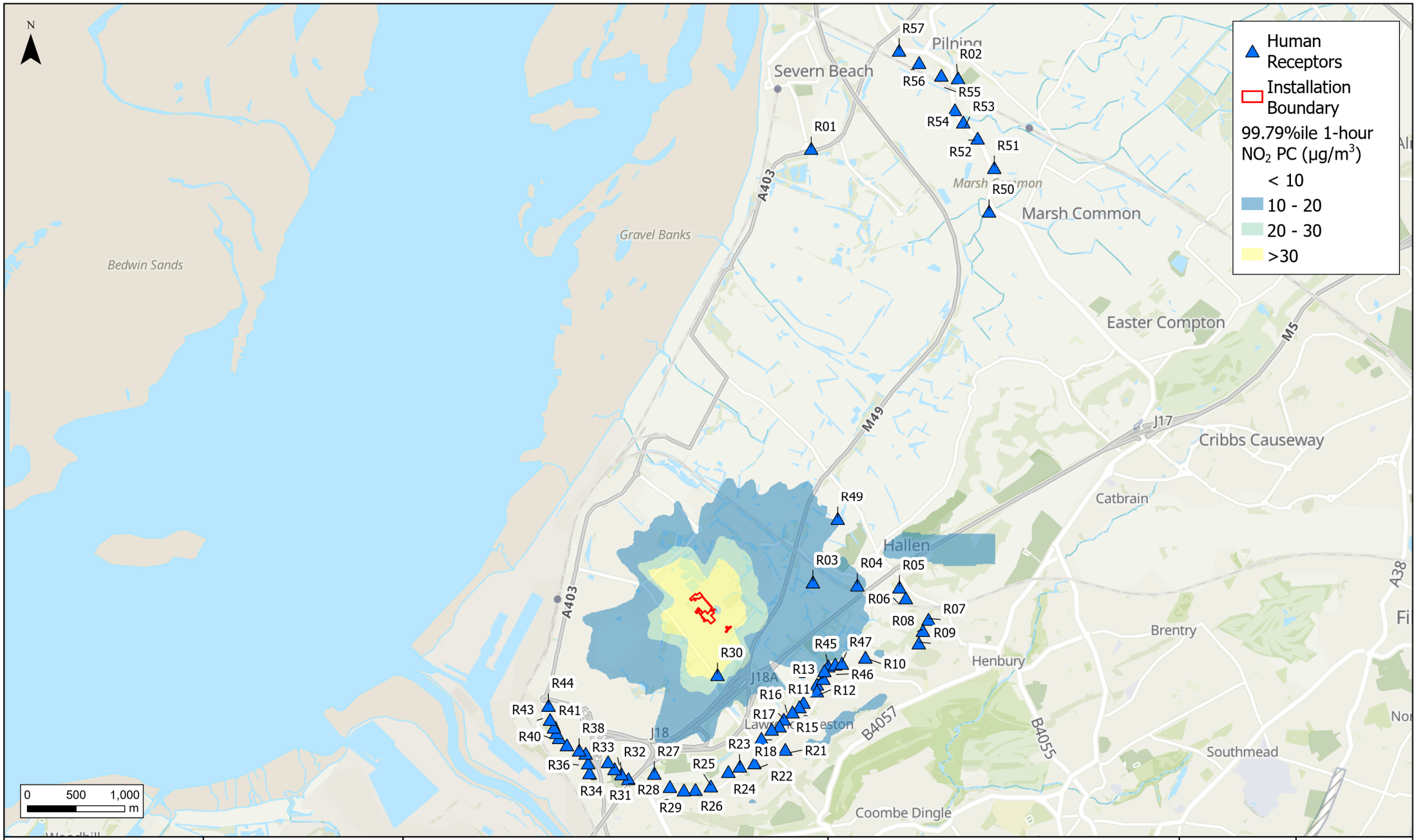

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Avonmouth Sewage Treatment Works

2019 Predicted 1-hour Mean NO_2 (99.79%ile) Process Contribution (PC) Contours

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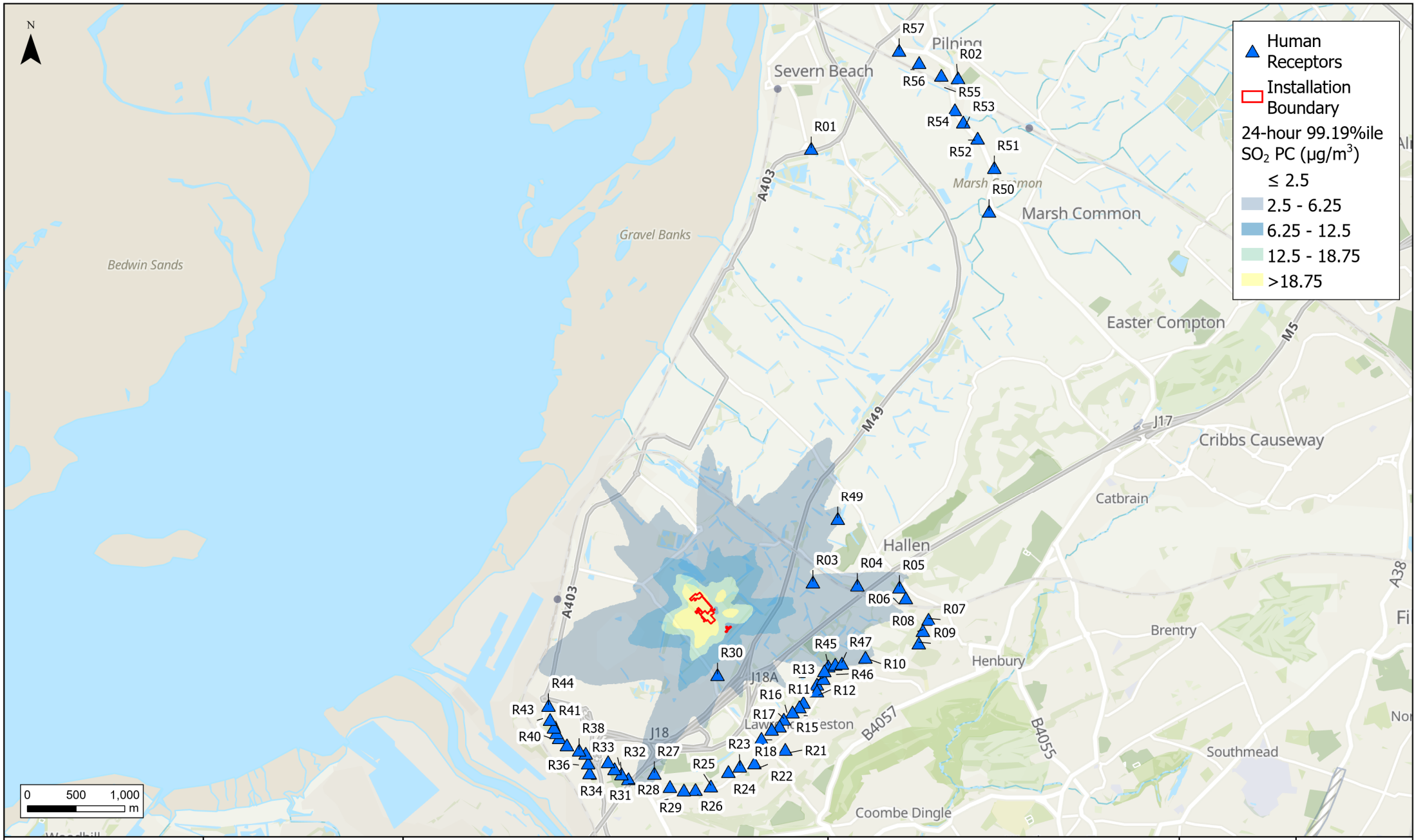

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Avonmouth Sewage Treatment Works

2019 Predicted 24-hour Mean SO_2 (99.19%ile) Process Contribution (PC) Contours

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Figure 08	Rev A

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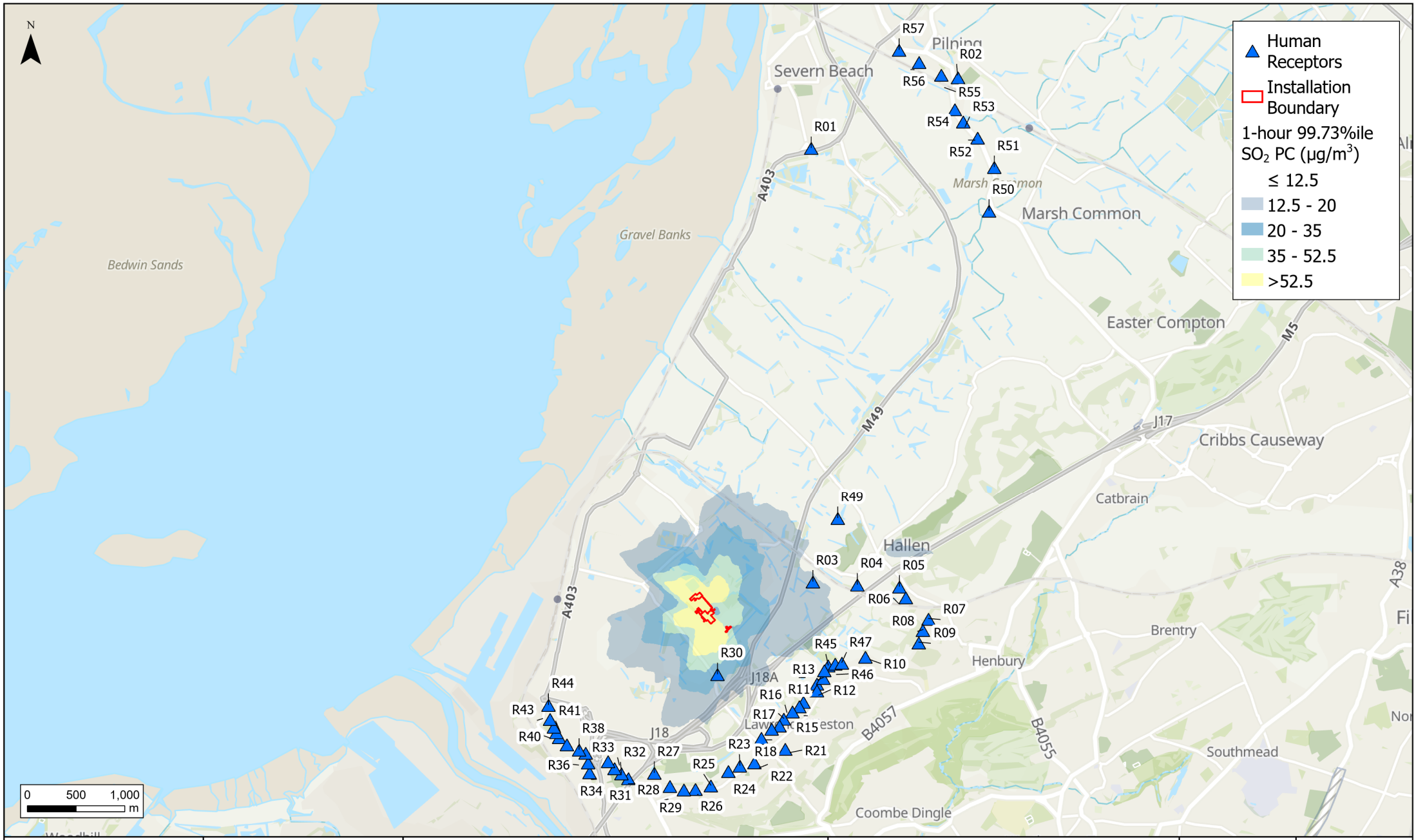

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Wessex Water a YTL company

Avonmouth Sewage Treatment Works

2019 Predicted 1-hour Mean SO_2 (99.73%ile) Process Contribution (PC) Contours

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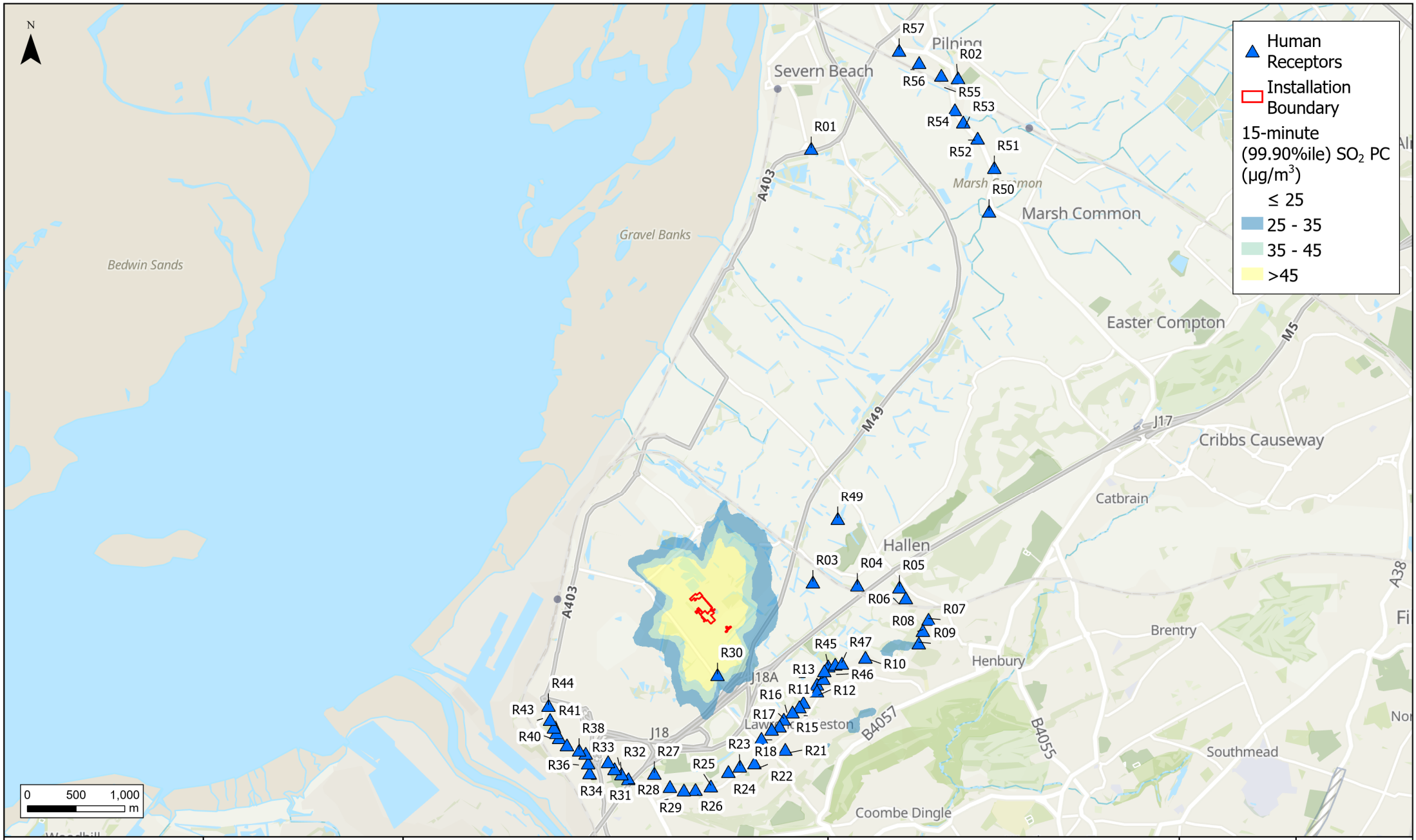

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Avonmouth Sewage Treatment Works

2018 Predicted 15-minute Mean SO_2 (99.9%ile) Process Contribution (PC) Contours

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Drawn: SB	Checked: PB
Figure 10	Rev A