# Trowbridge Wastewater Treatment Works

## Air Emissions Risk Assessment

On behalf of

Wessex Water
YTL GROUP

Project Ref: 330202598 / 800.200 | Rev: Third Issue | Date: September 2024

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# Document Control Sheet

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| | Name | Position | Signature | Date |
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| **For and on behalf of Stantec UK Limited** | | | | |

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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 for Anaerobic Digestion (AD) activities at Trowbridge Wastewater Treatment Works (WwTW).

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

1.1.3 The Installation includes biogas combustion plant comprising a gas-fired Combined Heat and Power (CHP) unit and two gas-fired boilers, as well as a gas upgrading plant associated with a Gas to Grid plant (G2G plant) which upgrades the calorific value of biogas to create biomethane that can be injected into the gas supply network

## 1.2 Report Scope

1.2.1 The scope of the assessment is limited to the point source emissions to air at the Installation defined above. Consistent with Environment Agency (EA) guidance (EA, 2022), for a gas engine fired on biogas, the principal release of oxides of nitrogen ($NO_x$) have been assessed alongside sulphur dioxide ($SO_2$) due to the potential sulphur content of biogas.

1.2.2 Emissions of $NO_x$ (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 out against the relevant Critical Levels ($C_{Le}$) for $NO_x$ 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 from combustion emissions 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 VOC emissions have also been assessed for the G2G plant exhaust point to determine the air quality impacts from the addition of propane during the biogas to biomethane upgrading process. As no there is no combustion associated with this point source, $NO_x$, $SO_2$, PM and CO emissions have not been assessed.

1.2.5 When modelling and assessing 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, benzene is unlikely to comprise more than 1% of the Non-Methane VOC (NMVOC) fraction.

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

1.2.7 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.

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

# 2 Legislation and Relevant Guidance

## 2.1 Air Quality Legislation

### Medium Combustion Plant Directive

2.1.1 The Medium Combustion Plant Directive (MCPD) EU/2015/2193 sets out emission limits and monitoring requirements for combustion plant with a total rated thermal input equal to or greater than 1 $MW_{th}$ and less than 50 $MW_{th}$. The MCPD sets out requirements to control emissions of $SO_2$, $NO_x$ and dust to air from medium combustion plants and seeks to protect human health and the environment from such emissions.

### Environmental Permitting (England and Wales) (Amendment) Regulations 2018

2.1.2 Schedule 25A of the Environmental Permitting (England and Wales) (Amendment) Regulations (EPR) were published in 2018 to transpose the requirements of the MCPD into UK law and to control emissions from the operation of Medium Combustion Plants.

### Air Quality Standards

2.1.3 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.

2.1.4 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 Air Quality 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

2.1.5 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 Limit Values throughout the UK within the 'shortest possible time'.

2.1.6 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 possible time*". 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 possible time' then LAs may consider implementing access restrictions on more polluting vehicles (e.g., Clean Air Zones (CAZs)). A CAZ is defined within the plan as being "*an area where targeted action is taken to improve air quality and resources are prioritised and coordinated in a way that delivers improved health benefits and supports economic growth*" and may be charging or non-charging.

### Air Quality Strategy

2.1.7 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 EA, 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.

2.1.8 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 $PM_{2.5}$.

2.1.9 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).

2.1.10 The EA'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."* (EA, 2008)

## 2.2 Environmental Permitting Guidance

2.2.1 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.

2.2.2 Of particular relevance to the assessment is the '*Air emissions risk assessment for your environmental permit*', also known as the 'AERA guidance' (DEFRA and EA, 2024). 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.

## 2.3 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-minute Mean | 266 (15-minute) not to be exceed more than 35 times a year | AQS |
| | 1-hour Mean | 350 (1-hour) not to be exceeded more than 24 times a year | AQS and AQSR |
| | 24-hour Mean | 125 (24-hour) 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 LAQM. According to LAQM.TG(22), air quality strategy objectives should only apply to locations where "*members of the public might be regularly exposed"* and where public exposure is *"related to the averaging period of the specific objective*" (DEFRA, 2022). 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 mean 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.<br>Hotels, unless people live there as their permanent residence.<br>Gardens of residential properties.<br>Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term. |
| 24-hour and 8-hour mean | All locations where the annual mean NAQO would apply, together with hotels and gardens of residences. | Kerbside sites<br>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 10 km 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 2 km 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 ($NO_x$) | 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), 2024).

2.4.6 $C_{Lo}$ for acidification have been set in the UK using an empirical approach for non-woodland habitats on a 1 km 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 version 9.1 of the AERMOD dispersion model which has been developed in conjunction with, and approved for use by, the US Environmental Protection Agency (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 4 km x 4 km Cartesian grid with 25 m spacing was used to predict the maximum predicted contribution to ground level (1.5 m flagpole) 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** to **Table 3-3** 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) |
|---|---|---|---|---|---|
| B01 | 384733.9 | 158762.1 | 3.0 | 10.3 | 4.2 |
| B02 | 384753.8 | 158759.5 | 10.2 | 2.9 | 5.4 |
| B03 | 384757.2 | 158754.2 | 7.9 | 7.9 | 4.3 |
| B21 | 384827.4 | 158804.9 | 9.7 | 4.9 | 5.2 |

Table 3-2 Building Parameters – Circular Buildings

| Building ID | X | Y | Radius (m) | Height above Ground (m) |
|---|---|---|---|---|
| B04 | 384778.2 | 158744.0 | 8.4 | 12.5 |
| B05 | 384713.8 | 158737.8 | 1.8 | 5.8 |
| B06 | 384710.8 | 158734.0 | 1.8 | 6.0 |
| B07 | 384755.4 | 158781.2 | 2.8 | 10.7 |
| B08 | 834761.9 | 158776.2 | 2.7 | 10.4 |
| B09 | 384766.9 | 158783.1 | 2.7 | 10.8 |
| B10 | 384760.4 | 158788.2 | 2.7 | 10.9 |
| B11 | 384765.3 | 158794.6 | 2.7 | 10.8 |
| B12 | 384772.0 | 158789.8 | 2.7 | 10.2 |
| B13 | 384787.0 | 158777.0 | 4.6 | 6.2 |
| B14 | 384800.2 | 158779.8 | 6.0 | 9.4 |
| B15 | 384812.4 | 158790.1 | 6.8 | 10.4 |
| B16 | 384746.8 | 158800.9 | 7.5 | 22.2 |
| B17 | 384758.6 | 158816.1 | 7.8 | 22.2 |
| B18 | 384774.4 | 158813.4 | 5.2 | 10.1 |
| B19 | 384781.0 | 158826.8 | 5.0 | 7.2 |
| B20 | 384791.7 | 158818.6 | 5.2 | 7.5 |

Table 3-3 Building Parameters – Polygon Buildings

| Building ID | X | Y | Height above Ground (m) |
|---|---|---|---|
| B22 | 384772.5 | 158925.5 | 2.5 |
| B23 | 384765.9 | 158908.6 | 3.2 |
| B24 | 384767.1 | 158919.5 | 2.7 |
| B25 | 384753.0 | 158899.4 | 3.2 |
| B26 | 384768.5 | 158911.4 | 3.6 |
| B27 | 384756.8 | 158903.2 | 2.3 |
| B28 | 384761.1 | 158904.8 | 14.5 |
| B29 | 384763.8 | 158909.7 | 13.3 |
| B30 | 384761.9 | 158907.4 | 8.9 |
| B31 | 384764.9 | 158915.6 | 2.1 |
| B32 | 384773.1 | 158915.1 | 3.6 |

**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 LandForm 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 Numerical Weather Prediction (NWP) meteorological dataset for the site which is considered to be appropriate for use in the assessment due to a lack of representative meteorological stations in the area. The 2016 to 2020 NWP windroses are provided in **Appendix A**.

## 3.2 Emissions to Atmosphere

3.2.1 The combustion plant at the Installation form a combined stack and have the following technical specifications:

- CHP – MTU 12V4000L62FB (4.5 MW thermal input, 1.5 MW thermal output).
- Two Boilers – 0.75 MW thermal output each.

3.2.2 The G2G plant at the Installation has the following technical specification:

- Malmberg COMPACT GR BAS 3

3.2.3 There is also a biogas flare and a biomethane flare on-site, although these are expected to operate for less than 10% of the year as there is sufficient biogas combustion capacity provided by the installed CHP plant and boilers, and the G2G plant should sufficiently upgrade the biogas to allow reliable injection to the gas supply network. Based on the limited use, these emission sources have not been included in the dispersion modelling.

3.2.4 As a worst-case scenario, the boilers, CHP and G2G plant have been assumed to operate throughout the year for 24-hours a day (8,760 hours per annum). This assumption is considered conservative; real-world boiler use in particular is substantially below this level of utilisation. All plant is periodically taken off-line for servicing which would also reduce total available annual operating hours.

**Calculation of Emission Rates**

3.2.5 The emission release rates for the plant have been calculated from the relevant Emission Limit Values (ELVs) as per **Table 3-4** and the 'normalised' flue gas flow rates in **Table 3-5**. Emissions from the CHP plant and boilers are discharged via individual flues (i.e., three flues in total) and form a combined stack. All flues have been modelled as regular point sources.

Table 3-4 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. |
| **G2G Plant** | |
| NMVOC | 75 mg/Nm$^3$ @5% $O_2$ from LFTGN08 'Guidance for monitoring landfill gas engine emissions' (2004 version) (EA, 2004). This is considered a worst-case ELV for the G2G plant as the incoming biogas contains less than 0.2% of methane, NMVOC emissions in biogas are considered to be limited, and the upgraded biomethane passes through a carbon filter which is expected to abate the majority of NMVOC emissions prior to exhaust. |

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

| Parameter / Source | CHP Flue | Boiler1 Flue | Boiler2 Flue | G2G Plant |
|---|---|---|---|---|
| Stack Location (x, y) | 384761.3, 158753.1 | 384761.9, 158753.5 | 384761.3, 158753.8 | 384773.1, 158912.9 |
| Stack Release Height (m AGL) | 13 | 13 | 13 | 6 |
| Emission Temperature (ºC) | 169 | 120 | 120 | 15 |
| Stack Internal Diameter (m) | 0.39 | 0.35 | 0.35 | 0.35 |
| Emission Velocity (m/s) | 22.17 | 5.82 | 5.82 | 17.26 |
| Actual flow rate ($Am^3/s$) | 2.65 | 0.56 | 0.56 | 0.54 |
| Normalised flow rate, dry, 15% oxygen ($Nm^3/s$) | 3.01 | - | - | - |
| Normalised flow rate, dry, 3% oxygen ($Nm^3/s$) | - | 0.24 | 0.24 | - |
| Normalised flow rate, dry, ambient oxygen ($Nm^3/s$) | - | - | - | 0.51 |
| $NO_x$ Emission Rate (g/s) | 0.571 | 0.059 | 0.059 | - |
| $SO_2$ Emission Rate (g/s) | 0.180 | 0.047 | 0.047 | - |
| PM Emission Rate (g/s) | 0.060 | 0.001 | 0.001 | - |
| CO Emission Rate (g/s) | 1.562 | 0.024 | 0.024 | - |
| NMVOC Emission Rate (g/s) | 0.084 | 0.006 | 0.006 | 0.039 |

3.2.6 The boilers use low-sulphur diesel as a secondary fuel, however as the $NO_x$ emissions from the boilers will be higher when utilising biogas and $SO_2$ is also generated, the impact assessment has focused on emissions from biogas combustion.

## 3.3 Assessment of Impacts on Air Quality

**$NO_x$ to $NO_2$ Conversion**

3.3.1 Emissions of $NO_x$ 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 and DEFRA guidance (EA and DEFRA, 2021), namely that:

- For the assessment of long term (annual mean) impacts at receptors, 70% of $NO_x$ is $NO_2$; and
- For the assessment of short term (hourly mean) impacts at receptors, 35% of $NO_x$ 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 close proximity to the stack, the EA and DEFRA 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 99.9$^{th}$ percentiles of 1-hour mean $SO_2$ concentrations have been converted into 99.9$^{th}$ 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.

3.3.8 DEFRA 2018-based background maps for 2023 (DEFRA, 2020) have been applied to calculate the $NO_2$, $PM_{10}$ and $PM_{2.5}$ PECs at receptor locations, and the 2001-based background maps for 2001 (DEFRA, 2001) have been applied to calculate the CO PECs. Background monitoring data for 2023 from DEFRA's Chilbolton Observatory Automatic Urban and Rural Network (AURN) monitoring site has been applied to calculate the $SO_2$ and $C_6H_6$ PECs at receptor locations.

3.3.9 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 Techniques (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 $NO_x$ 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 $NO_x$ (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 ecological site, and local factors (such as the water table).

3.4.6 The guidance provides the following further criteria:

- if the PEC is <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**. The area directly bordering the WwTW site to the north, south, east and west is predominantly agricultural, with part of this agricultural land to the north and west being used as a solar farm. The River Biss is located to the east of the site, beyond which lies a railway line and then the urban area of Trowbridge. The modelled sensitive human and ecological receptor locations in proximity to the Installation are described in the following sections.

### Human Receptors

4.1.2 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 concentration has been assessed at all potential exposure locations surrounding the site. In addition, sensitive existing residential properties and a nursery 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

4.1.3 Locally and internationally designated sites within the relevant AERA guidance screening distances are presented in **Table B-2, Appendix B** and shown in **Figure 4** and **Figure 5, Appendix E**. There are no nationally designated sites (SSSIs) within the relevant screening distance (2 km) from the Installation.

## 4.2 Ambient Air Quality

### Local Air Quality Management

4.2.1 WC has investigated air quality within its area as part of its responsibilities under the LAQM regime. The Council currently has eight Air Quality Management Areas (AQMAs) which have all been declared due to exceedances of the annual mean $NO_2$ AQO. The closest AQMA to the site is the Bradford-on-Avon AQMA, located approximately 2.9 km to the northwest of the Installation boundary and encompassing buildings with facades on Masons Lane, Market Street, Silver Street and St Margarets Street.

### Local Air Quality Monitoring Data

4.2.2 WC carries out monitoring of $NO_2$ concentrations at a number of locations across the borough. The closest and most representative locations are in Trowbridge and are shown in **Figure 1, Appendix E**. 2019 to 2023 monitoring data for these sites are presented in **Table 4-1** and **Table 4-2**. Whilst data for 2020 and 2021 have been included in **Table 4-1**, it should be noted that they are not considered to be representative of long-term trends due to the impact of COVID-19 restrictions during these years.

4.2.3 **Table 4-1** shows that there have been no exceedances of the annual mean $NO_2$ AQO in recent years at the closest monitoring locations to the Installation. In addition, measured concentrations were below 60 µg/m$^3$, indicating that there have also been no exceedances of the 1-hour mean $NO_2$ AQO in recent years.

Table 4-1 Measured Annual Mean $NO_2$ Concentrations 2019 – 2023

| Site ID | Site Type | Annual Mean (µg/m³) | | | | |
|---|---|---|---|---|---|---|
| | | 2019 | 2020 | 2021 | 2022 | 2023 |
| 39 - Rosset Gardens, Trowbridge[a] | Urban Background | 10.3 | 8.2 | 8.0 | 8.0 | 6.9 |
| 40 – 26 Newtown, Trowbridge[b] | Kerbside | 28.9 | 24.4 | 25.2 | 23.0 | 20.2 |
| 41 – Ashton Road, Trowbridge | Roadside | - | 20.6 | 20.2 | 19.7 | 16.8 |
| **AQO** | | **40** | | | | |

2019 - 2023 data obtained from the Wiltshire Council 2024 Air Quality Annual Status Report (Wiltshire Council, 2024).

## 4.3 Predicted Background Concentrations

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

4.3.2 The latest available background pollutant concentrations for $NO_2$, $PM_{10}$ and $PM_{2.5}$ are based upon a 2018 base year and projected to future years. The projected 2023 background concentrations for the grid squares containing the Installation and modelled receptor locations have been applied in this AERA and are provided in **Table 4-2**. Background $NO_2$, $PM_{10}$ and $PM_{2.5}$ concentrations are well below the relevant AQOs in 2023.

Table 4-2 Estimated Annual Mean Background Concentrations 2023 (µg/m³)

| Location (x_y) | 2023 Annual Mean (µg/m³) | | |
|---|---|---|---|
| | **$NO_2$** | **$PM_{10}$** | **$PM_{2.5}$** |
| 383_159 | 5.7 | 12.6 | 7.8 |
| 383_160 | 5.9 | 12.0 | 7.9 |
| 384_158 | 6.5 | 12.4 | 8.1 |
| 384_159 | 5.9 | 12.5 | 7.8 |
| 385_158 | 8.2 | 12.5 | 8.5 |
| 385_159 | 7.8 | 12.5 | 8.1 |
| **AQOs** | **40** | **40** | **20** |

4.3.3 The latest available modelled background pollutant data for $SO_2$ and $C_6H_6$ available from DEFRA are based on a 2001 base year. Therefore, it has been considered more appropriate to use more recent background monitoring data available from DEFRA's AURN.

4.3.4 The 2023 annual mean $SO_2$ and $C_6H_6$ concentrations from the Chilbolton Observatory background AURN monitoring site are provided in **Table 4-3**. The Chilbolton Observatory AURN site is the closest and most representative $SO_2$ and $C_6H_6$ monitoring site to the Installation with sufficient data capture in 2023. The measured annual mean $SO_2$ and $C_6H_6$ background concentrations from the Chilbolton Observatory monitoring site have been applied to all modelled human receptor locations in this AERA.

Table 4-3 Annual Mean $SO_2$ and $C_6H_6$ Measured Background Concentrations

| Site Name | Location (x,y) | 2023 Annual Mean Concentration (µg/m³) | |
|---|---|---|---|
| | | $SO_2$ | $C_6H_6$ |
| Chilbolton Observatory AURN | 439390, 139078 | 0.61 | 0.35 |

4.3.5 For CO, the latest DEFRA modelled background data available is from 2001. CO background concentrations for 2001 are provided in **Table 4-4** and have been applied to discrete receptor locations.

Table 4-4 Estimated Annual Mean CO Background Concentrations

| Location (x_y) | Annual Mean CO Concentration (µg/m³) |
|---|---|
| 383_159 | 270 |
| 383_160 | 258 |
| 384_158 | 279 |
| 384_159 | 274 |
| 385_158 | 276 |
| 385_159 | 268 |

4.3.6 The appropriate conversion factor for each averaging period has been used in accordance with the EA guidance:

- 1-hour mean background concentrations have been estimated by multiplying the annual mean by a factor of 2;
- 24-hour mean background concentrations have been estimated by multiplying the 1-hour mean by a factor of 0.59;
- 8-hour mean background concentrations have been estimated by multiplying the 1-hour mean by a factor of 0.7; and
- 15-minute mean background concentrations have been estimated by multiplying the 1-hour mean by a factor of 1.34.

## 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, regulatory agencies and the UK Centre for Ecology and Hydrology, 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 4-5** to **Table 4-7**. Baseline concentrations of $NO_x$ and $SO_2$ are provided in **Table 4-7** and have also been obtained from the APIS website.

*4.4.2* The APIS website (CEH, 2024) states that *"the potential impacts of additional sulphur and / or nitrogen deposition from a source are partly determined by PEC, because only if PEC of nitrogen deposition is greater than CLminN will the additional nitrogen deposition from the source contribute to acidity. Consequently, if PEC is less than CLminN only the acidifying effects of sulphur from the process needs to be considered:*

*Where PEC N Deposition < CLminN*

*PC as %CL function = (PC S deposition/CLmaxS)*100*

*Where PEC is greater than CLminN (the majority of cases), the combined inputs of sulphur and nitrogen needs to be considered. In such cases the total acidity input should be calculated as a proportion of the CLmaxN.*

*Where PEC N Deposition > CLminN*

*PC as %CL function = ((PC of S+N deposition/CLmaxN)*100"*

4.4.3 To calculate the background or PEC as %CL function, the term 'PC' in the above equation can be substituted for 'background' or 'PEC'.

4.4.4 Based on the above, background nitrogen deposition rates have been compared to the CLminN for the most sensitive habitat present at each designated site to determine whether CLmaxS or CLmaxN should be used as the critical load in this assessment. The relevant CLminN values are shown in **Table 4-5** below.

Table 4-5 Background Nitrogen Deposition and CLminN Critical Loads

| Receptor | Designated Site | Acid Deposition MinCLminN (keqN/ha/yr) | Background Nitrogen Deposition (keqN/ha/yr) |
|---|---|---|---|
| LWS1 | Great Bradford Wood Ancient Woodland / LWS | 0.36 | **2.25** |
| LWS2 | Lynwood Drive Pond LWS | Not acid sensitive | Not acid sensitive |
| LWS3 | Biss Meadows Country Park LWS | 1.07 | **1.21** |
| LWS4a | Widbrook Wood LWS | 0.36 | **2.25** |
| LWS4b | Widbrook Wood LWS | 0.36 | **2.25** |
| LWS4c | Widbrook Wood LWS | 0.36 | **2.25** |
| LWS4d | Widbrook Wood LWS | 0.36 | **2.25** |
| LWS4e | Widbrook Wood LWS | 0.36 | **2.25** |
| LWS4f | Widbrook Wood LWS | 0.36 | **2.23** |
| LWS4g | Widbrook Wood LWS | 0.36 | **2.23** |
| LWS4h | Widbrook Wood LWS | 0.36 | **2.23** |
| LWS5a | Bristol River Avon LWS | Not acid sensitive | Not acid sensitive |
| LWS5b | Bristol River Avon LWS | Not acid sensitive | Not acid sensitive |
| LWS5c | Bristol River Avon LWS | Not acid sensitive | Not acid sensitive |
| LWS5d | Bristol River Avon LWS | Not acid sensitive | Not acid sensitive |
| LWS6a | Kennet and Avon Canal LWS | Not acid sensitive | Not acid sensitive |
| LWS6b | Kennet and Avon Canal LWS | Not acid sensitive | Not acid sensitive |
| LWS6c | Kennet and Avon Canal LWS | Not acid sensitive | Not acid sensitive |
| LWS6d | Kennet and Avon Canal LWS | Not acid sensitive | Not acid sensitive |
| LWS6e | Kennet and Avon Canal LWS | Not acid sensitive | Not acid sensitive |
| LWS6f | Kennet and Avon Canal LWS | Not acid sensitive | Not acid sensitive |
| LWS6g | Kennet and Avon Canal LWS | Not acid sensitive | Not acid sensitive |
| LWS6h | Kennet and Avon Canal LWS | Not acid sensitive | Not acid sensitive |

| | | | |
|---|---|---|---|
| LWS6i | Kennet and Avon Canal LWS | Not acid sensitive | Not acid sensitive |
| LWS6j | Kennet and Avon Canal LWS | Not acid sensitive | Not acid sensitive |
| LWS6k | Kennet and Avon Canal LWS | Not acid sensitive | Not acid sensitive |
| LWS6l | Kennet and Avon Canal LWS | Not acid sensitive | Not acid sensitive |
| LWS6m | Kennet and Avon Canal LWS | Not acid sensitive | Not acid sensitive |
| LWS6n | Kennet and Avon Canal LWS | Not acid sensitive | Not acid sensitive |
| LWS6o | Kennet and Avon Canal LWS | Not acid sensitive | Not acid sensitive |
| LWS6p | Kennet and Avon Canal LWS | Not acid sensitive | Not acid sensitive |
| LWS6q | Kennet and Avon Canal LWS | Not acid sensitive | Not acid sensitive |
| SAC1a | Bath & Bradford on Avon Bats SAC | 0.14 | **2.25** |
| SAC1b | Bath & Bradford on Avon Bats SAC | 0.14 | **2.17** |
| SAC1c | Bath & Bradford on Avon Bats SAC | 0.14 | **2.17** |
| SAC1d | Bath & Bradford on Avon Bats SAC | 0.14 | **2.17** |
| SAC1e | Bath & Bradford on Avon Bats SAC | 0.14 | **2.17** |
| SAC1f | Bath & Bradford on Avon Bats SAC | 0.14 | **2.17** |
| SAC1g | Bath & Bradford on Avon Bats SAC | 0.14 | **2.17** |
| SAC1h | Bath & Bradford on Avon Bats SAC | 0.14 | **2.10** |
| SAC1i | Bath & Bradford on Avon Bats SAC | 0.14 | **2.14** |
| SAC1j | Bath & Bradford on Avon Bats SAC | 0.14 | **2.15** |
| SAC2 | Salisbury Plain SAC / SPA | 0.86 | **1.15** |

Exceedances of the relevant MinCLminN are shown in bold.

4.4.5 As background nitrogen deposition rates exceed the MinCLminN at all relevant ecological receptors, the MinCLmaxN has been used as the relevant critical load in this assessment, as presented in **Table 4-6**.

Table 4-6 Nitrogen and Acid Deposition Critical Loads used in this Assessment

| Receptor | Designated Site | Assigned Habitat | Critical Load | |
|---|---|---|---|---|
| | | | Nitrogen Deposition (kgN/ha/yr) | Acid Deposition MinCLmaxN (keqN/ha/yr) |
| LWS1 | Great Bradford Wood Ancient Woodland / LWS | Broadleaved, yew and mixed woodland | 10 | 1.924 |
| LWS2 | Lynwood Drive Pond LWS | Fen, marsh and swamp | 5 | Not acid sensitive |
| LWS3 | Biss Meadows Country Park LWS | Neutral grassland (low and medium altitude hay meadows) | 10 | 5.071 |

| Receptor | Designated Site | Assigned Habitat | Critical Load | |
|---|---|---|---|---|
| | | | Nitrogen Deposition (kgN/ha/yr) | Acid Deposition MinCLmaxN (keqN/ha/yr) |
| LWS4a | Widbrook Wood LWS | Broadleaved, yew and mixed woodland | 10 | 1.945 |
| LWS4b | Widbrook Wood LWS | Broadleaved, yew and mixed woodland | 10 | 1.945 |
| LWS4c | Widbrook Wood LWS | Broadleaved, yew and mixed woodland | 10 | 1.945 |
| LWS4d | Widbrook Wood LWS | Broadleaved, yew and mixed woodland | 10 | 1.945 |
| LWS4e | Widbrook Wood LWS | Broadleaved, yew and mixed woodland | 10 | 1.945 |
| LWS4f | Widbrook Wood LWS | Broadleaved, yew and mixed woodland | 10 | 8.768 |
| LWS4g | Widbrook Wood LWS | Broadleaved, yew and mixed woodland | 10 | 8.768 |
| LWS4h | Widbrook Wood LWS | Broadleaved, yew and mixed woodland | 10 | 8.768 |
| LWS5a | Bristol River Avon LWS | Fen, marsh and swamp | 5 | Not acid sensitive |
| LWS5b | Bristol River Avon LWS | Fen, marsh and swamp | 5 | Not acid sensitive |
| LWS5c | Bristol River Avon LWS | Fen, marsh and swamp | 5 | Not acid sensitive |
| LWS5d | Bristol River Avon LWS | Fen, marsh and swamp | 5 | Not acid sensitive |
| LWS6a | Kennet and Avon Canal LWS | Fen, marsh and swamp | 5 | Not acid sensitive |
| LWS6b | Kennet and Avon Canal LWS | Fen, marsh and swamp | 5 | Not acid sensitive |
| LWS6c | Kennet and Avon Canal LWS | Fen, marsh and swamp | 5 | Not acid sensitive |
| LWS6d | Kennet and Avon Canal LWS | Fen, marsh and swamp | 5 | Not acid sensitive |
| LWS6e | Kennet and Avon Canal LWS | Fen, marsh and swamp | 5 | Not acid sensitive |
| LWS6f | Kennet and Avon Canal LWS | Fen, marsh and swamp | 5 | Not acid sensitive |
| LWS6g | Kennet and Avon Canal LWS | Fen, marsh and swamp | 5 | Not acid sensitive |
| LWS6h | Kennet and Avon Canal LWS | Fen, marsh and swamp | 5 | Not acid sensitive |

| Receptor | Designated Site | Assigned Habitat | Critical Load | |
|---|---|---|---|---|
| | | | Nitrogen Deposition (kgN/ha/yr) | Acid Deposition MinCLmaxN (keqN/ha/yr) |
| LWS6i | Kennet and Avon Canal LWS | Fen, marsh and swamp | 5 | Not acid sensitive |
| LWS6j | Kennet and Avon Canal LWS | Fen, marsh and swamp | 5 | Not acid sensitive |
| LWS6k | Kennet and Avon Canal LWS | Fen, marsh and swamp | 5 | Not acid sensitive |
| LWS6l | Kennet and Avon Canal LWS | Fen, marsh and swamp | 5 | Not acid sensitive |
| LWS6m | Kennet and Avon Canal LWS | Fen, marsh and swamp | 5 | Not acid sensitive |
| LWS6n | Kennet and Avon Canal LWS | Fen, marsh and swamp | 5 | Not acid sensitive |
| LWS6o | Kennet and Avon Canal LWS | Fen, marsh and swamp | 5 | Not acid sensitive |
| LWS6p | Kennet and Avon Canal LWS | Fen, marsh and swamp | 5 | Not acid sensitive |
| LWS6q | Kennet and Avon Canal LWS | Fen, marsh and swamp | 5 | Not acid sensitive |
| SAC1a | Bath & Bradford on Avon Bats SAC | Broadleaved, yew and mixed woodland / Calcareous Grassland | 10 | 4.856 |
| SAC1b | Bath & Bradford on Avon Bats SAC | Broadleaved, yew and mixed woodland / Calcareous Grassland | 10 | 4.856 |
| SAC1c | Bath & Bradford on Avon Bats SAC | Broadleaved, yew and mixed woodland / Calcareous Grassland | 10 | 4.856 |
| SAC1d | Bath & Bradford on Avon Bats SAC | Broadleaved, yew and mixed woodland / Calcareous Grassland | 10 | 4.856 |
| SAC1e | Bath & Bradford on Avon Bats SAC | Broadleaved, yew and mixed woodland / Calcareous Grassland | 10 | 4.856 |
| SAC1f | Bath & Bradford on Avon Bats SAC | Broadleaved, yew and mixed woodland / Calcareous Grassland | 10 | 4.856 |
| SAC1g | Bath & Bradford on Avon Bats SAC | Broadleaved, yew and mixed woodland / Calcareous Grassland | 10 | 4.856 |
| SAC1h | Bath & Bradford on Avon Bats SAC | Broadleaved, yew and mixed woodland / Calcareous Grassland | 10 | 4.856 |
| SAC1i | Bath & Bradford on Avon Bats SAC | Broadleaved, yew and mixed woodland / Calcareous | 10 | 4.856 |

| Receptor | Designated Site | Assigned Habitat | Critical Load | |
|---|---|---|---|---|
| | | | Nitrogen Deposition (kgN/ha/yr) | Acid Deposition MinCLmaxN (keqN/ha/yr) |
| | | Grassland | | |
| SAC1j | Bath & Bradford on Avon Bats SAC | Broadleaved, yew and mixed woodland / Calcareous Grassland | 10 | 4.856 |
| SAC2 | Salisbury Plain SAC / SPA | Dwarf Shrub Heath | 5 | 1.792 |

Table 4-7 Baseline Deposition Rates and Concentrations

| Receptor | Nitrogen Deposition (kgN/ha/yr) | Acid Deposition | | Annual Mean Concentration (µg/m$^3$) | |
|---|---|---|---|---|---|
| | | Nitrogen (keq/ha/yr) | Sulphur (keq/ha/yr) | $NO_x$ | $SO_2$ |
| LWS1 | 31.5 | 2.3 | 0.2 | 7.7 | 1.1 |
| LWS2 | 17.1 | 1.2 | 0.1 | 8.7 | 1.3 |
| LWS3 | 16.9 | 1.2 | 0.1 | 11.8 | 2.0 |
| LWS4a | 31.5 | 2.3 | 0.2 | 7.8 | 1.1 |
| LWS4b | 31.5 | 2.3 | 0.2 | 7.8 | 1.1 |
| LWS4c | 31.5 | 2.3 | 0.2 | 7.8 | 1.1 |
| LWS4d | 31.5 | 2.3 | 0.2 | 7.8 | 1.1 |
| LWS4e | 31.5 | 2.3 | 0.2 | 7.8 | 1.1 |
| LWS4f | 31.2 | 2.2 | 0.2 | 9.6 | 1.6 |
| LWS4g | 31.2 | 2.2 | 0.2 | 9.6 | 1.6 |
| LWS4h | 31.2 | 2.2 | 0.2 | 9.6 | 1.6 |
| LWS5a | 17.2 | 1.2 | 0.1 | 7.8 | 1.1 |
| LWS5b | 17.2 | 1.2 | 0.1 | 7.8 | 1.1 |
| LWS5c | 17.2 | 1.2 | 0.1 | 7.8 | 1.1 |
| LWS5d | 16.9 | 1.2 | 0.1 | 9.6 | 1.6 |
| LWS6a | 17.2 | 1.2 | 0.1 | 7.8 | 1.1 |
| LWS6b | 17.2 | 1.2 | 0.1 | 7.8 | 1.1 |
| LWS6c | 17.2 | 1.2 | 0.1 | 7.8 | 1.1 |
| LWS6d | 17.2 | 1.2 | 0.1 | 7.8 | 1.1 |
| LWS6e | 17.2 | 1.2 | 0.1 | 7.8 | 1.1 |
| LWS6f | 17.2 | 1.2 | 0.1 | 7.8 | 1.1 |
| LWS6g | 17.2 | 1.2 | 0.1 | 7.8 | 1.1 |

| Receptor | Nitrogen Deposition (kgN/ha/yr) | Acid Deposition | | Annual Mean Concentration (µg/m$^3$) | |
|---|---|---|---|---|---|
| | | Nitrogen (keq/ha/yr) | Sulphur (keq/ha/yr) | $NO_x$ | $SO_2$ |
| LWS6h | 17.2 | 1.2 | 0.1 | 7.8 | 1.1 |
| LWS6i | 17.2 | 1.2 | 0.1 | 7.8 | 1.1 |
| LWS6j | 17.2 | 1.2 | 0.1 | 7.8 | 1.1 |
| LWS6k | 17.2 | 1.2 | 0.1 | 7.8 | 1.1 |
| LWS6l | 16.9 | 1.2 | 0.1 | 9.6 | 1.6 |
| LWS6m | 16.9 | 1.2 | 0.1 | 9.6 | 1.6 |
| LWS6n | 16.9 | 1.2 | 0.1 | 9.6 | 1.6 |
| LWS6o | 16.9 | 1.2 | 0.1 | 9.6 | 1.6 |
| LWS6p | 16.9 | 1.2 | 0.1 | 9.6 | 1.6 |
| LWS6q | 16.9 | 1.2 | 0.1 | 9.6 | 1.6 |
| SAC1a | 31.5 | 2.3 | 0.2 | 7.6 | 1.0 |
| SAC1b | 30.4 | 2.2 | 0.2 | 11.6 | 1.2 |
| SAC1c | 30.4 | 2.2 | 0.2 | 9.2 | 1.1 |
| SAC1d | 30.4 | 2.2 | 0.2 | 9.2 | 1.1 |
| SAC1e | 30.4 | 2.2 | 0.2 | 9.2 | 1.1 |
| SAC1f | 30.4 | 2.2 | 0.2 | 10.1 | 1.2 |
| SAC1g | 30.4 | 2.2 | 0.2 | 10.1 | 1.2 |
| SAC1h | 29.4 | 2.1 | 0.2 | 9.3 | 1.0 |
| SAC1i | 29.9 | 2.1 | 0.2 | 8.1 | 0.9 |
| SAC1j | 30.1 | 2.2 | 0.2 | 7.7 | 0.9 |
| SAC2 | 16.2 | 1.2 | 0.1 | 6.8 | 0.8 |

# 5 Assessment Results

5.1.1 Dispersion modelling has been undertaken using the input data specified in this report. **Figure 6** 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.

## 5.2 Impacts on Sensitive Human Receptors

5.2.1 Impact predictions have been based on a worst-case assessment scenario of the boilers, CHP and G2G plant operating constantly throughout the year, emitting the maximum permitted $NO_x$, $SO_2$, PM, CO and NMVOC concentration, and assuming all NMVOC emissions are $C_6H_6$. Therefore, the predicted concentrations presented in this report for this scenario are likely to be significant overestimations of the actual impacts of the Installation.

**Nitrogen Dioxide ($NO_2$)**

5.2.2 **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 2018 for annual mean $NO_2$ and 2017 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 (i.e., maximum impact at each receptor) of the five years assessed (2016 - 2020) are presented for each receptor.

5.2.3 The predicted annual mean $NO_2$ PCs exceed 1% of the EAL at nine of the sensitive receptor locations: R01, R04 - R07 and R10 - R13. At all other sensitive receptor locations, the PC is less than 1% of the EAL and can therefore be classified as 'insignificant' in accordance with the AERA guidance. At receptor locations where the PC exceeds 1% of the EAL, the PECs are all less than 25% of the EAL.

5.2.4 The predicted 1-hour mean $NO_2$ PCs do not exceed 10% of the EAL and can therefore be classified as 'insignificant' at all receptor locations in accordance with the AERA guidance.

5.2.5 As both the predicted annual mean and 1-hour mean $NO_2$ PECs are below the relevant EALs at all sensitive human receptor locations, the predicted $NO_2$ impacts are not considered to 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 2018 for 24-hour and 15-minute mean $SO_2$ and 2020 for 1-hour 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 for each receptor.

5.2.7 The predicted 24-hour and 1-hour mean $SO_2$ PCs are less than 10% of the EALs at all receptor locations and can therefore be classified as 'insignificant' in accordance with the AERA guidance.

5.2.8 The predicted 15-minute $SO_2$ PC exceeds 10% of the EAL at receptor location R06. At all remaining receptor locations, the PC is less than 10% of the EAL and can therefore be classified as 'insignificant' in accordance with the AERA guidance. At R06, where the PC exceeds 10% of the EAL, the PEC is less than 15% of the EAL.

5.2.9 The predicted 24-hour, 1-hour and 15-minute mean $SO_2$ PECs are well below the relevant EALs and therefore are not considered to constitute 'significant pollution'.

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

5.2.10 Predicted annual mean $PM_{10}$ concentrations at sensitive receptor locations are summarised in **Table C-6, Appendix C**, predicted 24-hour mean (90.41%ile) $PM_{10}$ concentrations are provided in **Table C-7, Appendix C**, and predicted annual mean $PM_{2.5}$ concentrations are provided in **Table C-8, Appendix C**. Results for the worst-case meteorological year of the five years assessed (2016 – 2020) are presented for each receptor.

5.2.11 At all receptor locations, the predicted annual mean $PM_{10}$ and $PM_{2.5}$ PCs are below 1% of the EAL and the predicted 24-hour mean $PM_{10}$ PCs are below 10% of the EAL. Therefore, all $PM_{10}$ and $PM_{2.5}$ PCs are considered to be 'insignificant' in accordance with the AERA guidance.

**Carbon Monoxide (CO)**

5.2.12 Predicted 1-hour mean CO concentrations at sensitive receptor locations are summarised in **Table C-9, Appendix C**, and predicted 8-hour average CO concentrations are provided in **Table C-10, Appendix C**. Results for the worst-case meteorological year of the five years assessed (2016-2020) are presented for each receptor.

5.2.13 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 the AERA guidance.

**NMVOC assessed as Benzene ($C_6H_6$)**

5.2.14 Predicted annual mean NMVOC concentrations at sensitive receptor locations are summarised in **Table C-11, Appendix C**, and predicted 24-hour mean NMVOC 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 NMVOC PCs exceed 1% of the EAL for $C_6H_6$ at fourteen of the seventeen modelled sensitive receptor locations, however the PEC is less than 20% of the EAL at each modelled sensitive receptor.

5.2.16 The predicted 24-hour mean NMVOC PCs exceed 10% of the EAL for $C_6H_6$ at three of the modelled sensitive receptor locations (R01, R05 and R11), however the PEC is less than 20% of the EAL at each modelled sensitive receptor.

5.2.17 In reality, only a small fraction of the NMVOC emission would be $C_6H_6$. Given this, and that the predicted annual mean and 24-hour mean PECs do not exceed the EAL at any of the modelled receptor locations, it is considered that the impacts do not constitute 'significant pollution'.

## 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 for each receptor.

5.3.2 The predicted annual mean $NO_x$ PCs are less than 100% of the $C_{Le}$ at locally designated sites, and less than 1% of the $C_{Le}$ at all internationally designated ecological sites. Therefore, the annual mean $NO_x$ impacts are classified as 'insignificant' at all locally and internationally designated ecological receptor locations in accordance with the AERA guidance.

5.3.3 The predicted 24-hour $NO_x$ PCs are less than 100% of the $C_{Le}$ at receptor locations within locally designated sites, and less than 10% at all internationally designated sites. Therefore, the 24-hour mean $NO_x$ impacts are classified as 'insignificant' at all locally and internationally designated ecological receptor locations in accordance with the AERA guidance.

**Sulphur Dioxide ($SO_2$)**

5.3.4 Predicted annual mean $SO_2$ concentrations at sensitive ecological receptor locations are summarised in **Table D-3, Appendix D.** Results for the worst-case meteorological year of the five years assessed (2016 - 2020) are presented for each receptor.

5.3.5 The predicted annual mean $SO_2$ PCs are less than 100% of the $C_{Le}$ at all the locally designated ecological receptor locations, and less than 1% at all internationally designated sites and can therefore be considered 'insignificant' in accordance with the AERA guidance.

**Nitrogen and Acid Deposition**

5.3.6 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.** Results for the worst-case meteorological year of the five years assessed (2016 - 2020) are presented for each receptor.

5.3.7 The predicted annual nitrogen and acid deposition PCs are less than 100% of the $C_{Lo}$ at all locally designated sites, and less than 1% at internationally designated sites. Therefore, the impacts on annual nitrogen and acid deposition are considered to be 'insignificant' in accordance with the AERA guidance.

# 6 Summary and Conclusions

6.1.1 An Air Emission Risk Assessment (AERA) utilising atmospheric dispersion modelling has been undertaken to support the Environmental Permit application for Anaerobic Digestion activities at Trowbridge WwTW. The Installation includes biogas combustion plant comprising two CHP units and two gas-fired boilers, as well as a biogas to biomethane gas upgrading plant. A biogas flare and a biomethane flare are also located on-site, however these are not expected to be operational for more than 10% of the year and have therefore not been assessed further.

6.1.2 As a worst-case scenario, the boilers, CHP and gas upgrading plant have been assumed to operate throughout the year for 24-hours a day (8,760 hours per annum) on biogas. This assumption is considered conservative; real-world boiler use in particular is substantially below this level of utilisation. All plant is periodically taken off-line for servicing which would also reduce total available annual operating hours.

6.1.3 The quantification of the pollutant emission rates has been based on typical physical discharge characteristics and the manufacturers specifications and applicable Emission Limit Values (ELVs)

6.1.4 In relation to human health, where impacts are not classified as 'insignificant' (i.e. Process Contribution (PC) less than 1% of the Environmental Assessment Level (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 are not considered to constitute 'significant pollution'.

6.1.5 In relation to the impact of the Installation on ecologically sensitive sites, at all locally designated sites, the predicted PCs from the installation are less than 100% of the applicable $C_{Le}$ or $C_{Lo}$. At all internationally designated sites, the predicted PCs from the Installation are less than 1% of the applicable annual $C_{Le}$ or $C_{Lo,}$ and less than 10% of the 24-hour $C_{Le}$ for $NO_x$. Therefore, the impacts of the Installation are considered 'insignificant' at all designated ecological sites.

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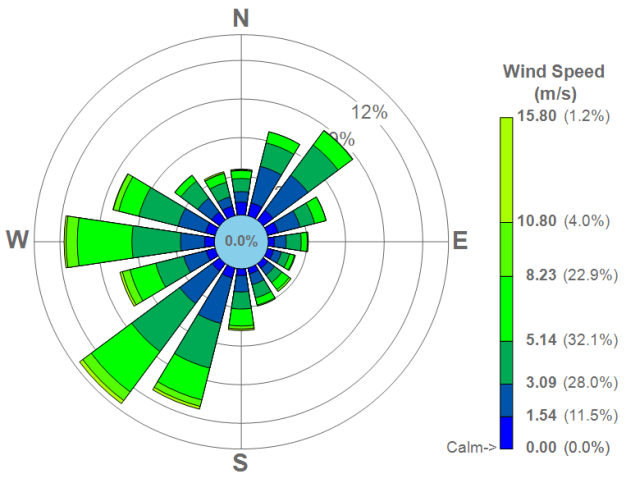
# Appendix A Trowbridge NWP 2016 – 2020 Windroses

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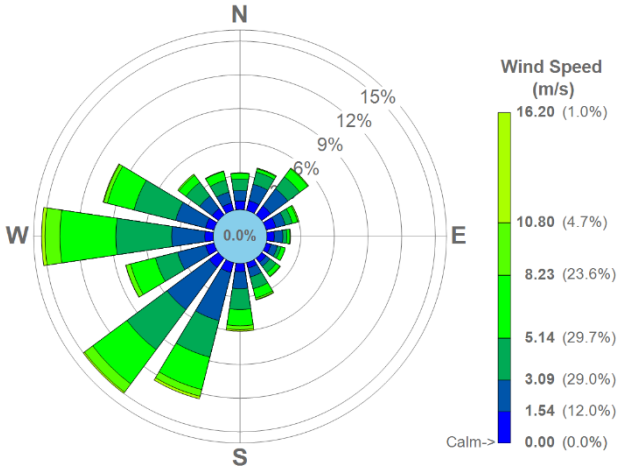


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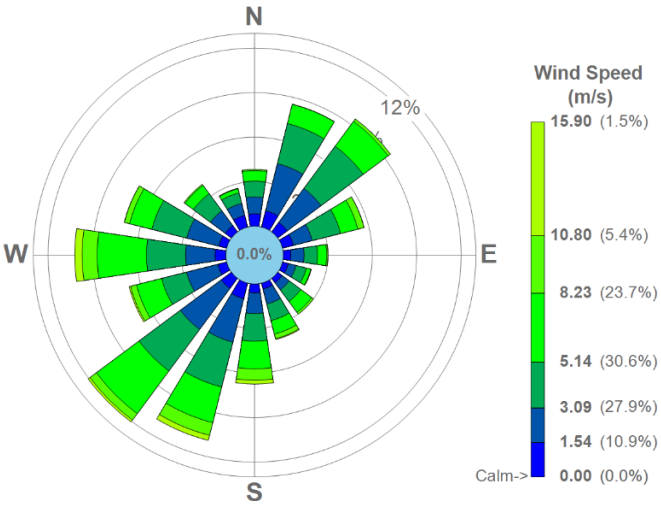


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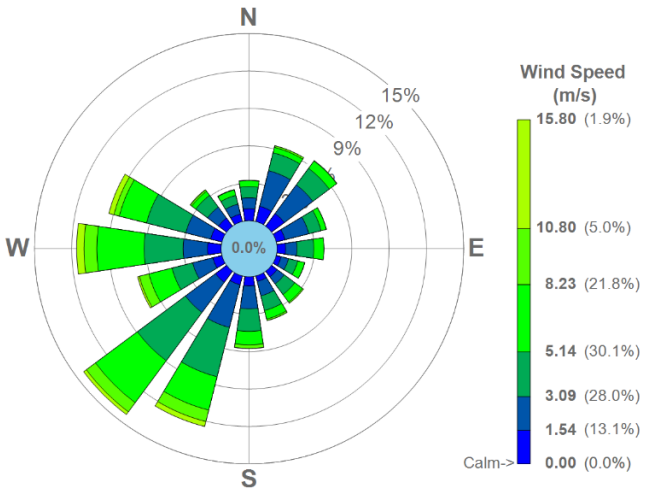
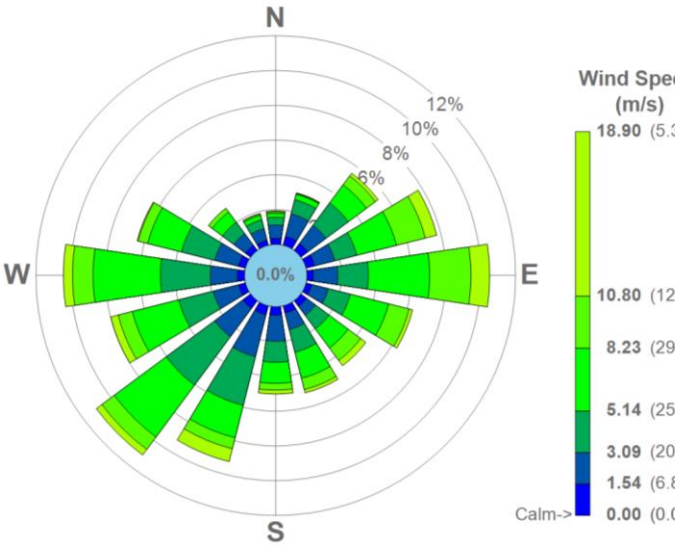



**2019**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Wind Spe
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Calm->

**2020**

# Appendix B Modelled Receptor Locations

Table B-1 Modelled Human Receptor Locations

| Receptor | Description | X Coordinate | Y Coordinate | Height (m) | Approximate Distance from Modelled Stack Locations (m) |
|---|---|---|---|---|---|
| R01 | Lady Down Farm, Canal Road | 385143.0 | 159239.1 | 1.5 | 620 m northeast |
| R02 | The Fulling Mill, Canal Road | 385357.3 | 159111.6 | 1.5 | 700 m northeast |
| R03 | 27, Parklands | 385464.1 | 158968.2 | 1.5 | 740 m northeast |
| R04 | 76, Landford Road | 385339.7 | 158823.1 | 1.5 | 580 m east |
| R05 | 100d, Langford Road | 385260.3 | 158730.2 | 1.5 | 500 m east |
| R06 | 25, Landford Road | 385158.7 | 158598.1 | 1.5 | 430 m southeast |
| R07 | 74, Francis Street | 385092.9 | 158476.3 | 1.5 | 430 m southeast |
| R08 | In$NO_x$ Mill Close | 384923.3 | 158103.3 | 1.5 | 670 m south |
| R09 | 18, A363 Cockhill | 384678.6 | 158171.6 | 1.5 | 590 m south |
| R10 | Farm Close | 384603.4 | 158380.0 | 1.5 | 410 m southwest |
| R11 | 42, A363 Cockhill | 384411.0 | 158449.4 | 1.5 | 460 m southwest |
| R12 | 6, A363 Trowle | 384324.0 | 158619.0 | 1.5 | 460 m west |
| R13 | 1, A363 Trowle | 384178.2 | 158815.5 | 1.5 | 590 m west |
| R14 | Longscroft Children's Nursery School, A363 Trowle | 384084.7 | 159012.0 | 1.5 | 720 m northwest |
| R15 | Widbrook House, Widbrook Hill | 383731.6 | 159313.1 | 1.5 | 1,170 m northwest |
| R16 | Old Farm, A363 Trowbridge Road | 383621.1 | 159571.4 | 1.5 | 1,410 m northwest |
| R17 | 103, Southville Road | 383582.7 | 160209.7 | 1.5 | 1,870 m northwest |

Table B-2 Modelled Ecological Sites

| Receptor | Grid Reference | | Site Name (Designation) | Interest Status | Approximate Distance from Modelled Stack Locations (m) |
|---|---|---|---|---|---|
| | X | Y | | | |
| LWS1 | 384593.6 | 160127.7 | Great Bradford Wood Ancient Woodland / LWS | Local | 1,390 m north |
| LWS2 | 384382.6 | 158086.9 | Lynwood Drive Pond LWS | Local | 770 m southwest |
| LWS3 | 385978.0 | 157659.8 | Biss Meadows Country | Local | 1,640 m southeast |

| Receptor | Grid Reference | | Site Name (Designation) | Interest Status | Approximate Distance from Modelled Stack Locations (m) |
|---|---|---|---|---|---|
| | X | Y | | | |
| | | | Park LWS | | |
| LWS4a | 384169.5 | 159510.6 | Widbrook Wood LWS | Local | 960 m northwest |
| LWS4b | 384379.8 | 159561.2 | Widbrook Wood LWS | Local | 890 m northwest |
| LWS4c | 384569.7 | 159557.7 | Widbrook Wood LWS | Local | 830 m northwest |
| LWS4d | 384769.0 | 159543.5 | Widbrook Wood LWS | Local | 760 m north |
| LWS4e | 384966.5 | 159589.6 | Widbrook Wood LWS | Local | 860 m northeast |
| LWS4f | 385148.3 | 159536.7 | Widbrook Wood LWS | Local | 870 m northeast |
| LWS4g | 385318.8 | 159431.4 | Widbrook Wood LWS | Local | 880 m northeast |
| LWS4h | 385500.3 | 159437.0 | Widbrook Wood LWS | Local | 1,010 m northeast |
| LWS5a | 384486.9 | 159663.7 | Bristol River Avon LWS | Local | 950 m northwest |
| LWS5b | 384671.0 | 159591.8 | Bristol River Avon LWS | Local | 840 m north |
| LWS5c | 384863.3 | 159611.5 | Bristol River Avon LWS | Local | 860 m north |
| LWS5d | 385042.4 | 159681.5 | Bristol River Avon LWS | Local | 970 m northeast |
| LWS6a | 384007.9 | 159511.5 | Kennet and Avon Canal LWS | Local | 1,070 m northwest |
| LWS6b | 384094.2 | 159481.1 | Kennet and Avon Canal LWS | Local | 990 m northwest |
| LWS6c | 384187.1 | 159494.4 | Kennet and Avon Canal LWS | Local | 910 m northwest |
| LWS6d | 384281.0 | 159527.9 | Kennet and Avon Canal LWS | Local | 940 m northwest |
| LWS6e | 384377.9 | 159545.3 | Kennet and Avon Canal LWS | Local | 880 m northwest |
| LWS6f | 384476.7 | 159544.7 | Kennet and Avon Canal LWS | Local | 840 m northwest |
| LWS6g | 384571.7 | 159544.1 | Kennet and Avon Canal LWS | Local | 810 m north |
| LWS6h | 384671.7 | 159543.4 | Kennet and Avon Canal LWS | Local | 790 m north |
| LWS6i | 384770.2 | 159528.8 | Kennet and Avon Canal LWS | Local | 790 m north |
| LWS6j | 384872.5 | 159546.7 | Kennet and Avon Canal LWS | Local | 800 m northeast |
| LWS6k | 384969.3 | 159574.3 | Kennet and Avon Canal LWS | Local | 850 m northeast |
| LWS6l | 385077.3 | 159560.1 | Kennet and Avon Canal LWS | Local | 870 m northeast |

| Receptor | Grid Reference | | Site Name (Designation) | Interest Status | Approximate Distance from Modelled Stack Locations (m) |
|---|---|---|---|---|---|
| | X | Y | | | |
| LWS6m | 385153.1 | 159499.8 | Kennet and Avon Canal LWS | Local | 840 m northeast |
| LWS6n | 385232.6 | 159442.7 | Kennet and Avon Canal LWS | Local | 830 m northeast |
| LWS6o | 385328.9 | 159412.7 | Kennet and Avon Canal LWS | Local | 870 m northeast |
| LWS6p | 385427.1 | 159410.1 | Kennet and Avon Canal LWS | Local | 930 m northeast |
| LWS6q | 385529.4 | 159421.2 | Kennet and Avon Canal LWS | Local | 1,020 m northeast |
| SAC1a | 379585.6 | 160711.0 | Bath & Bradford on Avon Bats SAC | European | 5,540 m northwest |
| SAC1b | 377040.7 | 162543.0 | Bath & Bradford on Avon Bats SAC | European | 8,620 m northwest |
| SAC1c | 376838.4 | 162441.6 | Bath & Bradford on Avon Bats SAC | European | 8,740 m northwest |
| SAC1d | 376812.9 | 162208.1 | Bath & Bradford on Avon Bats SAC | European | 8,670 m northwest |
| SAC1e | 376756.5 | 162227.0 | Bath & Bradford on Avon Bats SAC | European | 8,750 m northwest |
| SAC1f | 375917.6 | 162379.3 | Bath & Bradford on Avon Bats SAC | European | 9,570 m northwest |
| SAC1g | 375609.7 | 162223.2 | Bath & Bradford on Avon Bats SAC | European | 9,790 m northwest |
| SAC1h | 377801.7 | 165036.9 | Bath & Bradford on Avon Bats SAC | European | 9,380 m northwest |
| SAC1i | 379415.5 | 165239.3 | Bath & Bradford on Avon Bats SAC | European | 8,410 m northwest |
| SAC1j | 383341.4 | 168335.1 | Bath & Bradford on Avon Bats SAC | European | 9,690 m north |
| SAC2 | 389864.6 | 150859.2 | Salisbury Plain SAC / SPA | European | 9,400 m southeast |

# 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 | 0.9 | **2.4%** | 8.7 | 21.8% |
| R02 | 0.4 | 1.0% | 8.2 | 20.4% |
| R03 | 0.3 | 0.9% | 8.5 | 21.4% |
| R04 | 0.7 | **1.7%** | 8.9 | 22.2% |
| R05 | 1.2 | **3.0%** | 9.4 | 23.5% |
| R06 | 1.3 | **3.1%** | 9.5 | 23.6% |
| R07 | 0.5 | **1.2%** | 8.7 | 21.7% |
| R08 | 0.2 | 0.4% | 6.7 | 16.7% |
| R09 | 0.3 | 0.8% | 6.8 | 17.1% |
| R10 | 0.8 | **2.1%** | 7.3 | 18.3% |
| R11 | 0.6 | **1.5%** | 7.1 | 17.7% |
| R12 | 0.8 | **1.9%** | 7.3 | 18.1% |
| R13 | 0.5 | **1.2%** | 7.0 | 17.4% |
| R14 | 0.3 | 0.6% | 6.2 | 15.5% |
| R15 | 0.1 | 0.3% | 5.8 | 14.4% |
| R16 | 0.1 | 0.2% | 5.7 | 14.3% |
| R17 | 0.1 | 0.1% | 6.0 | 15.0% |
| **EAL** | **40 µg/m$^3$** | | | |

Exceedances of the screening threshold of 1% of the EAL are shown 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 | 6.2 | 3.1% | 21.8 | 10.9% |
| R02 | 4.4 | 2.2% | 20.0 | 10.0% |
| R03 | 4.8 | 2.4% | 21.2 | 10.6% |
| R04 | 7.5 | 3.8% | 23.9 | 12.0% |
| R05 | 9.8 | 4.9% | 26.2 | 13.1% |
| R06 | 13.9 | 7.0% | 30.3 | 15.2% |
| R07 | 8.3 | 4.2% | 24.7 | 12.4% |

| Receptor | 99.79%ile 1-Hour Mean $NO_2$ Concentration (µg/m$^3$) | | | |
|---|---|---|---|---|
| | PC | PC as % of EAL | PEC | PEC as % of EAL |
| R08 | 6.6 | 3.3% | 19.6 | 9.8% |
| R09 | 7.4 | 3.7% | 20.4 | 10.2% |
| R10 | 8.6 | 4.3% | 21.6 | 10.8% |
| R11 | 6.9 | 3.4% | 19.9 | 9.9% |
| R12 | 8.0 | 4.0% | 21.0 | 10.5% |
| R13 | 6.2 | 3.1% | 19.2 | 9.6% |
| R14 | 4.7 | 2.3% | 16.5 | 8.3% |
| R15 | 2.8 | 1.4% | 14.1 | 7.0% |
| R16 | 2.7 | 1.3% | 14.0 | 7.0% |
| R17 | 2.3 | 1.2% | 14.2 | 7.1% |
| **EAL** | **200 µg/m$^3$** | | | |

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 | 4.5 | 3.6% | 5.3 | 4.2% |
| R02 | 1.6 | 1.3% | 2.3 | 1.9% |
| R03 | 1.6 | 1.3% | 2.3 | 1.9% |
| R04 | 2.5 | 2.0% | 3.3 | 2.6% |
| R05 | 4.4 | 3.5% | 5.1 | 4.1% |
| R06 | 5.4 | 4.3% | 6.1 | 4.9% |
| R07 | 2.6 | 2.1% | 3.3 | 2.7% |
| R08 | 1.5 | 1.2% | 2.2 | 1.8% |
| R09 | 2.3 | 1.8% | 3.0 | 2.4% |
| R10 | 4.6 | 3.7% | 5.3 | 4.2% |
| R11 | 4.3 | 3.4% | 5.0 | 4.0% |
| R12 | 3.5 | 2.8% | 4.3 | 3.4% |
| R13 | 2.7 | 2.1% | 3.4 | 2.7% |
| R14 | 1.5 | 1.2% | 2.2 | 1.8% |
| R15 | 1.0 | 0.8% | 1.7 | 1.3% |
| R16 | 0.7 | 0.6% | 1.5 | 1.2% |

| Receptor | 99.19%ile 24-Hour Mean $SO_2$ Concentration (µg/m³) | | | |
|---|---|---|---|---|
| | PC | PC as % of EAL | PEC | PEC as % of EAL |
| R17 | 0.6 | 0.5% | 1.3 | 1.0% |
| **EAL** | **125 µg/m³** | | | |

Table C-4 Predicted 1-Hour Mean $SO_2$ Concentrations

| Receptor | 99.73%ile 1-Hour Mean $SO_2$ Concentration (µg/m³) | | | |
|---|---|---|---|---|
| | PC | PC as % of EAL | PEC | PEC as % of EAL |
| R01 | 8.2 | 2.3% | 9.4 | 2.7% |
| R02 | 5.7 | 1.6% | 6.9 | 2.0% |
| R03 | 6.5 | 1.8% | 7.7 | 2.2% |
| R04 | 9.9 | 2.8% | 11.1 | 3.2% |
| R05 | 13.7 | 3.9% | 14.9 | 4.3% |
| R06 | 17.7 | 5.1% | 18.9 | 5.4% |
| R07 | 11.4 | 3.3% | 12.6 | 3.6% |
| R08 | 7.8 | 2.2% | 9.0 | 2.6% |
| R09 | 10.2 | 2.9% | 11.4 | 3.3% |
| R10 | 12.2 | 3.5% | 13.4 | 3.8% |
| R11 | 9.0 | 2.6% | 10.2 | 2.9% |
| R12 | 10.0 | 2.9% | 11.2 | 3.2% |
| R13 | 8.2 | 2.3% | 9.4 | 2.7% |
| R14 | 6.1 | 1.7% | 7.3 | 2.1% |
| R15 | 3.4 | 1.0% | 4.6 | 1.3% |
| R16 | 3.2 | 0.9% | 4.5 | 1.3% |
| R17 | 3.0 | 0.9% | 4.2 | 1.2% |
| **EAL** | **350 µg/m³** | | | |

Table C-5 Predicted 15-minute Mean $SO_2$ Concentrations

| Receptor | 99.99%ile 15-Minute Mean $SO_2$ Concentration (µg/m³) | | | |
|---|---|---|---|---|
| | PC | PC as % of EAL | PEC | PEC as % of EAL |
| R01 | 11.9 | 4.5% | 13.5 | 5.1% |
| R02 | 8.9 | 3.4% | 10.6 | 4.0% |
| R03 | 10.1 | 3.8% | 11.8 | 4.4% |

| Receptor | 99.99%ile 15-Minute Mean $SO_2$ Concentration (µg/m³) | | | |
|---|---|---|---|---|
| | PC | PC as % of EAL | PEC | PEC as % of EAL |
| R04 | 16.6 | 6.2% | 18.2 | 6.9% |
| R05 | 25.1 | 9.4% | 26.8 | 10.1% |
| R06 | 31.3 | **11.8%** | 33.0 | 12.4% |
| R07 | 17.9 | 6.7% | 19.5 | 7.3% |
| R08 | 17.2 | 6.5% | 18.9 | 7.1% |
| R09 | 16.7 | 6.3% | 18.3 | 6.9% |
| R10 | 18.1 | 6.8% | 19.7 | 7.4% |
| R11 | 13.6 | 5.1% | 15.2 | 5.7% |
| R12 | 16.3 | 6.1% | 17.9 | 6.7% |
| R13 | 13.1 | 4.9% | 14.7 | 5.5% |
| R14 | 10.0 | 3.7% | 11.6 | 4.4% |
| R15 | 5.9 | 2.2% | 7.5 | 2.8% |
| R16 | 5.6 | 2.1% | 7.3 | 2.7% |
| R17 | 5.7 | 2.1% | 7.3 | 2.8% |
| **EAL** | **266 µg/m³** | | | |

Exceedances of the screening threshold of 10% of the EAL are shown in bold.

Table C-6 Predicted Annual Mean $PM_{10}$ Concentrations

| Receptor | Annual Mean $PM_{10}$ Concentration (µg/m³) | | | |
|---|---|---|---|---|
| | PC | PC as % of EAL | PEC | PEC as % of EAL |
| R01 | 0.1 | 0.3% | 12.6 | 31.6% |
| R02 | < 0.1 | 0.1% | 12.6 | 31.4% |
| R03 | < 0.1 | 0.1% | 12.6 | 31.4% |
| R04 | 0.1 | 0.2% | 12.6 | 31.5% |
| R05 | 0.1 | 0.3% | 12.7 | 31.6% |
| R06 | 0.1 | 0.4% | 12.7 | 31.6% |
| R07 | 0.1 | 0.1% | 12.6 | 31.4% |
| R08 | < 0.1 | < 0.1% | 12.4 | 31.1% |
| R09 | < 0.1 | 0.1% | 12.5 | 31.1% |
| R10 | 0.1 | 0.2% | 12.5 | 31.3% |
| R11 | 0.1 | 0.2% | 12.5 | 31.2% |
| R12 | 0.1 | 0.2% | 12.5 | 31.3% |
| R13 | 0.1 | 0.1% | 12.5 | 31.2% |

| Receptor | Annual Mean $PM_{10}$ Concentration (µg/m³) | | | |
|---|---|---|---|---|
| | PC | PC as % of EAL | PEC | PEC as % of EAL |
| R14 | < 0.1 | 0.1% | 12.5 | 31.2% |
| R15 | < 0.1 | < 0.1% | 12.6 | 31.6% |
| R16 | < 0.1 | < 0.1% | 12.6 | 31.6% |
| R17 | < 0.1 | < 0.1% | 12.0 | 30.0% |
| **EAL** | **40 µg/m³** | | | |

Table C-7 Predicted 24-Hour Mean $PM_{10}$ Concentrations

| Receptor | 90.41%ile 24-Hour Mean $PM_{10}$ Concentration (µg/m³) | | | |
|---|---|---|---|---|
| | PC | PC as % of EAL | PEC | PEC as % of EAL |
| R01 | 0.3 | 0.7% | 15.1 | 30.2% |
| R02 | 0.1 | 0.3% | 14.9 | 29.8% |
| R03 | 0.1 | 0.3% | 14.9 | 29.8% |
| R04 | 0.3 | 0.5% | 15.0 | 30.0% |
| R05 | 0.4 | 0.8% | 15.2 | 30.3% |
| R06 | 0.5 | 0.9% | 15.2 | 30.5% |
| R07 | 0.2 | 0.3% | 14.9 | 29.9% |
| R08 | 0.1 | 0.1% | 14.7 | 29.4% |
| R09 | 0.1 | 0.2% | 14.8 | 29.6% |
| R10 | 0.3 | 0.7% | 15.0 | 30.0% |
| R11 | 0.2 | 0.4% | 14.9 | 29.7% |
| R12 | 0.3 | 0.6% | 15.0 | 30.0% |
| R13 | 0.2 | 0.4% | 14.8 | 29.7% |
| R14 | 0.1 | 0.2% | 14.8 | 29.6% |
| R15 | < 0.1 | 0.1% | 14.9 | 29.8% |
| R16 | < 0.1 | 0.1% | 14.9 | 29.8% |
| R17 | < 0.1 | < 0.1% | 14.2 | 28.3% |
| **EAL** | **50 µg/m³** | | | |

Table C-8 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 | 0.1 | 0.5% | 8.2 | 41.0% |
| R02 | < 0.1 | 0.2% | 8.1 | 40.7% |
| R03 | < 0.1 | 0.2% | 8.6 | 42.8% |
| R04 | 0.1 | 0.4% | 8.6 | 43.0% |
| R05 | 0.1 | 0.7% | 8.7 | 43.3% |
| R06 | 0.1 | 0.7% | 8.7 | 43.3% |
| R07 | 0.1 | 0.3% | 8.6 | 42.8% |
| R08 | < 0.1 | 0.1% | 8.1 | 40.4% |
| R09 | < 0.1 | 0.2% | 8.1 | 40.4% |
| R10 | 0.1 | 0.5% | 8.1 | 40.7% |
| R11 | 0.1 | 0.3% | 8.1 | 40.6% |
| R12 | 0.1 | 0.5% | 8.1 | 40.7% |
| R13 | 0.1 | 0.3% | 8.1 | 40.5% |
| R14 | < 0.1 | 0.2% | 7.9 | 39.4% |
| R15 | < 0.1 | 0.1% | 7.8 | 39.2% |
| R16 | < 0.1 | < 0.1% | 7.8 | 39.2% |
| R17 | < 0.1 | < 0.1% | 7.9 | 39.3% |
| **EAL** | **20 µg/m$^3$** | | | |

Table C-9 Predicted 1-hour Mean CO Concentrations

| Receptor | 1-Hour Mean CO Concentration (µg/m$^3$) | | | |
|---|---|---|---|---|
| | PC | PC as % of EAL | PEC | PEC as % of EAL |
| R01 | 48.8 | 0.2% | 584.8 | 1.9% |
| R02 | 38.9 | 0.1% | 574.9 | 1.9% |
| R03 | 45.7 | 0.2% | 597.7 | 2.0% |
| R04 | 108.3 | 0.4% | 660.3 | 2.2% |
| R05 | 153.6 | 0.5% | 705.6 | 2.4% |
| R06 | 125.7 | 0.4% | 677.7 | 2.3% |
| R07 | 76.5 | 0.3% | 628.5 | 2.1% |
| R08 | 81.7 | 0.3% | 639.7 | 2.1% |
| R09 | 79.3 | 0.3% | 637.3 | 2.1% |

| Receptor | 1-Hour Mean CO Concentration (µg/m³) | | | |
|---|---|---|---|---|
| | PC | PC as % of EAL | PEC | PEC as % of EAL |
| R10 | 201.9 | 0.7% | 759.9 | 2.5% |
| R11 | 53.0 | 0.2% | 611.0 | 2.0% |
| R12 | 64.6 | 0.2% | 622.6 | 2.1% |
| R13 | 48.1 | 0.2% | 606.1 | 2.0% |
| R14 | 44.6 | 0.1% | 592.6 | 2.0% |
| R15 | 32.2 | 0.1% | 572.2 | 1.9% |
| R16 | 27.3 | 0.1% | 567.3 | 1.9% |
| R17 | 28.1 | 0.1% | 544.1 | 1.8% |
| **EAL** | **30,000 µg/m³** | | | |

Table C-10 Predicted 8-hour Average CO Concentrations

| Receptor | 8-Hour Average CO Concentration (µg/m³) | | | |
|---|---|---|---|---|
| | PC | PC as % of EAL | PEC | PEC as % of EAL |
| R01 | 34.4 | 0.3% | 409.6 | 4.1% |
| R02 | 19.5 | 0.2% | 394.7 | 3.9% |
| R03 | 17.3 | 0.2% | 403.7 | 4.0% |
| R04 | 40.6 | 0.4% | 427.0 | 4.3% |
| R05 | 48.1 | 0.5% | 434.5 | 4.3% |
| R06 | 67.8 | 0.7% | 454.2 | 4.5% |
| R07 | 42.9 | 0.4% | 429.3 | 4.3% |
| R08 | 17.6 | 0.2% | 408.2 | 4.1% |
| R09 | 25.6 | 0.3% | 416.2 | 4.2% |
| R10 | 45.1 | 0.5% | 435.7 | 4.4% |
| R11 | 34.1 | 0.3% | 424.7 | 4.2% |
| R12 | 53.1 | 0.5% | 443.7 | 4.4% |
| R13 | 29.5 | 0.3% | 420.1 | 4.2% |
| R14 | 20.9 | 0.2% | 404.5 | 4.0% |
| R15 | 14.5 | 0.1% | 392.5 | 3.9% |
| R16 | 14.1 | 0.1% | 392.1 | 3.9% |
| R17 | 11.5 | 0.1% | 372.7 | 3.7% |
| **EAL** | **10,000 µg/m³** | | | |

Table C-11 Predicted Annual Mean NMVOC Concentrations

| Receptor | Annual Mean NMVOC Concentration (µg/m$^3$) | | | |
|---|---|---|---|---|
| | PC | PC as % of EAL for $C_6H_6$ | PEC | PEC as % of EAL for $C_6H_6$ |
| R01 | 0.5 | **9.9%** | 0.8 | 16.8% |
| R02 | 0.2 | **4.1%** | 0.6 | 11.0% |
| R03 | 0.2 | **4.6%** | 0.6 | 11.5% |
| R04 | 0.4 | **7.3%** | 0.7 | 14.2% |
| R05 | 0.5 | **9.6%** | 0.8 | 16.5% |
| R06 | 0.3 | **6.8%** | 0.7 | 13.7% |
| R07 | 0.2 | **3.2%** | 0.5 | 10.1% |
| R08 | 0.1 | **1.3%** | 0.4 | 8.2% |
| R09 | 0.1 | **2.2%** | 0.5 | 9.1% |
| R10 | 0.3 | **5.4%** | 0.6 | 12.3% |
| R11 | 0.3 | **6.1%** | 0.7 | 13.0% |
| R12 | 0.2 | **4.6%** | 0.6 | 11.5% |
| R13 | 0.2 | **3.8%** | 0.5 | 10.7% |
| R14 | 0.1 | **2.4%** | 0.5 | 9.3% |
| R15 | < 0.1 | 1.0% | 0.4 | 7.9% |
| R16 | < 0.1 | 0.6% | 0.4 | 7.6% |
| R17 | < 0.1 | 0.6% | 0.4 | 7.5% |
| **EAL** | **5 µg/m$^3$** | | | |

Exceedances of the screening threshold of 1% of the EAL are shown in bold.

Table C-12 Predicted 24-hour Mean NMVOC Concentrations

| Receptor | 24-hour Mean NMVOC Concentration (µg/m$^3$) | | | |
|---|---|---|---|---|
| | PC | PC as % of EAL for $C_6H_6$ | PEC | PEC as % of EAL for $C_6H_6$ |
| R01 | 3.4 | **11.3%** | 3.8 | 12.7% |
| R02 | 1.8 | 6.0% | 2.2 | 7.4% |
| R03 | 2.1 | 7.0% | 2.5 | 8.3% |
| R04 | 2.8 | 9.4% | 3.2 | 10.8% |
| R05 | 4.1 | **13.7%** | 4.5 | 15.1% |
| R06 | 2.4 | 8.0% | 2.8 | 9.3% |
| R07 | 1.5 | 5.1% | 1.9 | 6.4% |
| R08 | 1.1 | 3.6% | 1.5 | 4.9% |

| Receptor | 24-hour Mean NMVOC Concentration (µg/m$^3$) | | | |
|---|---|---|---|---|
| | PC | PC as % of EAL for $C_6H_6$ | PEC | PEC as % of EAL for $C_6H_6$ |
| R09 | 1.7 | 5.6% | 2.1 | 6.9% |
| R10 | 2.5 | 8.2% | 2.9 | 9.6% |
| R11 | 3.7 | **12.3%** | 4.1 | 13.6% |
| R12 | 2.4 | 7.8% | 2.8 | 9.2% |
| R13 | 1.7 | 5.7% | 2.1 | 7.0% |
| R14 | 1.5 | 4.9% | 1.9 | 6.3% |
| R15 | 1.1 | 3.7% | 1.5 | 5.1% |
| R16 | 0.8 | 2.5% | 1.2 | 3.9% |
| R17 | 0.8 | 2.6% | 1.2 | 3.9% |
| **EAL** | **30 µg/m$^3$** | | | |

Exceedances of the screening threshold of 10% of the EAL are shown in bold.

# Appendix D Modelled Ecological Receptor Results

Table D-1 Predicted Annual Mean $NO_x$ Concentrations

| Receptor | Designated Site | Annual Mean $NO_x$ | | | |
|---|---|---|---|---|---|
| | | PC ($\mu g/m^3$) | PC as % of $C_{Le}$ | PEC ($\mu g/m^3$) | PEC as % of $C_{Le}$ |
| LWS1 | Great Bradford Wood Ancient Woodland / LWS | 0.2 | 0.7% | 7.9 | 26.3% |
| LWS2 | Lynwood Drive Pond LWS | 0.7 | 2.2% | 9.4 | 31.3% |
| LWS3 | Biss Meadows Country Park LWS | 0.1 | 0.4% | 11.9 | 39.7% |
| LWS4a | Widbrook Wood LWS | 0.2 | 0.6% | 8.0 | 26.7% |
| LWS4b | Widbrook Wood LWS | 0.3 | 1.1% | 8.1 | 27.2% |
| LWS4c | Widbrook Wood LWS | 0.4 | 1.5% | 8.3 | 27.5% |
| LWS4d | Widbrook Wood LWS | 0.6 | 1.9% | 8.4 | 28.0% |
| LWS4e | Widbrook Wood LWS | 0.5 | 1.7% | 8.3 | 27.8% |
| LWS4f | Widbrook Wood LWS | 0.7 | 2.4% | 10.3 | 34.5% |
| LWS4g | Widbrook Wood LWS | 0.8 | 2.8% | 10.5 | 34.9% |
| LWS4h | Widbrook Wood LWS | 0.6 | 1.8% | 10.2 | 33.9% |
| LWS5a | Bristol River Avon LWS | 0.3 | 1.1% | 8.1 | 27.2% |
| LWS5b | Bristol River Avon LWS | 0.4 | 1.5% | 8.3 | 27.5% |
| LWS5c | Bristol River Avon LWS | 0.5 | 1.7% | 8.3 | 27.8% |
| LWS5d | Bristol River Avon LWS | 0.4 | 1.4% | 10.0 | 33.5% |
| LWS6a | Kennet and Avon Canal LWS | 0.2 | 0.5% | 8.0 | 26.6% |
| LWS6b | Kennet and Avon Canal LWS | 0.2 | 0.6% | 8.0 | 26.7% |
| LWS6c | Kennet and Avon Canal LWS | 0.2 | 0.7% | 8.0 | 26.7% |
| LWS6d | Kennet and Avon Canal LWS | 0.3 | 0.9% | 8.1 | 27.0% |
| LWS6e | Kennet and Avon Canal LWS | 0.3 | 1.1% | 8.2 | 27.2% |
| LWS6f | Kennet and Avon Canal LWS | 0.4 | 1.3% | 8.2 | 27.4% |
| LWS6g | Kennet and Avon Canal LWS | 0.5 | 1.5% | 8.3 | 27.6% |
| LWS6h | Kennet and Avon Canal LWS | 0.5 | 1.6% | 8.3 | 27.7% |
| LWS6i | Kennet and Avon Canal LWS | 0.6 | 2.0% | 8.4 | 28.1% |
| LWS6j | Kennet and Avon Canal LWS | 0.6 | 2.0% | 8.4 | 28.0% |
| LWS6k | Kennet and Avon Canal LWS | 0.5 | 1.7% | 8.3 | 27.8% |
| LWS6l | Kennet and Avon Canal LWS | 0.6 | 2.0% | 10.2 | 34.0% |
| LWS6m | Kennet and Avon Canal LWS | 0.8 | 2.7% | 10.4 | 34.8% |

| Receptor | Designated Site | Annual Mean $NO_x$ | | | |
|---|---|---|---|---|---|
| | | PC ($\mu g/m^3$) | PC as % of $C_{Le}$ | PEC ($\mu g/m^3$) | PEC as % of $C_{Le}$ |
| LWS6n | Kennet and Avon Canal LWS | 1.0 | 3.2% | 10.6 | 35.3% |
| LWS6o | Kennet and Avon Canal LWS | 0.8 | 2.7% | 10.4 | 34.8% |
| LWS6p | Kennet and Avon Canal LWS | 0.6 | 2.1% | 10.2 | 34.1% |
| LWS6q | Kennet and Avon Canal LWS | 0.5 | 1.7% | 10.1 | 33.8% |
| SAC1a | Bath & Bradford on Avon Bats SAC | < 0.1 | 0.1% | 7.6 | 25.3% |
| SAC1b | Bath & Bradford on Avon Bats SAC | < 0.1 | < 0.1% | 11.6 | 38.8% |
| SAC1c | Bath & Bradford on Avon Bats SAC | < 0.1 | < 0.1% | 9.2 | 30.8% |
| SAC1d | Bath & Bradford on Avon Bats SAC | < 0.1 | < 0.1% | 9.2 | 30.8% |
| SAC1e | Bath & Bradford on Avon Bats SAC | < 0.1 | < 0.1% | 9.2 | 30.8% |
| SAC1f | Bath & Bradford on Avon Bats SAC | < 0.1 | < 0.1% | 10.1 | 33.6% |
| SAC1g | Bath & Bradford on Avon Bats SAC | < 0.1 | < 0.1% | 10.1 | 33.6% |
| SAC1h | Bath & Bradford on Avon Bats SAC | < 0.1 | < 0.1% | 9.3 | 31.0% |
| SAC1i | Bath & Bradford on Avon Bats SAC | < 0.1 | < 0.1% | 8.1 | 27.1% |
| SAC1j | Bath & Bradford on Avon Bats SAC | < 0.1 | < 0.1% | 7.7 | 25.6% |
| SAC2 | Salisbury Plain SAC / SPA | < 0.1 | < 0.1% | 6.8 | 22.7% |

Table D-2 Predicted 24-hour Mean $NO_x$ Concentrations

| Receptor | Designated Site | 24-Hour Mean $NO_x$ | | | |
|---|---|---|---|---|---|
| | | PC ($\mu g/m^3$) | PC as % of $C_{Le}$ | PEC ($\mu g/m^3$) | PEC as % of $C_{Le}$ |
| LWS1 | Great Bradford Wood Ancient Woodland / LWS | 5.2 | 7.0% | 20.5 | 27.4% |
| LWS2 | Lynwood Drive Pond LWS | 8.0 | 10.6% | 25.4 | 33.9% |
| LWS3 | Biss Meadows Country Park LWS | 1.6 | 2.1% | 25.2 | 33.6% |
| LWS4a | Widbrook Wood LWS | 3.3 | 4.4% | 18.9 | 25.3% |
| LWS4b | Widbrook Wood LWS | 9.3 | 12.5% | 25.0 | 33.3% |
| LWS4c | Widbrook Wood LWS | 9.3 | 12.4% | 24.9 | 33.2% |
| LWS4d | Widbrook Wood LWS | 11.9 | 15.9% | 27.5 | 36.7% |
| LWS4e | Widbrook Wood LWS | 5.9 | 7.9% | 21.5 | 28.7% |
| LWS4f | Widbrook Wood LWS | 4.9 | 6.5% | 24.1 | 32.1% |
| LWS4g | Widbrook Wood LWS | 6.5 | 8.7% | 25.8 | 34.3% |
| LWS4h | Widbrook Wood LWS | 4.0 | 5.4% | 23.3 | 31.0% |

| Receptor | Designated Site | 24-Hour Mean $NO_x$ | | | |
|---|---|---|---|---|---|
| | | PC ($\mu g/m^3$) | PC as % of $C_{Le}$ | PEC ($\mu g/m^3$) | PEC as % of $C_{Le}$ |
| LWS5a | Bristol River Avon LWS | 10.5 | 13.9% | 26.1 | 34.8% |
| LWS5b | Bristol River Avon LWS | 9.3 | 12.3% | 24.9 | 33.2% |
| LWS5c | Bristol River Avon LWS | 6.1 | 8.2% | 21.8 | 29.0% |
| LWS5d | Bristol River Avon LWS | 5.2 | 7.0% | 24.5 | 32.6% |
| LWS6a | Kennet and Avon Canal LWS | 2.8 | 3.7% | 18.4 | 24.5% |
| LWS6b | Kennet and Avon Canal LWS | 3.1 | 4.1% | 18.7 | 25.0% |
| LWS6c | Kennet and Avon Canal LWS | 3.4 | 4.6% | 19.1 | 25.4% |
| LWS6d | Kennet and Avon Canal LWS | 4.9 | 6.6% | 20.6 | 27.4% |
| LWS6e | Kennet and Avon Canal LWS | 9.0 | 12.0% | 24.7 | 32.9% |
| LWS6f | Kennet and Avon Canal LWS | 12.6 | 16.8% | 28.2 | 37.7% |
| LWS6g | Kennet and Avon Canal LWS | 9.7 | 13.0% | 25.4 | 33.8% |
| LWS6h | Kennet and Avon Canal LWS | 10.4 | 13.9% | 26.1 | 34.8% |
| LWS6i | Kennet and Avon Canal LWS | 12.4 | 16.6% | 28.1 | 37.4% |
| LWS6j | Kennet and Avon Canal LWS | 7.1 | 9.5% | 22.7 | 30.3% |
| LWS6k | Kennet and Avon Canal LWS | 6.2 | 8.3% | 21.9 | 29.1% |
| LWS6l | Kennet and Avon Canal LWS | 6.0 | 8.0% | 25.2 | 33.7% |
| LWS6m | Kennet and Avon Canal LWS | 5.4 | 7.2% | 24.7 | 32.9% |
| LWS6n | Kennet and Avon Canal LWS | 7.6 | 10.2% | 26.9 | 35.8% |
| LWS6o | Kennet and Avon Canal LWS | 6.6 | 8.8% | 25.8 | 34.4% |
| LWS6p | Kennet and Avon Canal LWS | 4.7 | 6.2% | 23.9 | 31.9% |
| LWS6q | Kennet and Avon Canal LWS | 3.6 | 4.8% | 22.8 | 30.4% |
| SAC1a | Bath & Bradford on Avon Bats SAC | 0.5 | 0.7% | 15.7 | 20.9% |
| SAC1b | Bath & Bradford on Avon Bats SAC | 0.1 | 0.2% | 23.4 | 31.2% |
| SAC1c | Bath & Bradford on Avon Bats SAC | 0.2 | 0.2% | 18.6 | 24.8% |
| SAC1d | Bath & Bradford on Avon Bats SAC | 0.2 | 0.2% | 18.6 | 24.8% |
| SAC1e | Bath & Bradford on Avon Bats SAC | 0.2 | 0.2% | 18.6 | 24.8% |
| SAC1f | Bath & Bradford on Avon Bats SAC | 0.1 | 0.2% | 20.3 | 27.0% |
| SAC1g | Bath & Bradford on Avon Bats SAC | 0.1 | 0.1% | 20.2 | 27.0% |
| SAC1h | Bath & Bradford on Avon Bats SAC | 0.1 | 0.1% | 18.7 | 24.9% |
| SAC1i | Bath & Bradford on Avon Bats SAC | 0.1 | 0.1% | 16.3 | 21.8% |
| SAC1j | Bath & Bradford on Avon Bats SAC | 0.4 | 0.5% | 15.7 | 20.9% |
| SAC2 | Salisbury Plain SAC / SPA | 0.1 | 0.1% | 13.7 | 18.2% |

Table D-3 Predicted Annual Mean $SO_2$ Concentrations

| Receptor | Designated Site | Annual Mean $SO_2$ | | | |
|---|---|---|---|---|---|
| | | PC ($\mu g/m^3$) | PC as % of $C_{Le}$ | PEC ($\mu g/m^3$) | PEC as % of $C_{Le}$ |
| LWS1 | Great Bradford Wood Ancient Woodland / LWS | 0.10 | 0.5% | 1.2 | 6.0% |
| LWS2 | Lynwood Drive Pond LWS | 0.32 | 1.6% | 1.6 | 7.9% |
| LWS3 | Biss Meadows Country Park LWS | 0.05 | 0.3% | 2.0 | 10.1% |
| LWS4a | Widbrook Wood LWS | 0.09 | 0.4% | 1.2 | 6.0% |
| LWS4b | Widbrook Wood LWS | 0.14 | 0.7% | 1.3 | 6.3% |
| LWS4c | Widbrook Wood LWS | 0.19 | 1.0% | 1.3 | 6.5% |
| LWS4d | Widbrook Wood LWS | 0.25 | 1.3% | 1.4 | 6.8% |
| LWS4e | Widbrook Wood LWS | 0.23 | 1.2% | 1.3 | 6.7% |
| LWS4f | Widbrook Wood LWS | 0.35 | 1.7% | 2.0 | 9.8% |
| LWS4g | Widbrook Wood LWS | 0.40 | 2.0% | 2.0 | 10.1% |
| LWS4h | Widbrook Wood LWS | 0.26 | 1.3% | 1.9 | 9.4% |
| LWS5a | Bristol River Avon LWS | 0.14 | 0.7% | 1.3 | 6.3% |
| LWS5b | Bristol River Avon LWS | 0.19 | 1.0% | 1.3 | 6.5% |
| LWS5c | Bristol River Avon LWS | 0.22 | 1.1% | 1.3 | 6.7% |
| LWS5d | Bristol River Avon LWS | 0.20 | 1.0% | 1.8 | 9.1% |
| LWS6a | Kennet and Avon Canal LWS | 0.07 | 0.4% | 1.2 | 5.9% |
| LWS6b | Kennet and Avon Canal LWS | 0.08 | 0.4% | 1.2 | 6.0% |
| LWS6c | Kennet and Avon Canal LWS | 0.09 | 0.5% | 1.2 | 6.0% |
| LWS6d | Kennet and Avon Canal LWS | 0.12 | 0.6% | 1.2 | 6.2% |
| LWS6e | Kennet and Avon Canal LWS | 0.15 | 0.7% | 1.3 | 6.3% |
| LWS6f | Kennet and Avon Canal LWS | 0.17 | 0.8% | 1.3 | 6.4% |
| LWS6g | Kennet and Avon Canal LWS | 0.20 | 1.0% | 1.3 | 6.5% |
| LWS6h | Kennet and Avon Canal LWS | 0.21 | 1.1% | 1.3 | 6.6% |
| LWS6i | Kennet and Avon Canal LWS | 0.26 | 1.3% | 1.4 | 6.9% |
| LWS6j | Kennet and Avon Canal LWS | 0.26 | 1.3% | 1.4 | 6.8% |
| LWS6k | Kennet and Avon Canal LWS | 0.24 | 1.2% | 1.3 | 6.7% |
| LWS6l | Kennet and Avon Canal LWS | 0.28 | 1.4% | 1.9 | 9.5% |
| LWS6m | Kennet and Avon Canal LWS | 0.39 | 2.0% | 2.0 | 10.1% |
| LWS6n | Kennet and Avon Canal LWS | 0.46 | 2.3% | 2.1 | 10.4% |

| Receptor | Designated Site | Annual Mean $SO_2$ | | | |
|---|---|---|---|---|---|
| | | PC ($\mu g/m^3$) | PC as % of $C_{Le}$ | PEC ($\mu g/m^3$) | PEC as % of $C_{Le}$ |
| LWS6o | Kennet and Avon Canal LWS | 0.39 | 1.9% | 2.0 | 10.0% |
| LWS6p | Kennet and Avon Canal LWS | 0.29 | 1.5% | 1.9 | 9.6% |
| LWS6q | Kennet and Avon Canal LWS | 0.25 | 1.2% | 1.9 | 9.3% |
| SAC1a | Bath & Bradford on Avon Bats SAC | 0.01 | < 0.1% | 1.0 | 5.2% |
| SAC1b | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 1.2 | 5.9% |
| SAC1c | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 1.1 | 5.5% |
| SAC1d | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 1.1 | 5.5% |
| SAC1e | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 1.1 | 5.5% |
| SAC1f | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 1.2 | 6.1% |
| SAC1g | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 1.2 | 6.1% |
| SAC1h | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 1.0 | 5.1% |
| SAC1i | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 0.9 | 4.5% |
| SAC1j | Bath & Bradford on Avon Bats SAC | 0.01 | < 0.1% | 0.9 | 4.7% |
| SAC2 | Salisbury Plain SAC / SPA | < 0.01 | < 0.1% | 0.8 | 4.2% |

Table D-4 Predicted Annual Nitrogen Deposition Rates

| Receptor | Designated Site | Annual Nitrogen Deposition | | | |
|---|---|---|---|---|---|
| | | PC (kgN/ha/yr) | PC as % of $C_{Lo}$ | PEC (kgN/ha/yr) | PEC as % of $C_{Lo}$ |
| LWS1 | Great Bradford Wood Ancient Woodland / LWS | 0.04 | 0.4% | 31.5 | 315.2% |
| LWS2 | Lynwood Drive Pond LWS | 0.07 | 1.4% | 17.2 | 344.2% |
| LWS3 | Biss Meadows Country Park LWS | 0.01 | 0.1% | 16.9 | 169.2% |
| LWS4a | Widbrook Wood LWS | 0.04 | 0.4% | 31.5 | 315.5% |
| LWS4b | Widbrook Wood LWS | 0.07 | 0.7% | 31.6 | 315.8% |
| LWS4c | Widbrook Wood LWS | 0.09 | 0.9% | 31.6 | 316.0% |
| LWS4d | Widbrook Wood LWS | 0.12 | 1.2% | 31.6 | 316.3% |
| LWS4e | Widbrook Wood LWS | 0.10 | 1.0% | 31.6 | 316.1% |
| LWS4f | Widbrook Wood LWS | 0.15 | 1.5% | 31.3 | 313.5% |
| LWS4g | Widbrook Wood LWS | 0.17 | 1.7% | 31.4 | 313.7% |
| LWS4h | Widbrook Wood LWS | 0.11 | 1.1% | 31.3 | 313.1% |
| LWS5a | Bristol River Avon LWS | 0.03 | 0.7% | 17.2 | 343.9% |
| LWS5b | Bristol River Avon LWS | 0.04 | 0.9% | 17.2 | 344.1% |

| Receptor | Designated Site | Annual Nitrogen Deposition | | | |
|---|---|---|---|---|---|
| | | PC (kgN/ha/yr) | PC as % of $C_{Lo}$ | PEC (kgN/ha/yr) | PEC as % of $C_{Lo}$ |
| LWS5c | Bristol River Avon LWS | 0.05 | 1.0% | 17.2 | 344.2% |
| LWS5d | Bristol River Avon LWS | 0.04 | 0.9% | 17.0 | 339.1% |
| LWS6a | Kennet and Avon Canal LWS | 0.02 | 0.3% | 17.2 | 343.5% |
| LWS6b | Kennet and Avon Canal LWS | 0.02 | 0.4% | 17.2 | 343.6% |
| LWS6c | Kennet and Avon Canal LWS | 0.02 | 0.4% | 17.2 | 343.6% |
| LWS6d | Kennet and Avon Canal LWS | 0.03 | 0.6% | 17.2 | 343.8% |
| LWS6e | Kennet and Avon Canal LWS | 0.03 | 0.7% | 17.2 | 343.9% |
| LWS6f | Kennet and Avon Canal LWS | 0.04 | 0.8% | 17.2 | 344.0% |
| LWS6g | Kennet and Avon Canal LWS | 0.05 | 0.9% | 17.2 | 344.1% |
| LWS6h | Kennet and Avon Canal LWS | 0.05 | 1.0% | 17.2 | 344.2% |
| LWS6i | Kennet and Avon Canal LWS | 0.06 | 1.2% | 17.2 | 344.4% |
| LWS6j | Kennet and Avon Canal LWS | 0.06 | 1.2% | 17.2 | 344.4% |
| LWS6k | Kennet and Avon Canal LWS | 0.05 | 1.1% | 17.2 | 344.3% |
| LWS6l | Kennet and Avon Canal LWS | 0.06 | 1.2% | 17.0 | 339.4% |
| LWS6m | Kennet and Avon Canal LWS | 0.08 | 1.6% | 17.0 | 339.8% |
| LWS6n | Kennet and Avon Canal LWS | 0.10 | 1.9% | 17.0 | 340.1% |
| LWS6o | Kennet and Avon Canal LWS | 0.08 | 1.6% | 17.0 | 339.8% |
| LWS6p | Kennet and Avon Canal LWS | 0.06 | 1.2% | 17.0 | 339.4% |
| LWS6q | Kennet and Avon Canal LWS | 0.05 | 1.1% | 17.0 | 339.3% |
| SAC1a | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 31.5 | 315.0% |
| SAC1b | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 30.4 | 304.0% |
| SAC1c | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 30.4 | 303.8% |
| SAC1d | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 30.4 | 303.8% |
| SAC1e | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 30.4 | 303.8% |
| SAC1f | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 30.4 | 303.6% |
| SAC1g | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 30.4 | 303.6% |
| SAC1h | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 29.4 | 294.0% |
| SAC1i | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 29.9 | 299.3% |
| SAC1j | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 30.1 | 301.2% |
| SAC2 | Salisbury Plain SAC / SPA | < 0.01 | < 0.1% | 16.2 | 323.2% |

Table D-5 Predicted Annual Acid Deposition Rates

| Receptor | Designated Site | Annual Acid Deposition | | | |
|---|---|---|---|---|---|
| | | PC (keq/ha/yr) | PC as % of $C_{Lo}$ | PEC (keq/ha/yr) | PEC as % of $C_{Lo}$ |
| LWS1 | Great Bradford Wood Ancient Woodland / LWS | 0.03 | 1.4% | 2.5 | 128.2% |
| LWS2 | Lynwood Drive Pond LWS | 0.04 | Not Sensitive | 1.4 | Not Sensitive |
| LWS3 | Biss Meadows Country Park LWS | 0.01 | 0.1% | 1.3 | 26.6% |
| LWS4a | Widbrook Wood LWS | 0.02 | 1.2% | 2.5 | 126.1% |
| LWS4b | Widbrook Wood LWS | 0.04 | 2.0% | 2.5 | 126.9% |
| LWS4c | Widbrook Wood LWS | 0.05 | 2.7% | 2.5 | 127.6% |
| LWS4d | Widbrook Wood LWS | 0.07 | 3.5% | 2.5 | 128.4% |
| LWS4e | Widbrook Wood LWS | 0.06 | 3.2% | 2.5 | 128.1% |
| LWS4f | Widbrook Wood LWS | 0.09 | 1.1% | 2.5 | 28.5% |
| LWS4g | Widbrook Wood LWS | 0.11 | 1.2% | 2.5 | 28.7% |
| LWS4h | Widbrook Wood LWS | 0.07 | 0.8% | 2.5 | 28.3% |
| LWS5a | Bristol River Avon LWS | 0.02 | Not Sensitive | 1.4 | Not Sensitive |
| LWS5b | Bristol River Avon LWS | 0.03 | Not Sensitive | 1.4 | Not Sensitive |
| LWS5c | Bristol River Avon LWS | 0.03 | Not Sensitive | 1.4 | Not Sensitive |
| LWS5d | Bristol River Avon LWS | 0.03 | Not Sensitive | 1.4 | Not Sensitive |
| LWS6a | Kennet and Avon Canal LWS | 0.01 | Not Sensitive | 1.4 | Not Sensitive |
| LWS6b | Kennet and Avon Canal LWS | 0.01 | Not Sensitive | 1.4 | Not Sensitive |
| LWS6c | Kennet and Avon Canal LWS | 0.01 | Not Sensitive | 1.4 | Not Sensitive |
| LWS6d | Kennet and Avon Canal LWS | 0.02 | Not Sensitive | 1.4 | Not Sensitive |
| LWS6e | Kennet and Avon Canal LWS | 0.02 | Not Sensitive | 1.4 | Not Sensitive |
| LWS6f | Kennet and Avon Canal LWS | 0.02 | Not Sensitive | 1.4 | Not Sensitive |
| LWS6g | Kennet and Avon Canal LWS | 0.03 | Not Sensitive | 1.4 | Not Sensitive |
| LWS6h | Kennet and Avon Canal LWS | 0.03 | Not Sensitive | 1.4 | Not Sensitive |
| LWS6i | Kennet and Avon Canal LWS | 0.04 | Not Sensitive | 1.4 | Not Sensitive |
| LWS6j | Kennet and Avon Canal LWS | 0.03 | Not Sensitive | 1.4 | Not Sensitive |
| LWS6k | Kennet and Avon Canal LWS | 0.03 | Not Sensitive | 1.4 | Not Sensitive |
| LWS6l | Kennet and Avon Canal LWS | 0.04 | Not Sensitive | 1.4 | Not Sensitive |
| LWS6m | Kennet and Avon Canal LWS | 0.05 | Not Sensitive | 1.4 | Not Sensitive |
| LWS6n | Kennet and Avon Canal LWS | 0.06 | Not Sensitive | 1.4 | Not Sensitive |
| LWS6o | Kennet and Avon Canal LWS | 0.05 | Not Sensitive | 1.4 | Not Sensitive |

| Receptor | Designated Site | Annual Acid Deposition | | | |
|---|---|---|---|---|---|
| | | PC (keq/ha/yr) | PC as % of $C_{Lo}$ | PEC (keq/ha/yr) | PEC as % of $C_{Lo}$ |
| LWS6p | Kennet and Avon Canal LWS | 0.04 | Not Sensitive | 1.4 | Not Sensitive |
| LWS6q | Kennet and Avon Canal LWS | 0.03 | Not Sensitive | 1.4 | Not Sensitive |
| SAC1a | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 2.4 | 50.3% |
| SAC1b | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 2.4 | 48.6% |
| SAC1c | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 2.4 | 48.4% |
| SAC1d | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 2.4 | 48.4% |
| SAC1e | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 2.4 | 48.4% |
| SAC1f | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 2.4 | 48.4% |
| SAC1g | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 2.4 | 48.4% |
| SAC1h | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 2.3 | 46.8% |
| SAC1i | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 2.3 | 47.8% |
| SAC1j | Bath & Bradford on Avon Bats SAC | < 0.01 | < 0.1% | 2.3 | 47.8% |
| SAC2 | Salisbury Plain SAC / SPA | < 0.01 | < 0.1% | 1.3 | 71.4% |

# Appendix E Figures

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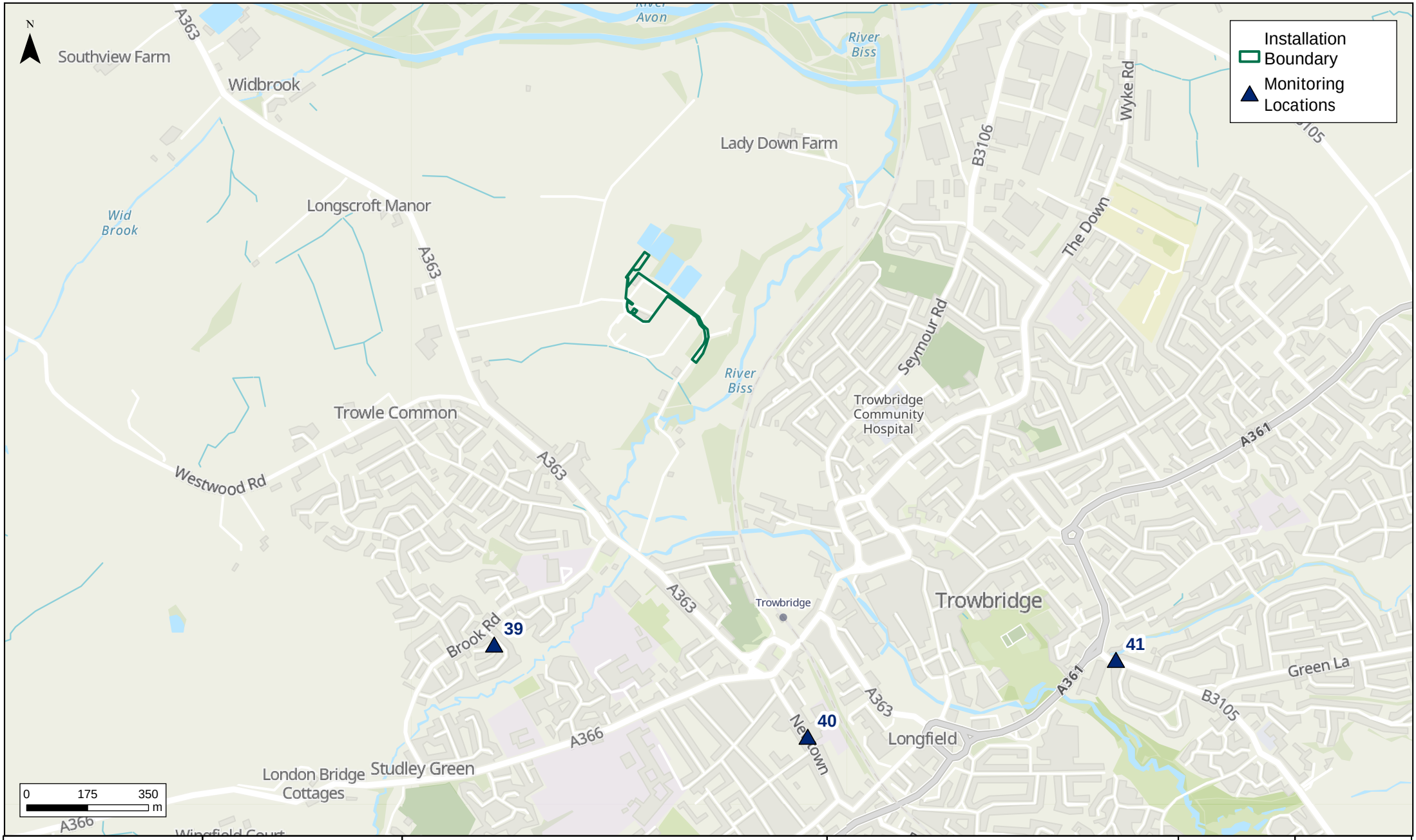


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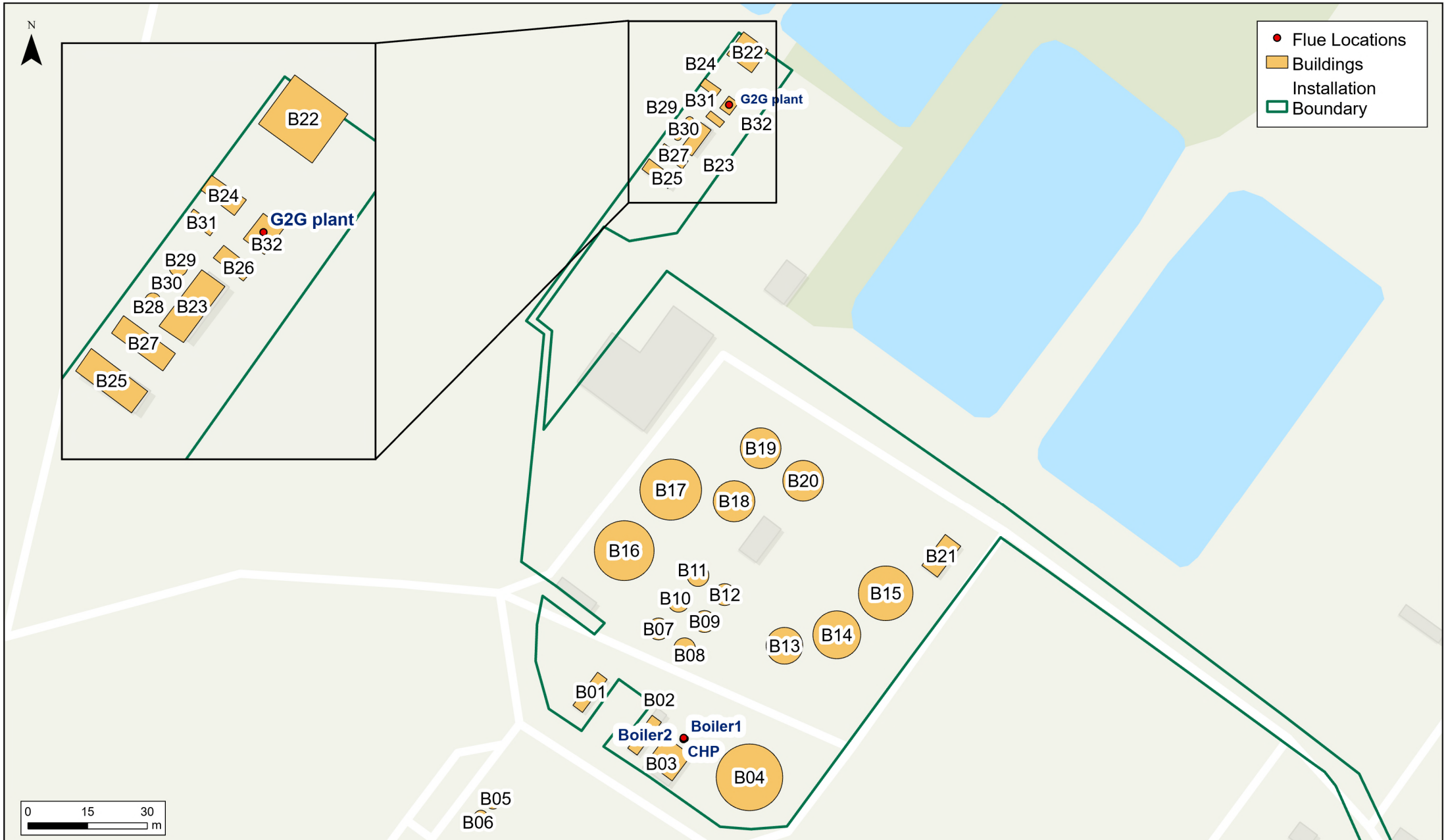


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**Trowbridge Wastewater Treatment Works**

Modelled Buildings and Flue Locations



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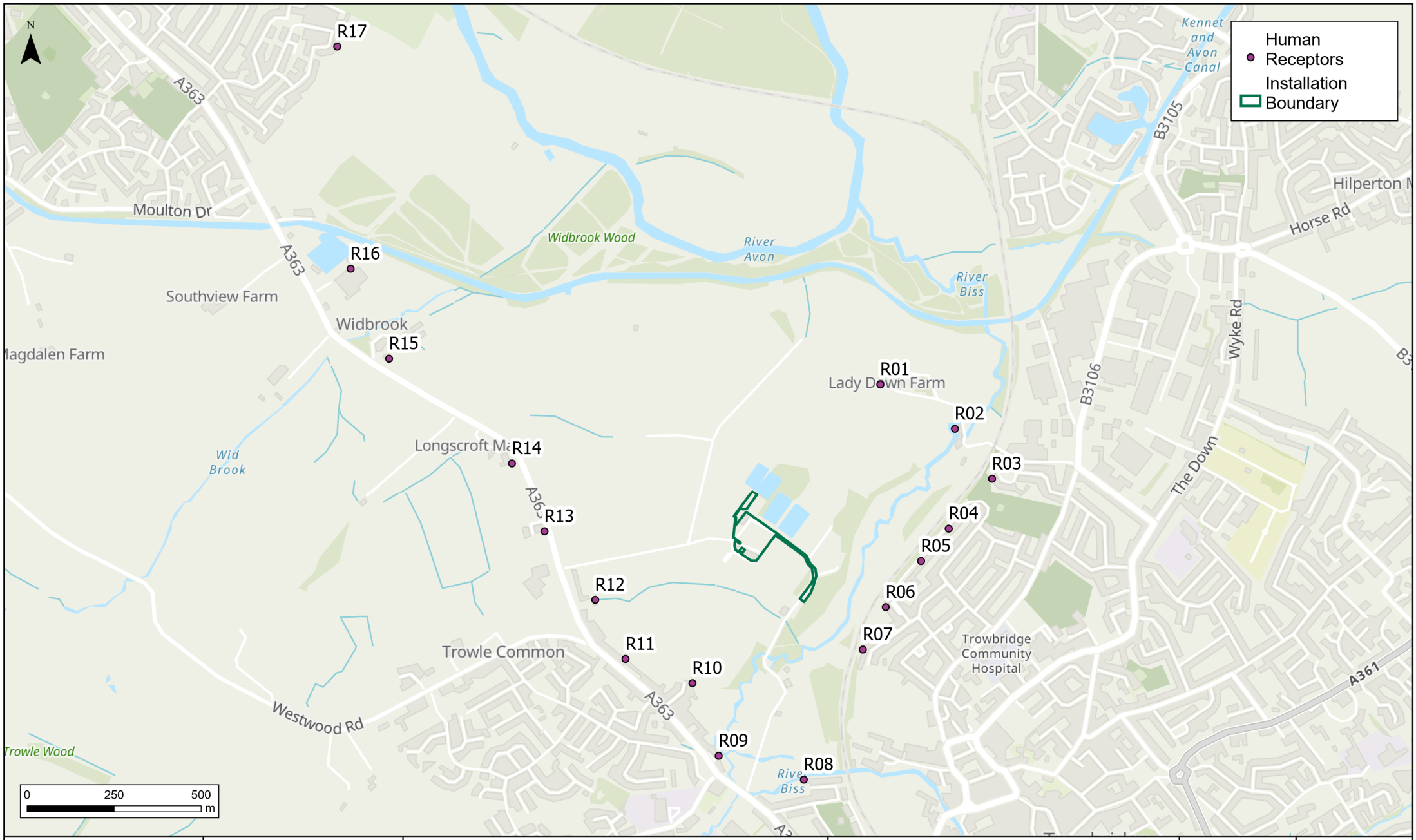


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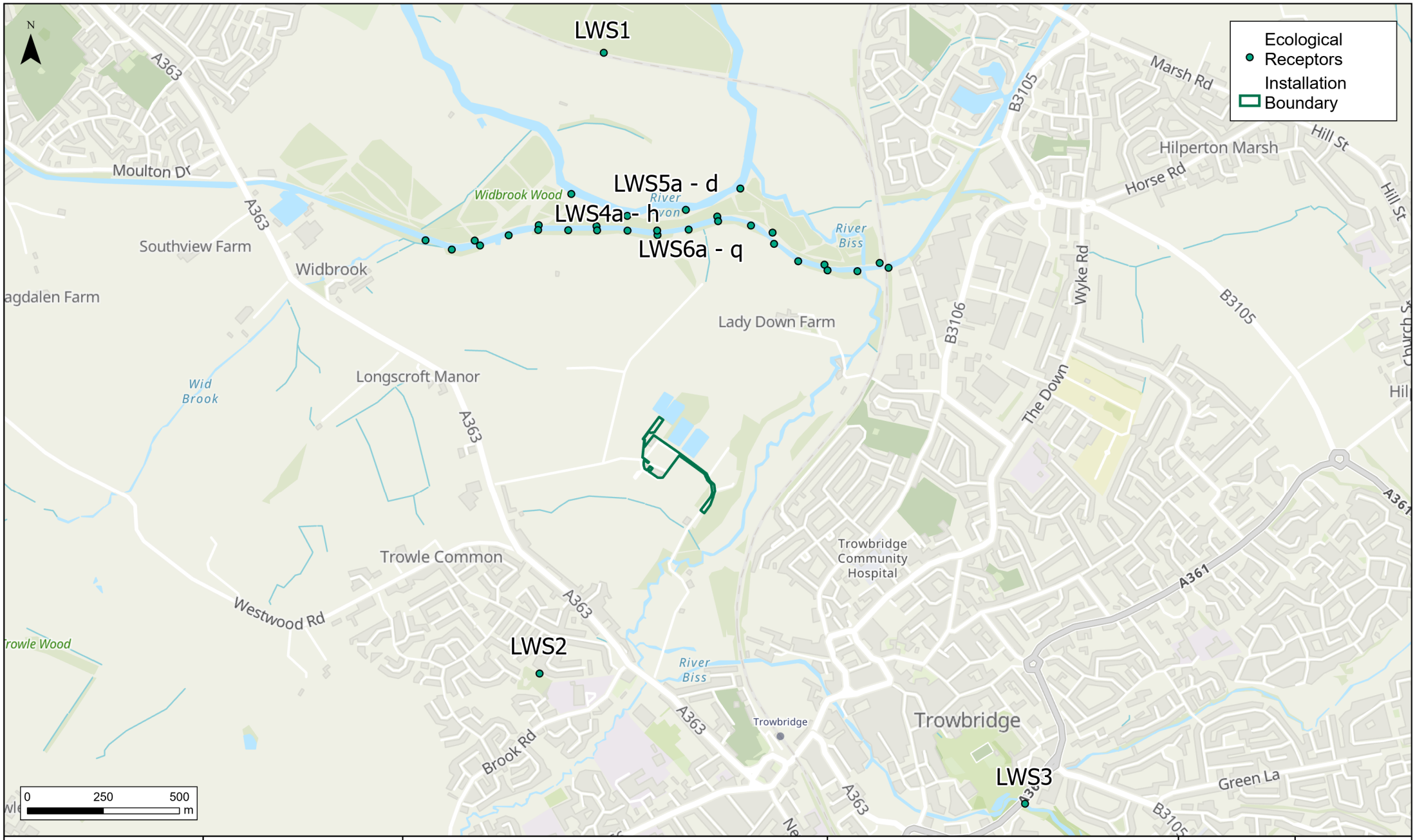


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|---|---|---|---|---|
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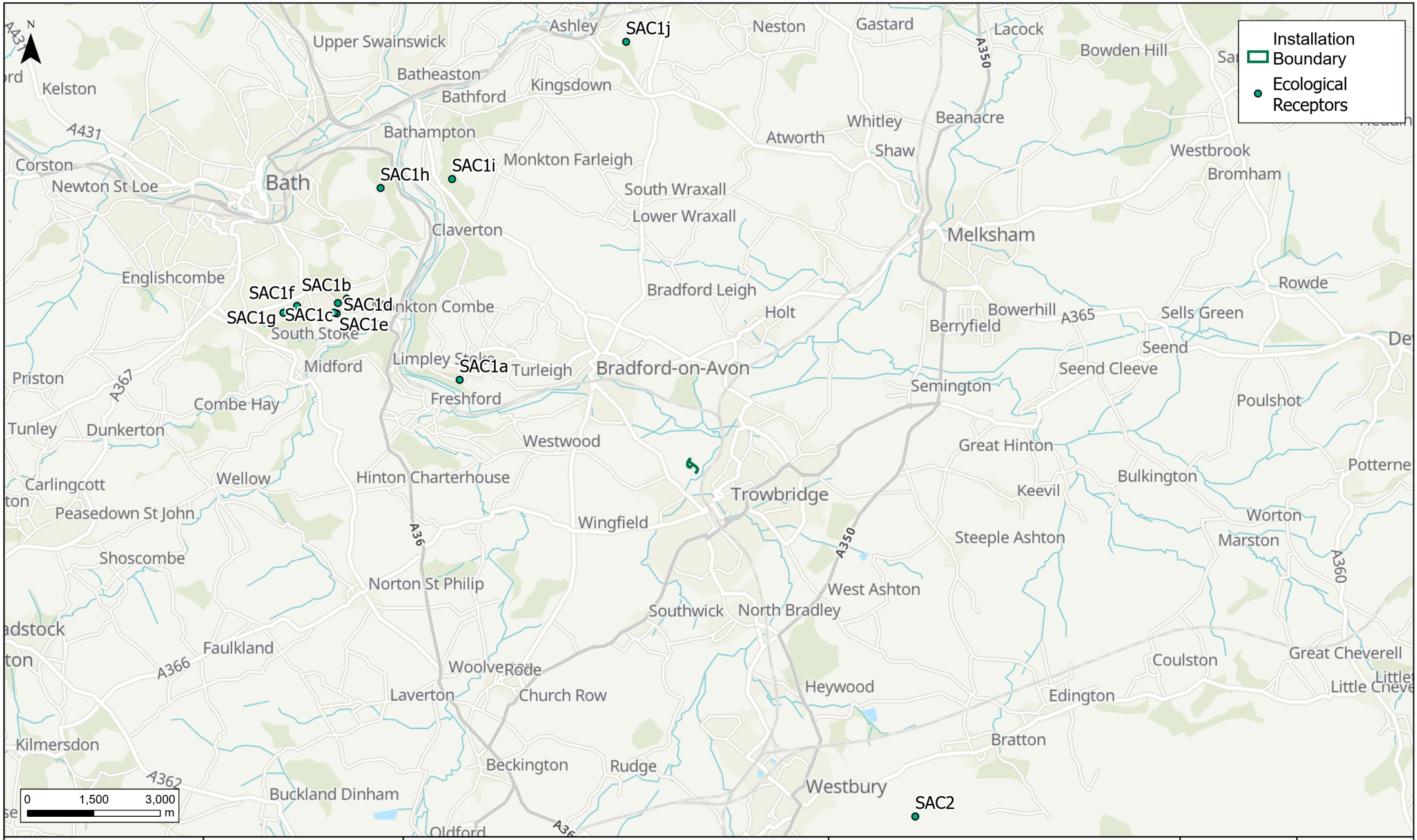


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**Trowbridge Wastewater Treatment Works**

Modelled Internationally Designated Ecological Receptor Locations



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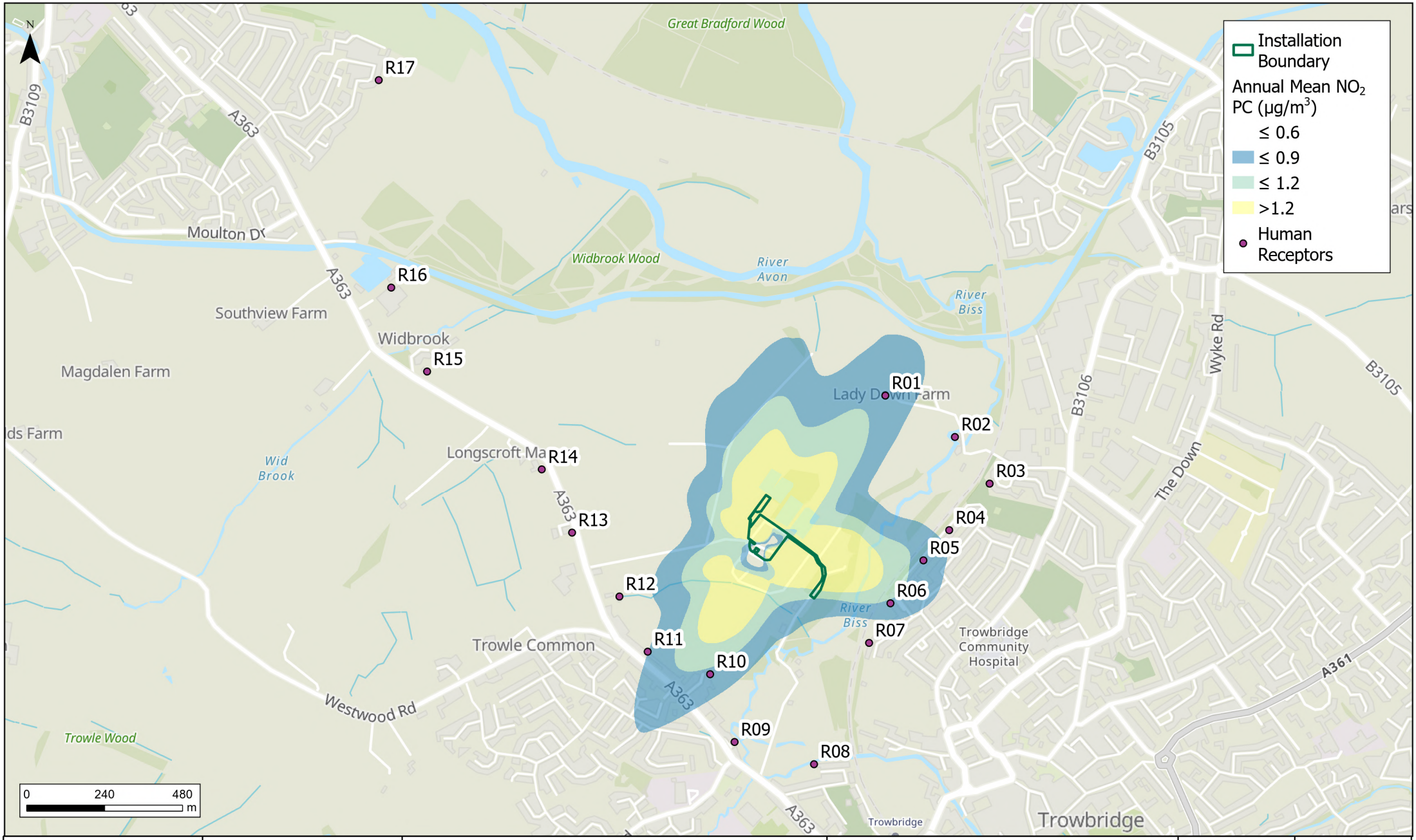


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**Trowbridge Wastewater Treatment Works**
2018 Predicted Annual Mean $NO_2$
Process Contribution Contours



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| Figure 06 | Rev A |

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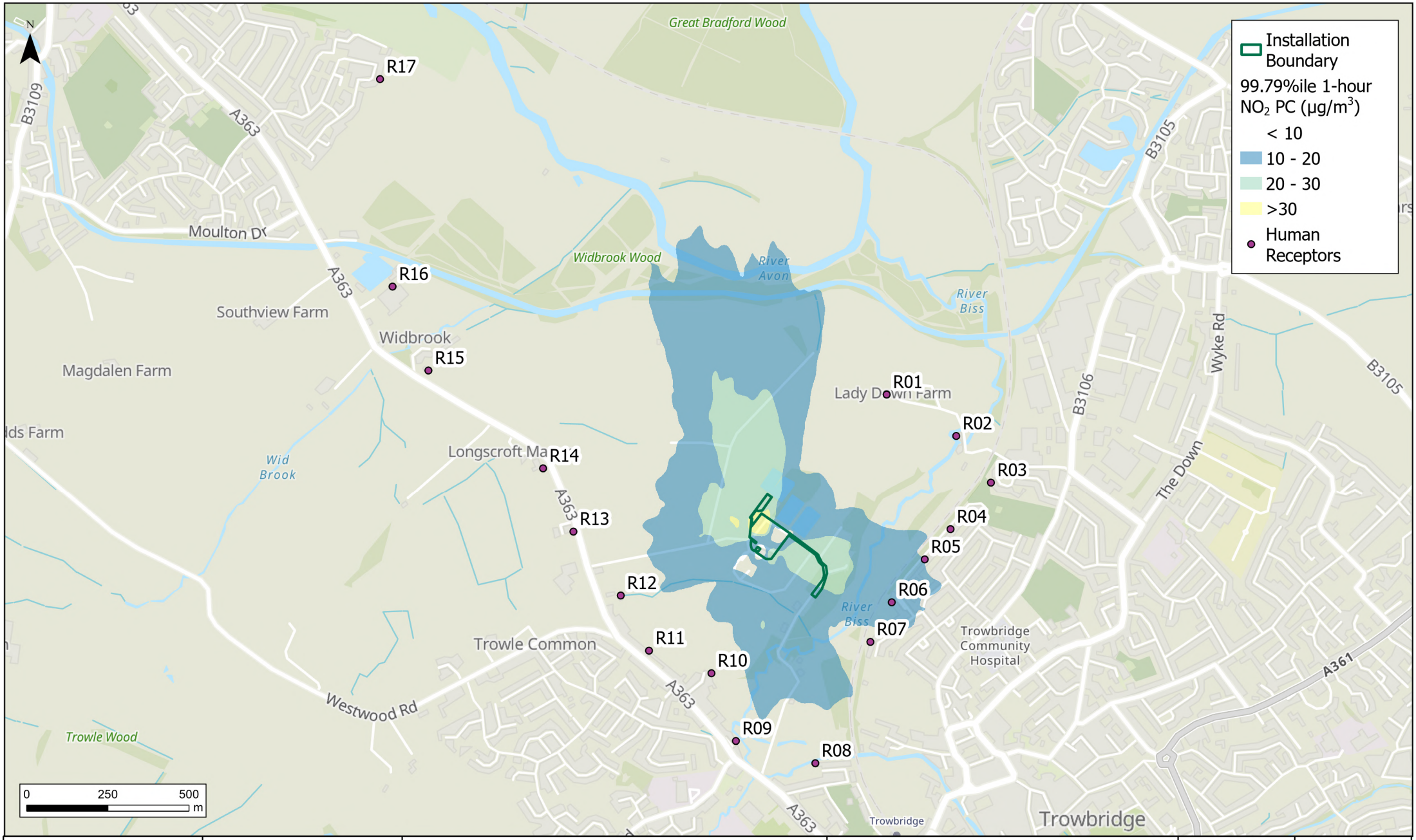


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Wessex Water YTL GROUP

**Trowbridge Wastewater Treatment Works**

2017 Predicted 1-hour Mean $NO_2$ (99.79%ile) Process Contribution Contour



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| Figure 07 | Rev A |

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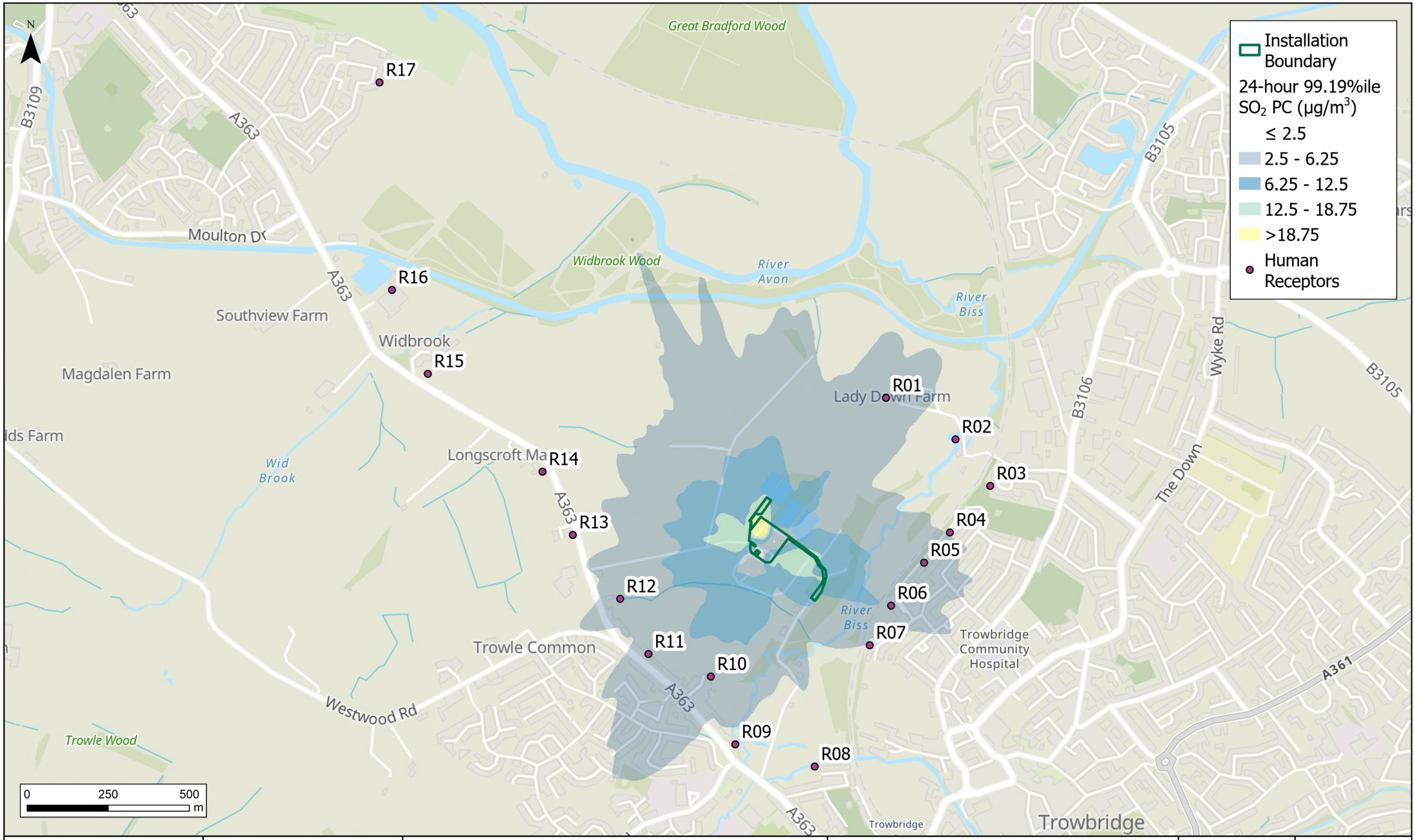


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**Trowbridge Wastewater Treatment Works**

2018 Predicted 24-hour Mean $SO_2$ (99.19%ile) Process Contribution Contours



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| Figure 08 | Rev A |

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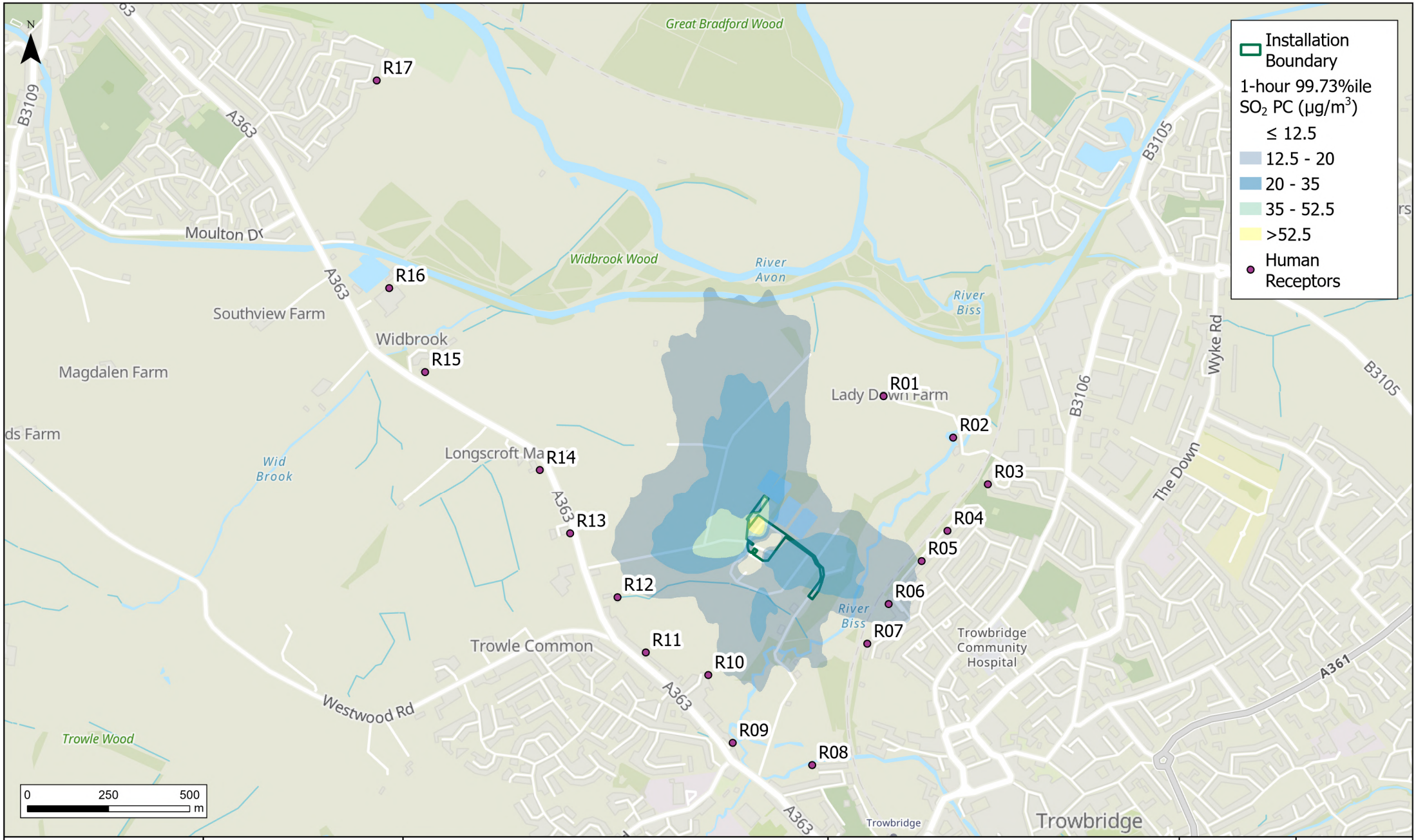


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**Trowbridge Wastewater Treatment Works**
2020 Predicted 1-hour Mean $SO_2$ (99.73%ile) Process Contribution Contours



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| Figure 09 | Rev A |

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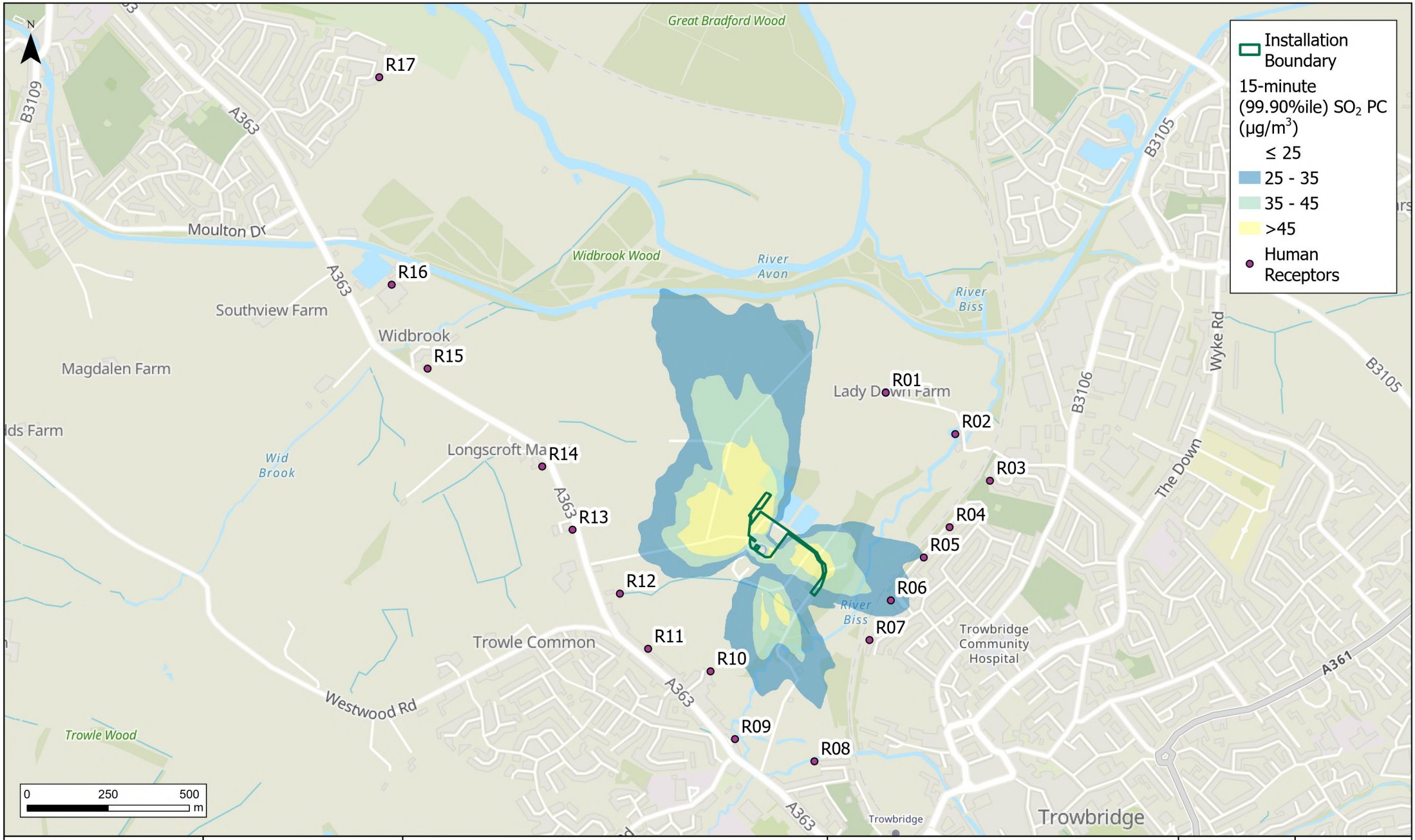


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**Trowbridge Wastewater Treatment Works**
2018 Predicted 15-minute Mean $SO_2$ (99.9%ile) Process Contribution Contours



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| 1:15,000 @ A4 | Date: 03/09/2024 |
| Drawn: WS | Checked: LS |
| Figure 10 | Rev A |