Shadow Habitat Regulations Assessment (sHRA)

Manor Farm, Slough
02 December 2024

TG Report No. 16194_R04_CC

Tyler Grange

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Summary

S.1. This report has been prepared by Tyler Grange Group Ltd (TG) on behalf of . It sets out the findings of a 'shadow' Habitat Regulations Assessment (sHRA). It has been prepared to accompany a full planning application for the demolition of the current buildings located onsite and the erection of a data centre, office, substation and Battery Energy Storage System (BESS), hereafter referred to as the 'proposed development' at Manor Farm, Poyle Road, Slough, SL3 0BL, hereafter referred to as 'the site'.

S.2. This report uses available data to examine likely significant effects of the proposed development on statutory designated European sites, both alone and in combination with other proposals; it sets out information required to inform a HRA, which will ultimately be carried out by the competent authority (Slough Borough Council). The following internationally designated sites were identified within 10 km:

- South West London Waterbodies Special Protection Area (SPA) - 0.1 km south of the site;
- South West London Waterbodies Ramsar 0.1 km south of the site; and
- Windsor Forest and Great Park, Special Area of Conservation (SAC) 5.5 km south west of the site.

S.3. The HRA screening exercise outlined in this report has identified no potential Likely Significant Effects (LSE) as a results of the proposed development at the construction and operations phase.

S.4. It is anticipated that implementation of the mitigation measures outlined in this report during construction and operation allows the competent authority to conclude that there will be no likely significant adverse effects arising from the proposed development on the Conservation Objectives or the qualifying features of the designated sites identified.

Section 1: Introduction

1.1. This 'shadow' Habitat Regulations Assessment (sHRA) has been prepared by Tyler Grange Group Ltd (TG) . It has been prepared to accompany a full planning application for the demolition of the current buildings located onsite and the erection of a data centre, office, substation and Battery Energy Storage Systems (BESS) at Manor Farm, Poyle Road, Slough, SL3 0BL, hereafter referred to as 'the site'.

1.2. The site encompasses an area of 7.74 ha and is centred on Ordnance Survey (OS) grid reference TQ 0304176159, wholly within the Slough Borough Council district. The extent of the site is shown by the red line in **Figure 1.1** below. Site habitats include developed land; sealed surface, buildings, bramble scrub, artificial unvegetated; unsealed surface, native hedgerows, modified grassland, mixed scrub, arable fields and mature trees as shown on **Baseline habitats and PBRA Plan 16194/P04** appended to this report. Protected Sites Plan **16194/P10** illustrates the location of the site in relation to the National Sites Network sites concerned.

Figure 1.1: Red Line Boundary (© Google Earth 2023)

Planning Context

1.3. A full planning application for the demolition of the current buildings located onsite and the erection of a data centre, office, substation and BESS will be submitted, and this assessment will be read in conjunction with the application.

1.4. An Ecological Impact Assessment (EcIA) report has been prepared for the site by Tyler Grange (Ref **16194/R03**) which sets out on-site ecological impacts/mitigation and proposed enhancements.

Purpose

1.5. This report sets out 'shadow' HRA Stage 1 screening which in accordance with the Conservation of Habitats and Species Regulations 2017 ('the Habitats Regulations'), provides information for the competent authority[1], Slough Borough Council (SBC), to carry out the required Appropriate Assessment (AA).

Quality Control

1.6. All ecologists at Tyler Grange Group Ltd are members of Chartered Institute of Ecology and Environmental Management (CIEEM), working towards becoming members of CIEEM or acting under the supervision of staff that are members of CIEEM, and abide by the Institute's Code of Professional Conduct[2].

[1] The Habitats Regulations define a 'competent authority' as including any Minister of the Crown, government department, statutory undertaker, public body of any description or persons holding public office, or any person exercising those functions (regulation 7(1)). [Accessed: 10/11/2024]
[2] CIEEM (2022) Code of Professional Conduct, CIEEM, Winchester

Section 2: Legislation and Planning Policy

Legislation

2.1. The European Council Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna, 1992, often referred to as the 'Habitats Directive', provides for the protection of key habitats and species considered of European importance (listed under Annex I, II and IV of the Directive). The Birds Directive (formally known as Council Directive 2009/147/EC on the conservation of wild birds) was also adopted in 2009. These directives have been transposed into UK law through The Conservation of Habitats and Species Regulations, hereafter referred to as 'the Habitats Regulations 2017 (as amended)', and incorporated protections for European sites.

2.2. It should be noted that the UK's departure from the European Union (EU) does not alter the implementation of this legislation in the UK at the time of writing. Section 6 of the EU (Withdrawal) Act 2018 (as amended) requires retained EU law such as the Conservation of Habitat and Species Regulations 2017 (as amended) to be interpreted in line with "retained case law" which includes retained EU case law.

2.3. National Site Network sites comprise:

- SACs and candidate SACs (cSACs) designated under the Habitats Directive;
- SPAs and potential SPAs (pSPAs), classified under the Birds Directive;
- Ramsar sites, designated under the Convention on Wetlands of International Importance; and
- European Marine Sites (EMS).

2.4. Under the Habitats Regulations, competent authorities are required to consider impacts of any plans / projects which may result in Likely Significant Effect (LSE) and/or adverse effects on the integrity of European sites - either alone or in-combination with other plans / projects. The assessment of the potential effects is termed an HRA, which is split into three stages, as described below.

- **Stage 1** is a screening stage to determine if the proposed development is expected to have an LSE on a European site. If an LSE is determined, AA, Stage 2, is required;
- If required, **Stage 2** refers to an AA which is used to determine whether the project will adversely affect the integrity of any given National Sites Network site(s) (through also considering proposed avoidance and mitigation measures), in view of their conservation objectives. Conservation objectives specify the overall target for a site's qualifying features (habitats and species / populations listed in Annex I and II) in order for that feature to be maintained or restored, to reach favourable conservation status;

- **Stage 3**,degroation is triggered if significant adverse effects are identified in **Stage 2** that cannot be avoided or mitigated. This stage requires alternative options to be examined to avoid significant impacts on National Sites Network sites. If it is deemed that the project should proceed for Imperative Reasons of Overriding Public Interest (IROPI) an assessment of compensatory measures which would be required.

2.5. The responsibility of undertaking AA, if required, lies with the competent authority who is responsible for granting consent for the scheme - in this case, it is assumed that this will be the LPA (SBC). However, it is the applicant's obligation to provide information to the competent authority to enable them to undertake the assessment. In this case, the applicant is AIPUT.

2.6. This report aims to provide sufficient information relevant to HRA screening (HRA Stage 1) to demonstrate to the LPA that AA (HRA Stage 2) is only required for potential adverse effects relating to air and water pollution, strategic recreational disturbance and site-specific impacts (tall buildings and collision risk) during the constructional and operational phase of the development.

2.7. The National Planning Policy Framework (NPPF) 2023 requires development plans to identify, map and safeguard international, national and locally designated sites of importance for biodiversity, such as European designated sites. Under the requirements of the NPPF, unless it has been concluded that the proposed development will not adversely affect the integrity of European designated sites, the usual presumption in favour of sustainable development does not apply.

Local Planning Policy Context

Slough Local Development Framework Core Strategy 2006-2026 (Adopted 2008)

2.8. The Slough Local Development Framework Core Strategy 2006-2026, adopted in December 2008. The relevant policies within the Core Strategy are set out below for reference:

2.9. Core Policy 8: Sustainability and the Environment

All development in the Borough shall be sustainable, of a high quality design, improve the quality of the environment and address the impact of climate change.

1. *Sustainable Design and Construction Principles: All development should, where feasible, include measures to:*
   a. *Minimise the consumption and unnecessary use of energy, particularly from non-renewable sources;*
   b. *Recycle waste;*
   c. *Generate energy from renewable resources;*
   d. *Reduce water consumption; and*
   e. *Incorporate sustainable design and construction techniques, including the use of recycled and energy efficient building materials.*
2. *High Quality Design: All development will:*

a. *Be of a high quality design that is practical, attractive, safe, accessible and adaptable;*
b. *Respect its location and surroundings;*
c. *Provide appropriate public space, amenity space and landscaping as an integral part of the design; and*
d. *Be in accordance with the Spatial Strategy in terms of its height, scale, massing and architectural style.*

The design of all development within the existing residential areas should respect the amenities of adjoining occupiers and reflect the street scene and the local distinctiveness of the area.

3. *Pollution Development shall not:*
   a. *Give rise to unacceptable levels of pollution including air pollution, dust, odour, artificial lighting or noise;*
   b. *Cause contamination or a deterioration in land, soil or water quality; and*
   c. *Be located on polluted land, areas affected by air pollution or in noisy environments unless the development incorporates appropriate mitigation measures to limit the adverse effects on occupiers and other appropriate receptors.*
4. *Flooding*
   a. *Development will only be permitted where it is safe and it can be demonstrated that there is minimal risk of flooding to the property and it will not impede the flow of floodwaters, increase the risk of flooding elsewhere or reduce the capacity of a floodplain; and*
   b. *Development must manage surface water arising from the site in a sustainable manner which will also reduce the risk of flooding and improve water quality.*

2.10. Core Policy 9: Natural and Built Environment

Development will not be permitted unless it:

- *Enhances and protects the historic environment;*
- *Respects the character and distinctiveness of existing buildings, townscapes and landscapes and their local designations;*
- *Protects and enhances the water environment and its margins;*
- *Enhances and preserves natural habitats and the biodiversity of the Borough, including corridors between biodiversity rich features.*

Slough Local Plan (Adopted March 2004) Saved Policies and Policies still in use at December 2010

2.11. Several policies from the previous Slough Local Plan (Adopted March 2004) have been saved and are still enforceable from December 2010 until a new local plan has been developed. Whilst not enforceable yet the relevant policies within the Local Plan are set out below for reference:

2.12. Policy EN22 (Protection of Sites with Nature Conservation Interest)

"Special account will be taken of nature conservation interest when determining proposals for development which would be detrimental to identified and future Wildlife Heritage Sites and any other land which meets the criteria for Wildlife Heritage Sites or contains features of local ecological importance.

Any proposed development which would have a detrimental effect on such a site will be refused unless it can be demonstrated that appropriate measures can be taken to conserve the site's wildlife interest as far as possible.

Ecological appraisals will be required where proposed development is likely to threaten any nature conservation interest."

2.13. Policy EN23 (Areas of Local Nature Conservation Interest)

"Encouragement will be given to the creation and enhancement of areas of local nature conservation interest by identifying them as local informal nature reserves or wildlife corridors. sympathetic habitat management and suitable public access arrangements will be sought.

The following sites are proposed as non-statutory informal nature reserves.

Proposal Site 34 - Keel Drive former watercress beds

Proposal Site 35 - Land west of Hollow Hill Lane

Proposal Site 36 - Halkingcroft Wood

Proposal Site 37 - Railway triangle, Stranraer Gardens

Proposal Site 38 - Lynch Hill open space

Proposal Site 39 - Old Slade Lake, Colnbrook"

2.14. Policy EN24 (Protection of Watercourses)

"Development will not be permitted which will have a detrimental effect on water quality or the ecological, amenity or historical value of the watercourse. Where appropriate, measures to enhance or restore watercourses will be encouraged. In certain circumstances, the substitution of replacement features of equal or greater value, through the use of planning conditions or agreements, will be considered if there is no overall detrimental affect on water quality, ecological or amenity value."

Local Habitat Regulations Assessment

2.15. A HRA has not yet been prepared to support the new and emerging local plan. Nor was one available for the saved local planning policies from the previous local plan in 2004.

Section 3: Methodology

3.1. This report provides information relevant to HRA screening (Stage 1) and AA (Stage 2) and aims to determine if the proposed development is likely to have a LSE on any European sites. Detailed methodology at each stage is set out below.

3.2. To inform the scope of the Stage 1 Screening, and potential for LSEs the Ecological Impact Assessment report 16194/R04 written by Tyler Grange was used for reference.

HRA Stage 1: Screening

3.3. Screening aims to determine if the proposed development is expected to have any LSEs on National Site Network sites. An effect is considered 'likely significant' if, in the absence of mitigation, it cannot be excluded based on objective information and it might undermine a European site's conservation objectives.

3.4. To assess whether LSEs may occur, the following information is provided:

- Identification of relevant National Site Network sites and their respective qualifying features (presented in **Section 4, National Site Network sites**);
- Identification and understanding of the conservation objectives the identified sites (presented in **Section 4, National Site Network sites**);
- Where relevant, an estimation of the likely magnitude, duration, location and extent of effects on European sites if any are anticipated (presented in **Section 5, HRA screening (Stage 1);** and
- Identification of whether any element of the proposed development will have an LSE on any qualifying feature, either alone or in-combination with other projects and plans (presented in **Section 5, HRA screening (Stage 1)**).

3.5. This assessment has been informed by thorough review of the proposed development proposals (set out in **Section 1** above) and (**Appendix 1**). In addition, the following resources were reviewed to inform this report:

- The Habitats Regulations 2017 (as amended);
- UK government guidance on the use of Habitats Regulations Assessment1F3 ;
- Joint Nature Conservation Committee for citations of European sites and associated conservation objective and site improvement plan documents[4] ;

3 Ministry of Housing, Communities and Local Government (2019) Guidance Appropriate assessment: Guidance on the use of Habitats Regulations Assessment, https://www.gov.uk/guidance/appropriate-assessment [Accessed: 14/08/2023]
4 JNCC (2020) Joint Nature Conservation Committee for citations of internationally designated sites, https://jncc.gov.uk/our-work/uk-protected-areas/ [Accessed: November 2023].

- Natural England's web resources for citations of European sites and associated conservation objective and site improvement plan documents;
- Multi-Agency Geographic Information for the Countryside (MAGIC) interactive maps for locations of statutory sites (DEFRA 2020) within a 10 km search radius of the site3F5 ;
- Slough Local Plan (Adopted March 2004) Saved Policies and Policies still in use at December 2010;
- Slough Local Development Framework Core Strategy 2006-2026[6].

3.6. In order to establish the National Site Network sites which may be affected by the proposed development, a 10 km search radius was used from the site boundary in the first instance. 10 km is the typical Zone of Influence associated with impacts to National Site Network sites, unless specific by the citation for the site in question. This was then followed by a review of the local planning policy to establish if any National Site Network sites within the wider area have a larger catchment area, which it was found they do not.

3.7. The CJEU in the case of People Over Wind, Peter Sweetman v Coillte Teoranta ruled that "in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site"[7]. Hence it is not acceptable for the Stage 1 screening assessment to rely on avoidance or reduction (mitigation) measures. Therefore, if it cannot be concluded that there will be no LSE in the absence of mitigation measures at the screening stage, HRA Stage 2 (AA) is required.

In-combination Assessment

3.8. This report considers the potential for 'in-combination effects' on National Site Network sites from the development.

Assessment of Effects and Mitigation Measures

3.9. An assessment of the potential effects for National Site Network sites in view of their conservation objectives is made, in terms of the magnitude, duration, location and extent of effects, both alone and in-combination with other developments.

3.10. Mitigation measures can include both avoidance measures and reduction measures, but the former approach is preferred.

[5] https://magic.defra.gov.uk/ [Accessed: November 2023]
[6] Slough Local Development Framework Core Strategy, 2006-2026, https://www.slough.gov.uk/downloads/file/2273/development-plan-core-strategy-2006-2026 [Accessed 09/10/2023]
[7] Court of Justice of the European Union (CJEU) (2018) Judgement of 12.4.2018 - Case C-323/17 People Over Wind and Sweetman

Integrity Test

3.11. The integrity test requires the competent authority to ascertain if the development (alone and in-combination with other plans / projects) will not have a significant adverse effect on a National Site Network site's integrity, which is defined as:

3.12. "The coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the level of populations for the species for which it was classified."[8]

8 The Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2019) Guidance: Appropriate Assessment, https://www.gov.uk/guidance/appropriate-assessment [Accessed: 15/08/2023]

Section 4: National Site Network sites

4.1. The site falls within the Zone of Influence (ZoI) of three National Site Network sites and two further national site identified by MAGIC, listed in **Table 4.1** and **Table 4.2** below. Qualifying features and threats of each designated site are provided in **Table 4.3**.

Table 4.1: European statutory designated sites within the search radius of 10 km.

Site Name	Designation	EU Code	Area (ha)	Distance and Direction from Site
South West London Waterbodies	SPA[9]	UK9012171	830.2567 ha	0.1 km south
	Ramsar[10]	SN: 1038	830.2567 ha	
Windsor Forest and Great Park	SAC[11]	UK0012599	309 ha	5.5 km southwest

4.2. Two Site of Special Scientific Interest (SSSI), partially with and beyond those forming components of the National Site Network sites listed above, was identified within the 2 km ZoI, this is noted in Table 4.2 below. Given the same qualifying features between the SSSIs and European designations, any potential impacts of the proposed development (and therefore suggested mitigation) on the internationally designated site will also be relevant to the SSSIs not noted below.

Table 4.2: National statutory designated sites within the search radius of 2 km.

Site Name	Designation	Code	Area (ha)	Distance and Direction from Site
Wraysbury Reservoir	SSSI	2000374	510.8206 ha	0.1 km south
Staines Moor	SSSI	1001892	205.5593 ha	0.4 km southeast

4.3. Given that the site does not lie within the ZoI for any other National Site Network sites and none are present within 10 km of the site, effects on National Site Network sites, Ramsar other than those listed in **Table 4.3** have been scoped out of this assessment and are discussed no further within this report.

[9] South West London Waterbodies SPA Citation. Link: https://publications.naturalengland.org.uk/publication/4901473695563776 [Accessed: 22/11/2024]
[10] South West London Waterbodies Ramsar Citation. Link: https://rsis.ramsar.org/ris/1038 [Accessed: 22/11/2024]
[11] https://publications.naturalengland.org.uk/publication/5130124110331904 [Accessed: 22/11/2024]

Table 4.3: National Site Network sites assessed as part of the screening stage including qualifying features and threats of each site in relation to the development.

Site Name	Qualifying Features	Pressure/Threats
South West London Waterbodies SPA	The site qualifies under **Article 4.2** of the Directive (79/409/EEC) as it is used regularly by 1% or more of the biogeographical populations of the following regularly occurring migratory species (other than those listed on **Annex 1**), in any season: Article 4.2 Designation (Non-breeding) • Gadwall Anas *strepera*; and • Shoveler Anas *clypeata*.	As identified in the Site Improvement Plan (SIP)**12F**[12] for this SPA, the following are noted as Pressures and/or Threats: • Public Access/Disturbance (Pressure/Threat) Gadwall (Non-breeding (NB)) and shoveler (NB) • Changes in species distributions (Pressure/Threat) Gadwall (Non-breeding (NB)) and shoveler (NB) • Invasive species (Pressure/Threat) Gadwall (Non-breeding (NB)) and shoveler (NB) • Natural changes to site conditions (Pressure/Threat) Gadwall (Non-breeding (NB)) and shoveler (NB) • Fisheries: fish stocking (Pressure) Gadwall (Non-breeding (NB)) and shoveler (NB) • Inappropriate weed control (Threat) Gadwall (Non-breeding (NB)) and shoveler (NB) Pressures/Threats that are relevant to this development are: • Changes in species distributions (Pressure/Threat) • Natural changes to site conditions (Pressure/Threat)

[12] https://publications.naturalengland.org.uk/publication/6662064386867200?category=6149691318206464 [Accessed: 22/11/2024]

Site Name	Qualifying Features	Pressure/Threats
		Pressures/Threats that are not relevant to this development are: • Public Access/Disturbance (Pressure/Threat) • Invasive species • Fisheries: fish stocking • Inappropriate weed control
South West London Waterbodies Ramsar	The site qualifies under **Criterion 6** of the Ramsar Convention as it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird: Qualifies under **Criterion 6** **Criterion 6** – The site supports the following over wintering species occurring at high levels of international importance: • Gadwall *Anas strepera*; and • Shoveler *Anas clypeata*.	Same SIP as for South West London Waterbodies SPA

Site Name	Qualifying Features	Pressure/Threats
Windsor Forest and Great Park SAC	The site qualifies under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following habitats listed in **Annex I**: Annex I Habitats – Primary Selection Reason • Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*). (Beech forests on acid soils) • Old acidophilous oak woods with *Quercus robur* on sandy plains. (Dry oak-dominated woodland) The site qualifies under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following habitats listed in **Annex II**: Annex II Species – Primary Selection Reason • Violet click beetle *Limoniscus violaceus*	As identified in the Site Improvement Plan (SIP)**12F**[13] for this SAC, the following are noted as Pressures and/or Threats: Foresty and woodland management (Pressure/Threat) Beech forests on acid soils, dry oak-dominated woodland and violet click beetle • Invasive species (Threat) Dry oak-dominated woodland and violet click beetle • Disease (Threat) Dry oak-dominated woodland • Air pollution: impact of atmospheric nitrogen deposition (Pressure) Beech forests on acid soils and dry oak-dominated woodland Pressures/Threats that are relevant to this development are: • Air pollution: impact of atmospheric nitrogen deposition (Pressure) Pressures/Threats that are not relevant to this development are: • Foresty and woodland management • Invasive species • Disease (Threat)

[13] https://publications.naturalengland.org.uk/publication/6221375450644480?category=6149691318206464 [Accessed: 22/11/2024]

Conservation Objectives

4.4. Conservation objectives are set out by Natural England to help public bodies comply with the law and to protect National Site Network sites .

4.5. Conservation objectives for the National Site Network sites protected sites are set out below in **Table 4.4**. 'Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring':

Table 4.4: National Site Network sites conservation objectives.

Site Name	Conservation objectives
South West London Waterbodies SPA/Ramsar	• The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features, and, • The distribution of the qualifying features within the site.
Windsor Forest and Great Park SAC	• The extent and distribution of qualifying natural habitats and habitats of qualifying species • The structure and function (including typical species) of qualifying natural habitats • The structure and function of the habitats of qualifying species • The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely • The populations of qualifying species, and, • The distribution of qualifying species within the site.

4.6. Although Ramsar sites do not have specific conservation objectives, the South West London Waterbodies Ramsar boundaries overlap with that of the SPA and therefore the conservation objectives listed above are also relevant to the Ramsar.

Section 5: HRA Screening (Stage 1)

5.1. The aim of the HRA Screening is to establish whether construction or operation of a proposed development is likely to result in a LSE on National Site Network sites.

5.2. In this stage, the following information is required:

- Identification of internationally designated sites;
- Identification / understanding of conservation objectives of each interest/ qualifying feature;
- Estimation of the likely magnitude, duration, location and extent of effects of the changes on internationally designated sites, as far as can be reasonably predicted; and
- Identification of whether any element of the development will have an LSE on any feature or interest, either alone or in combination with other projects / plans.

Potential Likely Significant Effects (LSEs)

5.3. **Table 5.1** below summarises the potential impact pathways and LSEs considered as part of this assessment. The following section outlines the potential LSEs on the nearby European protected sites.

South West London Waterbodies SPA and Ramsar

Data Search Records

5.4. No records were returned of gadwall or shoveler, both qualifying species of South West London Waterbodies, were returned within 2 km of the site boundary. Due to the distance from the site, 0.1 km and the SPA/Ramsar this is likely due to under recording.

Suitability of Habitat for Interest Features of the SPA

5.5. A UK Habitat Classification (UKHabs) survey was undertaken on the 19th March 2024. The following UKHab classifications and observations are considered relevant to this sHRA,

5.6. The site is composed of modified grassland used for agriculture, disused stables and an active industrial park and car park. The majority of the site is unsuitable for both gadwall and shoveler, However, the area of modified grassland could be used infrequently by gadwall or shoveler. Based on the grassland management for agriculture and its small size (2.04 hectares) it is unlikely that this area is use frequently by either species and by a large number that it would impact the population using the SPA/Ramsar.

5.7. Therefore, due to the frequency of use, disturbance from agriculture and use of the industrial park, small size of suitable grassland habitat this land is therefore **not considered to be functionally linked land.**

SIPs Scope Out of Assessment

5.8. Of the pressures and threats listed in the SIPs (Site Improvement Plans) for the South West London Waterbodies SPA and Ramsar site, only the following have been assessed for Likely Significant Effects (LSEs). Other issues were not brought forward for assessment due to the small scale and nature of the development, as well as the characteristics of habitats on or directly adjacent to the development site.

5.9. The pressures or threats noted within the SIP, or is a known pressure on the site, that are not associated with the development site include:

- Public Access/Disturbance (Pressure/Threat)
- Invasive species
- Fisheries: fish stocking; and
- Inappropriate weed control

5.10. The above have been scoped out to the nature of the development as a data centre and BESS. The proposed development will not result in a net increase in residents which could impact the above SIPs. As such, these SIPs have been **scoped out and these impact pathways will not result in an LSE.**

Windsor Forest and Great Park SAC

Data Search Records

5.11. No records were returned of violet click beetle within 2 km of the site boundary.

Suitability of Habitat for Interest Features of the SAC

5.12. The site is 5.5 km away from Windsor Forest and Great Park SAC, furthermore it does not contain any suitable habitat for violet click beetle, for which Windsor Forest and Great Park SAC is notified. As such, due to the distance and lack of suitable habitats this land is therefore **not considered to be functionally linked land.**

SIPs Scope Out of Assessment

5.13. Of would be pressures/threats listed in the SIPs for Windsor Forest and Great Park SAC only the following have been assessed for LSEs; other issues have not been brought forward due to the nature and small size of the development, as well as the nature of habitats on the development site or directly adjacent.

5.14. The pressures or threats noted within the SIP, or is a known pressure on the site, that are not associated with the development site include:

- Foresty and woodland management;

- Invasive species; and
- Disease

5.15. The above have been scoped out to the nature of the development as a data centre and BESS. The proposed development will not results in a net increase in residents which could impact the above SIPs. As such, these SIPs have been **scoped out and these impact pathways will not result in an LSE.**

Assessment of Likely Significant Effects

South West London Waterbodies SPA and Ramsar

Changes in species distributions and Natural changes to site conditions

5.16. The proposed development has the potential to results in LSEs at the construction and operational stages.

Construction

Dust, noise and air pollution impact

5.17. Construction activities could increase pollutants such as dust, noise and air pollution which could disturb qualifying species and site conditions on a parcel of South West London Waterbodies SPA and Ramsar 0.1 km away from the south site boundary. An air quality assessment undertaken by Logika Group (see **Appendix 2**) concluded that as no ecological receptors were present within 50 m of the site or the 250 m of road used as part of site access for construction, that no impacts would occur. Best practise guidance from Institute of Air Quality Management (IAQM)[14] states that no ecological receptors will be impacted by construction related dusk if not within 50 m of the site. As such, this **impact pathway will not result in an LSE and is not screened into the Stage 2: Appropriate Assessment.**

Hydrology

5.18. Due to the topography of the site any pollution as a result of run-off and accidental spills will not results in a LSE is no hydrological link between South West London Waterbodies SPA and Ramsar and the site. The reservoir designated as part of South West London Waterbodies SPA and Ramsar is raised 13 m above the site and as such no run-off or aquatic pollutants are able to enter the watercourse. As such, this **impact pathway will not result in an LSE and is not screened into the Stage 2: Appropriate Assessment.**

[14] IAQM. (2024).

Noise

As reported in the study by the Institute of Estuarine and Coastal Studies[15], five levels of disturbance are given – shown in **Table 5.1** below (adapted from IECS study).[16]

5.19. **Table 5.1** – Noise Levels their Effects and Impacts

Level	Impact	Effect level	dBA
1	None	Low	<50
2	Head turning, scanning behavior	Moderate	<70
3	Movement within zone	Moderate – High	>70
4	Movement out of zone (but within site)	High	>85
5	Movement off site	High	N/A

5.20. Based on these parameters, it is considered that the 'threshold' which will not trigger a significant effect on the birds associated with the SPA is 70 dB. It is noted in the IECS study that birds will habituate to regular noise below 70 dB.

5.21. Construction noise from the Battery Energy Storage System (BESS), proposed 0.1 km north of a parcel of the South West London Waterbodies SPA and Ramsar site, has the potential to disturb associated species. However, noise levels below 70 dB are considered a threshold that does not trigger significant effects, as birds are likely to habituate to regular noise below this level without notable behavioural changes. In contrast, noise exceeding 70 dB could elicit high-level responses, including energy-intensive flight behaviours. The predicted construction noise level of 60 dB is consistent with current baseline conditions and falls well below the threshold. As such, this **impact pathway will not result in an LSE and is not screened into the Stage 2: Appropriate Assessment**.

[15] Institute of Estuarine & Coastal Studies (IECS) University of Hull. (2013). Waterbird Disturbance Mitigation Toolkit Informing Estuarine Planning & Construction Projects. Version 3.2.
[16] Note that these parameters are illustrative only and should not be taken as final and confirmed parameters for the works to be undertaken on site. As noted in the IECS study, these guidelines should be used in conjunction with a suitable monitoring programme on a project.

Operations

Noise

5.22. Operational noise from the BESS has the potential to affect the South West London Waterbodies SPA and Ramsar site by altering site conditions and impacting qualifying species.

5.23. According to the Institute of Estuarine and Coastal Studies (IECS) disturbance levels outlined in the construction phase, noise below 70 dB is unlikely to elicit significant behavioural responses, as birds are expected to habituate to consistent noise at this level. Any noise exceeding this threshold could impact birds more significantly, particularly in winter, when increased flight responses deplete energy reserves. However, a noise assessment prepared by Sharps Redmore Acoustic Consultants (**Appendix 3**) confirms that daytime and nighttime noise outputs from the BESS will not exceed 46 dB after attenuation to the reservoir. Therefore, this impact pathway will **not result in an LSE and is not screened into the Stage 2: Appropriate Assessment**.

Windsor Forest and Great Park SAC

Air pollution: impact of atmospheric nitrogen deposition

5.24. The proposed development at the construction and operational phases has the potential to increase nitrogen deposition from vehicles on Windsor Forest and Great Park SAC. The general threshold for a significant impact from nitrogen deposition from vehicles is any roads within 200 m of the SAC[18]. Any impacts further than 200 m are considered insignificant.

Construction

5.25. As detailed in the Transport Assessment prepared by SLR Consulting (**Appendix 4**). The site is currently used as an industrial estates and overflow car park. During construction the number of vehicles will not exceed the current use as such will not results in a significant increase in emissions. Therefore, this **impact pathway will not result in an LSE and is not screened into the Stage 2: Appropriate Assessment**.

Operational

5.26. As detailed in the Transport Assessment prepared by SLR Consulting (**Appendix 4**). The proposed development will reduce the number of vehicles entering the site, as the site will be redeveloped from an industrial park and overflow car parking into a data centre and BESS . As the only vehicular requirement will be for workers to access the faciality and maintenance It is not anticipated that any workers from the site will be using any roads within 200 m of Windsor Forest and Great Park SAC at a significant frequency to impact the SAC due to the distance 5.5 km from the site. Therefore, this **impact pathway will not result in an LSE and is not screened into the Stage 2: Appropriate Assessment**

[18] National Highways (2024). DMRB: Sustainability and Environment LA 105 Air quality (vertical barriers) (formerly HA 207/07, IAN 170/12, IAN 174/13, IAN 175/13, part of IAN 185/15). Version 0.1.0

Summary

5.27. No adverse LSEs are anticipated to South West London Waterbodies SPA and Ramsar or Windsor Forest and Great Park SAC as a result of the proposed development. Therefore, these **sites do not need to be taken to Stage 2: Appropriate Assessment**.

Table 5.2: HRA Stage 1 Screening Summary

Site Name	Is the scheme likely to have a significant effect on European site(s) alone?	Effect in combination with other plans/projects?	Stage 2 Appropriate Assessment Required?
Construction Phase			
South West London Waterbodies SPA	No	No	No
South West London Waterbodies Ramsar	No	No	No
Windsor Forest and Great Park SAC	No	No	No
Operation Phase			
South West London Waterbodies SPA	No	No	No
South West London Waterbodies Ramsar	No	No	No
Windsor Forest and Great Park SAC	No	No	No

Section 6: Conclusions

6.1. The site lies within the Zols of South West London Waterbodies SPA and Ramsar, and Windsor Forest and Great Park SAC.

6.2. The sHRA screening assessment concluded that there is no likely significant effects on National Site Network Sites/Ramsar sites as a result of the proposed development, the assessment is complete and is not taken to the Appropriate Assessment stage.

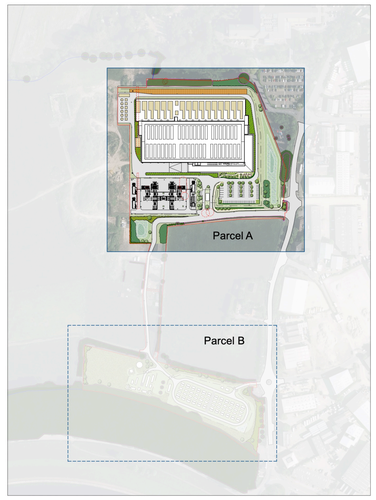
6.3. The proposed development is therefore compliant with relevant legislation and policy relating to protected sites.

Appendix 1: Planting Plan (HR600-TM-ZZ-GF-DR-L-0510 Planting GA-Rev P01)

Existing soil mounds on site located in the area, to be locally levelled to allow footpath route

Woodland planting to soften views and provide a variety of habitats

Location Plan Scale 1:5000



KEY - Parcel A

- Application boundary (Parcel A)
- Blue line boundary
- Indicative size and extent of existing vegetation to be retained to BS5837:2012. Dashed line shows RPA.
- Indicative extent of existing vegetation to be removed.
- Native tree planting
- Native woodland planting
- Areas of native scrub planting
- Infill mixed native hedgerow (translocated)
- Ornamental planting
- Ornamental hedgerow
- Wet-tolerant ornamental planting within soft-landscaped rain gardens
- Short mown grass
- Tussock grassland
- Reinforced grass (eg. Bodpave)
- Earth mound (approx. 1.5m max height)
- Attenuation basin / swales - seeded with species rich meadow suitable for seasonally wet soils
- Self binding gravel footpath
- Lighting column locations

POYLE ROAD, SLOUGH - PARCEL A - STRATEGIC LANDSCAPE MASTERPLAN

PEGASUS GROUP

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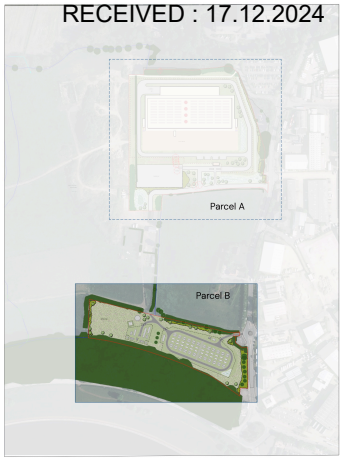
Location Plan Scale 1:5000



KEY - Parcel B

- Application boundary (Parcel B)
- Blue line boundary
- Indicative size and extent of existing vegetation to be retained to BS5837:2012. Dashed line shows RPA.
- Indicative extent of existing vegetation to be removed.
- Native tree planting
- Areas of native scrub planting
- Infill mixed native hedgerow
- Tussock grassland
- Species rich meadow

DRAFT 01-08-2024

POYLE ROAD, SLOUGH - PARCEL B - STRATEGIC LANDSCAPE MASTERPLAN

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| PEGASUSGROUP.CO.UK | TEAM/DRAWN BY: AMS | APPROVED BY: - | DATE: 01/08/2024 | SCALE: 1:500@A1 | DRWG: P24-1155_EN_-__002 | CLIENT: TRITAX GROUP |

Appendix 2: Air Quality Assessment (Air Quality Consultants, Logika Group.November 2024)

Logika GROUP

Report

Air Quality Assessment

Manor Farm, Slough

Air Quality CONSULTANTS | PART OF Logika Group

Document Control

Project Title:	Air Quality Assessment
Project Number:	J10-15555A-10
Client:	Philip Murphy (Quod Limited)
Principal Contact:	Manor Farm, Slough
Document Title:	J10-15555A-10-1-F02
Document Number:	Faye Wilder and Jack Buckley
Prepared By:	Martin Pierce (Associate Director)
Reviewed By:	

Revision History

01	11/11/2024	First Issue
02	20/11/2024	Second Issue

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Executive Summary

The air quality impacts associated with the proposed development at Manor Farm, Slough have been assessed. The proposed development consists of a data centre split across three levels with associated parking, gantry and substation, a battery energy storage system.

The proposed development includes 47 emergency diesel powered generators. An assessment of emissions from routine testing of the generators has demonstrated that the off-site human health impacts of these emissions will be negligible. The impacts of the emergency generator emissions on nearby designated ecological sites have also been assessed.

The proposed development will generate additional traffic on the local road network, but the assessment has shown that this will be below relevant screening thresholds, and therefore will not result in significant impacts.

During the construction works, a range of best practice mitigation measures will be implemented to reduce dust emissions and the overall effect will be 'not significant'; appropriate measures have been set out in this report, to be included in the CEMP for the works.

Overall, the operational air quality effects of the proposed development are judged to be 'not significant' for existing human health receptors.

Contents

Tables

Figures

1 Introduction

1.1 This report describes the potential air quality impacts associated with the proposed development at Manor Farm, Slough. The proposed development will consist of a data centre split across three levels with associated parking, gantry and substation, and a battery energy storage system, and four industrial units.

1.2 The proposed development lies close to a borough-wide Air Quality Management Area (AQMA) declared by the London Borough of Hillingdon for exceedances in the annual mean nitrogen dioxide (NO_2) objective; close to the Spelthorne Borough Council AQMA declared for exceedances in the annual mean NO_2 objective; and an AQMA declared by Slough Borough Council (SBC) for exceedances of the annual mean NO_2 objective. The proposed development also lies close to three designated ecological sites: the Arthur Jacob Local Nature Reserve (LNR); Wraysbury Reservoir, which forms part of the South West London Waterbodies Special Protection Area (SPA) and Ramsar site and is also designated as a Site of Special Scientific Interest (SSSI); and the Staines Moor Site SSSI, part of which also forms part of the South West London Waterbodies SPA and Ramsar site.

1.3 The proposed development will generate additional traffic on local roads, which may impact on air quality at existing residential properties along the affected road network. The main air pollutants of concern related to road traffic emissions are NO_2 and fine particulate matter (PM_{10} and $PM_{2.5}$).

1.4 The proposals for the development include the provision of 47 diesel generator units with a rated thermal input of 8.1 MW_{th} each (total 382 MW_{th}). The generators will be used during emergency situations to power the data centre in the event of major grid failure, and during routine testing and maintenance only; they will not be used for non-emergency power generation. The generators will be tested for up to 1 hour per month per generator, totalling up to 564 operating hours per annum. The emissions from the generators could impact air quality at nearby existing residential properties, and nearby ecological receptors. The potential impacts of the generators have been assessed using dispersion modelling to establish the air quality impacts arising from the proposed generators' use and has been prepared taking into account all relevant local and national guidance and regulations. The assessment focuses on NO_2 for human health, and on nitrogen oxides (NOx), nitrogen deposition and acid deposition for ecological impacts. The diesel generators will result in minor emissions of other pollutants such as particulate matter: PM emissions are far lower than NOx, and considered to be small compared to the environmental standards, however they have been included in this assessment.

1.5 The location of the proposed development is shown in Figure 1-1, along with the relevant nearby AQMAs and ecological sites.

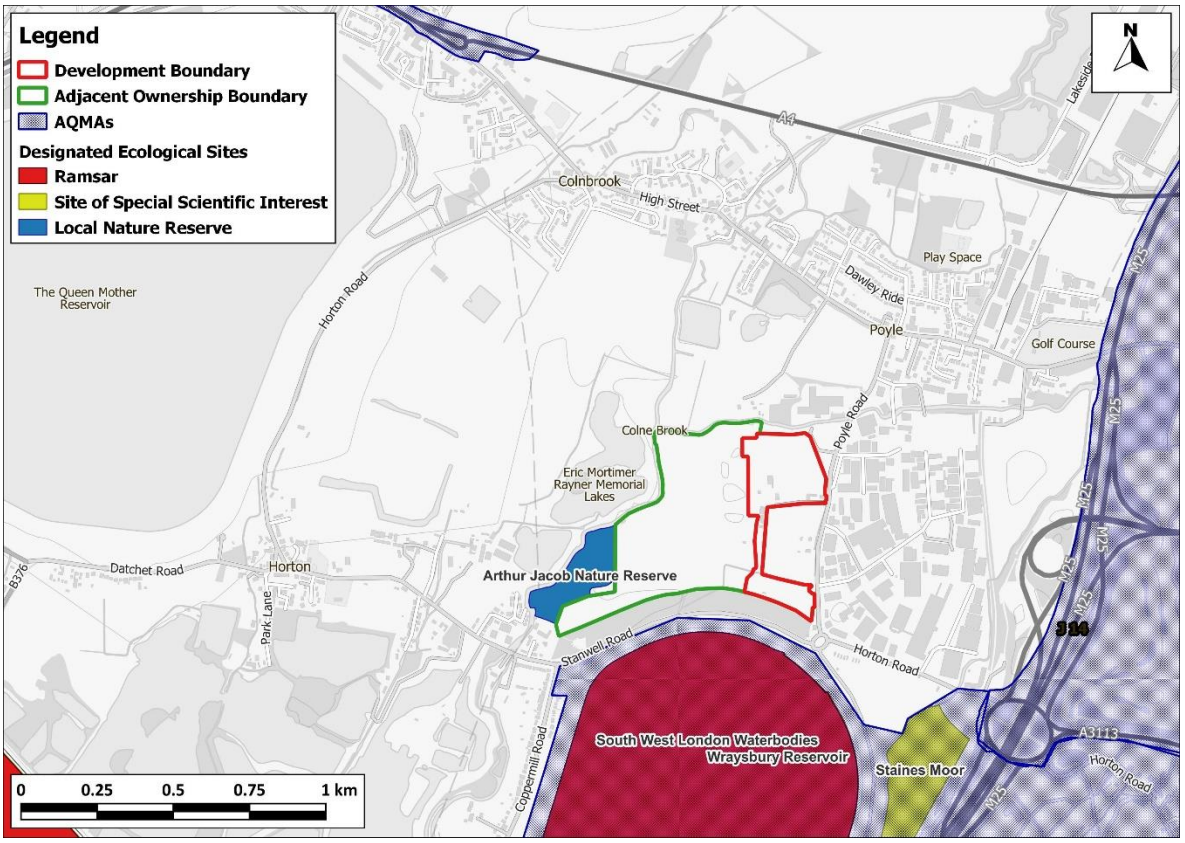

Figure 1-1: Proposed Development Setting in the Context of Air Quality

Additional data sourced from third parties, including public sector information licensed under the Open Government Licence v3.0.

1.6 There is also the potential for the construction activities to impact upon existing properties. The main pollutants of concern related to construction activities are dust and PM_{10}.

1.7 This report describes existing local air quality conditions (base year 2023), and those in the earliest possible year of operation (2027).

1.8 This report has been prepared taking into account all relevant local and national guidance and regulations, and follows a methodology agreed with SBC.

2 Policy Context

2.1 All European legislation referred to in this report is written into UK law and remains in place.

Air Quality Strategy 2007

2.2 The Air Quality Strategy (Defra, 2007) published by the Department for Environment, Food, and Rural Affairs (Defra) and Devolved Administrations, provides the policy framework for air quality management and assessment in the UK. It provides air quality standards and objectives for key air pollutants, which are designed to protect human health and the environment. It also sets out how the different sectors: industry, transport and local government, can contribute to achieving the air quality objectives. Local authorities are seen to play a particularly important role. The strategy describes the Local Air Quality Management (LAQM) regime that has been established, whereby every authority has to carry out regular reviews and assessments of air quality in its area to identify whether the objectives have been, or will be, achieved at relevant locations, by the applicable date. If this is not the case, the authority must declare an AQMA, and prepare an action plan which identifies appropriate measures that will be introduced in pursuit of the objectives.

Air Quality Strategy 2023

2.3 The Air Quality Strategy: Framework for Local Authority Delivery 2023 (Defra, 2023a) sets out the strategic air quality framework for local authorities and other Air Quality Partners in England. It sets out their powers and responsibilities, and actions the government expects them to take. It does not replace other air quality guidance documents relevant to local authorities.

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

2.4 The Medium Combustion Plant Directive (MCPD) (The European Parliament and the Council of the European Union, 2015) regulates pollutant emissions from combustion plant with a rated input between 1 and 50 megawatts (MW_{th}) and was transposed into UK law in January 2018 through an amendment to the Environmental Permitting Regulations (2018). The legislation sets emission limits to be applied from December 2018 for new plant and from 2025 or 2030 for existing plant (depending on the rated input). Generators whose sole purpose is maintaining power supply at a site during an on-site emergency, that are operated for the purpose of testing/maintenance for no more than 50 hours per year, will be exempt from the emission limits.

Clean Air Act 1993 & Environmental Protection Act

2.5 Small combustion plant of less than 20 MW net rated thermal input are controlled under the Clean Air Act 1993 (1993). This requires the local authority to approve the chimney height. Plant which are smaller than 366 kW have no such requirement.

2.6 Measures to ensure adequate dispersion of emissions from discharging stacks and vents are included in Technical Guidance Note D1 (Dispersion) (1993), issued in support of the Environmental Protection Act (1990).

Clean Air Strategy 2019

2.7 The Clean Air Strategy (Defra, 2019) sets out a wide range of actions by which the UK Government will seek to reduce pollutant emissions and improve air quality. Actions are targeted at four main

sources of emissions: Transport, Domestic, Farming and Industry. At this stage, there is no straightforward way to take account of the expected future benefits to air quality within this assessment.

Reducing Emissions from Road Transport: Road to Zero Strategy

2.8 The Office for Low Emission Vehicles (OLEV) and Department for Transport (DfT) published a Policy Paper (DfT, 2018) in July 2018 outlining how the government will support the transition to zero tailpipe emission road transport and reduce tailpipe emissions from conventional vehicles during the transition. This paper affirms the Government's pledge to end the sale of new conventional petrol and diesel cars and vans by 2040, and states that the Government expects the majority of new cars and vans sold to be 100% zero tailpipe emission and all new cars and vans to have significant zero tailpipe emission capability by this year, and that by 2050 almost every car and van should have zero tailpipe emissions. It states that the Government wants to see at least 50%, and as many as 70%, of new car sales, and up to 40% of new van sales, being ultra-low emission by 2030.

2.9 The paper sets out a number of measures by which Government will support this transition, but is clear that Government expects this transition to be industry and consumer led. The Government has recently announced that 80% of new cars and 70% of new vans sold in Great Britain must be zero emission by 2030, increasing to 100% by 2035. If these ambitions are realised then road traffic-related NOx emissions can be expected to reduce significantly over the coming decades, likely beyond the scale of reductions forecast in the tools utilised in carrying out this air quality assessment.

Environment Act 2021

2.10 The UK's new legal framework for protection of the natural environment, the Environment Act (2021) passed into UK law in November 2021. The Act gives the Government the power to set long-term, legally binding environmental targets. It also establishes an Office for Environmental Protection (OEP), responsible for holding the Government to account and ensuring compliance with these targets.

2.11 The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (SI 2023 No. 96) sets two new targets for future concentrations of $PM_{2.5}$. These targets are described in Paragraph 3.5.

Environmental Improvement Plan 2023

2.12 Defra published its 25 Year Environment Plan in 2018 (Defra, 2018a). The Environment Act (2021) requires Defra to review this Plan at least every five years. The Environmental Improvement Plan 2023 (Defra, 2023b) is the first revision. This outlines the progress made since 2018 and adds detail to the goals defined in the 2018 Plan, including that of achieving clean air.

2.13 The Environmental Improvement Plan 2023 sets out the new air quality targets which have been set for concentrations of $PM_{2.5}$. These targets, which are described in more detail in Paragraph 3.5, include the long-term targets in the Statutory Instrument described in Paragraph 2.11, and interim targets to be achieved by 2028.

2.14 The 2023 Plan outlines the role of local authorities in helping it meet both its targets and existing commitments. It also outlines the respective roles of industry, agricultural sectors, and the DfT in providing the coordinated action required to meet both its new, and pre-existing targets and commitments.

Planning Policy

National Policies

2.15 The National Planning Policy Framework (NPPF) (2023) sets out planning policy for England. It states that the purpose of the planning system is to contribute to the achievement of sustainable development, and that the planning system has three overarching objectives, one of which (Paragraph 8c) is an environmental objective:

"to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy".

2.16 To prevent unacceptable risks from air pollution, Paragraph 180 of the NPPF states that:

"Planning policies and decisions should contribute to and enhance the natural and local environment by…preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air quality".

2.17 Paragraph 191 states:

"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development".

2.18 More specifically on air quality, Paragraph 192 makes clear that:

"Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan".

2.19 The NPPF is supported by Planning Practice Guidance (PPG) (Ministry of Housing, Communities & Local Government, 2019), which includes guiding principles on how planning can take account of the impacts of new development on air quality. The PPG states that:

"Defra carries out an annual national assessment of air quality using modelling and monitoring to determine compliance with Limit Values. It is important that the potential impact of new development on air quality is taken into account where the national assessment indicates that relevant limits have been exceeded or are near the limit, or where the need for emissions reductions has been identified".

2.20 Regarding plan-making, the PPG states:

"It is important to take into account air quality management areas, Clean Air Zones and other areas including sensitive habitats or designated sites of importance for biodiversity where there could be specific requirements or limitations on new development because of air quality".

2.21 The role of the local authorities through the LAQM regime is covered, with the PPG stating that a local authority Air Quality Action Plan "*identifies measures that will be introduced in pursuit of the objectives and can have implications for planning*". In addition, the PPG makes clear that "*Odour and dust can also be a planning concern, for example, because of the effect on local amenity*".

2.22 Regarding the need for an air quality assessment, the PPG states that:

"*Whether air quality is relevant to a planning decision will depend on the proposed development and its location. Concerns could arise if the development is likely to have an adverse effect on air quality in areas where it is already known to be poor, particularly if it could affect the implementation of air quality strategies and action plans and/or breach legal obligations (including those relating to the conservation of habitats and species). Air quality may also be a material consideration if the proposed development would be particularly sensitive to poor air quality in its vicinity*".

2.23 The PPG sets out the information that may be required in an air quality assessment, making clear that:

"*Assessments need to be proportionate to the nature and scale of development proposed and the potential impacts (taking into account existing air quality conditions), and because of this are likely to be locationally specific*".

2.24 The PPG also provides guidance on options for mitigating air quality impacts, as well as examples of the types of measures to be considered. It makes clear that:

"*Mitigation options will need to be locationally specific, will depend on the proposed development and need to be proportionate to the likely impact. It is important that local planning authorities work with applicants to consider appropriate mitigation so as to ensure new development is appropriate for its location and unacceptable risks are prevented*".

Local Transport Plan

2.25 SBC's third Local Transport Plan (LTP) outlines improvements in local transport during 2011-2026 (Slough Borough Council, 2011). A large component of the LTP concerns poor air quality, arising from the proximity of major transport corridors and hubs (including the M4 motorway and Heathrow Airport) and congested roads.

2.26 Sustainable Community Strategy (SCS) Theme 2: Health and Wellbeing details the LTP objective to '*protect and improve personal health*', to be achieved partially through improving local air quality. The LTP aims to achieve this through:

- Sustainable land use planning (limiting parking, requiring transport assessments, securing financial contributions from development, and tackling congestion through widening travel choices);
- Better management of congestion and speed;
- Cleaner buses, taxis, and commercial vehicles;
- Promoting less polluting travel, encouraging healthy active travel and promoting walking and cycling;
- Managing parking demand; and
- School and workplace travel plans.

2.27 SBC is currently in the process of producing an updated LTP 4; however, this has not yet been published.

Local Policies

Core Strategy

2.28 SBC adopted The Core Strategy Development Plan Document (Slough Borough Council, 2008) in December 2008, and within this Strategy, one of the strategic objectives is *"to reduce areas subject to risk of flooding and pollution and control the location of development in order to protect people and their property from the effects of pollution and flooding"*.

2.29 In relation to air quality, 'Core Policy 7 (Transport)' states:

"…Development proposals will, either individually or collectively, have to make appropriate provisions for:

Improving air quality and reducing the impact of travel upon the environment, in particular climate change…"

2.30 Additionally, 'Core Policy 8 (Sustainability and the Environment)' states:

"All development in the Borough shall be sustainable, of a high quality design, improve the quality of the environment and address the impact of climate change.

[…]

3. Pollution

Development shall not:

a) Give rise to unacceptable levels of pollution including air pollution, dust, odour, artificial lighting or noise;

b) Cause contamination or a deterioration in land, soil or water quality; and

c) Be located on polluted land, areas affected by air pollution or in noisy environments unless the development incorporates appropriate mitigation measures to limit the adverse effects on occupiers and other appropriate receptors."

Emerging Local Plan

2.31 SBC is currently working on a new Local Plan, which will supersede the existing Core Strategy, Site Allocations and Local Plan Saved Policies, once adopted (Slough Borough Council, n.d.). The new Local Plan will set out how to guide development in Slough through to 2036, and will contain policies to guide business and residential developments to meet the needs of Slough's expanding population.

Building Standards

2.32 Part F(1) of Schedule 1 of the Building Regulations 2010 as amended June 2022 (Ministry of Housing, Communities & Local Government, 2022) places a duty on building owners, or those responsible for relevant building work[1], to ensure adequate ventilation is provided to building occupants.

2.33 Approved Document F (HM Government, 2021a), which accompanies the Building Regulations, explains that care should be taken to minimise entry of external air pollutants. Specific steps should be taken to manage ventilation intakes where the building is near to a significant source of emissions,

[1] Building work is a legal term for work covered by the Building Regulations. With limited exemptions, the Regulations apply to all significant building work, including erecting or extending a building.

or if local ambient concentrations exceed values set in the Air Quality Standards Regulations 2010 (see Paragraph 3.10, later). These steps include maximising the distance between emission source and air intake, considering likely dispersion patterns, and considering the timing of pollution releases when designing the ventilation system.

2.34 Part S(1) of Schedule 1, and Regulation 44D, of the Building Regulations 2010 (Ministry of Housing, Communities & Local Government, 2022) define a requirement for the provision of infrastructure for charging electric vehicles. Precise requirements are explained further within Approved Document S (HM Government, 2021b) and depend on the overall number of parking spaces provided and the average financial cost of installation.

2.35 Compliance with the Building Regulations is not required for planning approval, but it is assumed that the Regulations will be complied with in the completed development.

Air Quality Action Plans

National Air Quality Plan

2.36 Defra has produced an Air Quality Plan to tackle roadside nitrogen dioxide concentrations in the UK (Defra, 2017); a supplement to the 2017 Plan (Defra, 2018b) was published in October 2018 and sets out the steps Government is taking in relation to a further 33 local authorities where shorter-term exceedances of the limit value were identified. Alongside a package of national measures, the 2017 Plan and the 2018 Supplement require those identified English Local Authorities (or the GLA in the case of London Authorities) to produce local action plans and/or feasibility studies. These plans and feasibility studies must have regard to measures to achieve the statutory limit values within the shortest possible time, which may include the implementation of a Clean Air Zone (CAZ). There is currently no straightforward way to take account of the effects of the 2017 Plan or 2018 Supplement in this assessment; however, consideration has been given to whether there is currently, or is likely to be in the future, a limit value exceedance in the vicinity of the proposed development. This assessment has principally been carried out in relation to the air quality objectives, rather than the limit values that are the focus of the Air Quality Plan.

Local Air Quality Action Plan

2.37 SBC currently has five AQMAs for exceedances of the annual mean NO_2 objective. The Council has subsequently prepared Air Quality Action Plans (AQAPs) for AQMAs 1 and 2, as well as AQMAs 3 and 4 (Slough Borough Council, 2020). SBC is currently consolidating these action plans into one comprehensive AQAP to address air quality issues within all of the AQMAs.

2.38 This AQAP will determine existing NO_2 and particulate matter (PM_{10} and $PM_{2.5}$) concentrations, test the effectiveness of the measures outlined in the Low Emission Strategy (LES) programme in achieving compliance with the air quality objectives, and identify additional measures to tackle air pollution in the district.

2.39 SBC are currently consulting on a draft AQAP which will address poor air quality within the borough between 2024 to 2028 (Slough Borough Council, 2024a). The action plan outlines SBC's aim to achieve borough-wide NO_2 annual mean concentrations of under 35 $\mu g/m^3$, and to revoke SBC's AQMAs by 2030.

Low Emission Strategy

2.40 The Slough Low Emission Strategy (LES) (Slough Borough Council, 2018) forms part of the Slough Air Quality Action Plan. The LES lays out an integrated, year on year plan to improve air quality over the period until 2025.

2.41 The overarching aims of the LES are to:

- *"Improve air quality and health outcomes across Slough by reducing vehicle emissions through the accelerated uptake of cleaner fuels and technologies*
- *Embed an innovative approach to vehicle emission reduction through integrated policy development and implementation*
- *Provide a platform for inward investment as part of the transition to a low emission economy"*

2.42 Under Section 3.3 'Land-Use Planning & Development Management', the LES states:

"SBC will:

- *Adopt Air Quality Planning Guidance to provide clarity to developers through the planning system*
- *Seek air quality mitigation to be integrated into development schemes at the design stage*
- *Require appropriate air quality mitigation, proportionate in scale and kind to development scheme impact, including off-set mitigation on major schemes*
- *Introduce standards for plug-in vehicle charging on new development schemes*
- *Adopt emission controls for non-road mobile machinery (NRMM)"*

2.43 At the time of this assessment, SBC has not published the aforementioned Air Quality Planning Guidance.

3 Assessment Criteria

3.1 The Government has established a set of air quality standards and objectives to protect human health. The 'standards' are set as concentrations below which effects are unlikely even in sensitive population groups, or below which risks to public health would be exceedingly small. They are based purely upon the scientific and medical evidence of the effects of an individual pollutant. The 'objectives' set out the extent to which the Government expects the standards to be achieved by a certain date. They take account of economic efficiency, practicability, technical feasibility and timescale. The objectives for use by local authorities are prescribed within the Air Quality (England) Regulations (2000) and the Air Quality (England) (Amendment) Regulations (2002).

3.2 The UK-wide objectives for nitrogen dioxide and PM_{10} were to have been achieved by 2005 and 2004 respectively, and continue to apply in all future years thereafter. Measurements across the UK have shown that the 1-hour mean nitrogen dioxide objective is unlikely to be exceeded at roadside locations where the annual mean concentration is below 60 µg/m^3 (Defra, 2022). Therefore, 1-hour nitrogen dioxide concentrations will only be considered if the annual mean concentration is above this level. Measurements have also shown that the 24-hour mean PM_{10} objective could be exceeded at roadside locations where the annual mean concentration is above 32 µg/m^3 (Defra, 2022). The predicted annual mean PM_{10} concentrations are thus used as a proxy to determine the likelihood of an exceedance of the 24-hour mean PM_{10} objective. Where predicted annual mean concentrations are below 32 µg/m^3 it is unlikely that the 24-hour mean objective will be exceeded.

3.3 The objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed over the averaging period of the objective. Defra explains where these objectives will apply in its Local Air Quality Management Technical Guidance (Defra, 2022). The annual mean objectives for nitrogen dioxide and PM_{10} are considered to apply at the façades of residential properties, schools, hospitals etc.; they do not apply at hotels. The 24-hour mean objective for PM_{10} is considered to apply at the same locations as the annual mean objective, as well as in gardens of residential properties and at hotels. The 1-hour mean objective for nitrogen dioxide applies wherever members of the public might regularly spend 1 hour or more, including outdoor eating locations and pavements of busy shopping streets.

3.4 For $PM_{2.5}$, the objective set by Defra for local authorities is to work toward reducing concentrations without setting any specific numerical value. In the absence of a numerical objective, it is convention to assess local air quality impacts against the limit value (see Paragraph 3.10), originally set at 25 µg/m^3 and currently set at 20 µg/m^3.

3.5 Defra has also recently set two new targets, and two new interim targets, for $PM_{2.5}$ concentrations in England. One set of targets focuses on absolute concentrations. The long-term target is to achieve an annual mean $PM_{2.5}$ concentration of 10 µg/m^3 by the end of 2040, with the interim target being a value of 12 µg/m^3 by the start of 2028[2]. The second set of targets relate to reducing overall population exposure to $PM_{2.5}$. By the end of 2040, overall population exposure to $PM_{2.5}$ should be reduced by 35% compared with 2018 levels, with the interim target being a reduction of 22% by the start of 2028.

3.6 Defra will assess compliance with the population exposure targets by averaging concentrations measured at its own background monitoring stations. This will not consider small changes over time to precisely where people are exposed (such as would relate to exposure introduced by a new development). Furthermore, as explained in Paragraph 2.14, all four new targets provide metrics against which central Government can assess its own progress. While local authorities have an

[2] Meaning that it will be assessed using measurements from 2027. The 2040 target will be assessed using measurements from 2040. National targets are assessed against concentrations expressed to the nearest whole number, for example a concentration of 10.4 µg/m^3 would not exceed the 10 µg/m^3 target.

important role delivering the required improvements, these are expected to relate to controlling emissions and not to directly assessing $PM_{2.5}$ concentrations against the targets.

3.7 In March 2023, the Department for Levelling Up, Housing and Communities (DLUHC, 2023) explained that the new $PM_{2.5}$ targets will:

"need to be integrated into the planning system, and in setting out planning guidance for local authorities and businesses, we will consider the specific characteristics of $PM_{2.5}$. The guidance will be forthcoming in due course, until then we expect local authorities to continue to assess local air quality impacts in accordance with existing guidance."

3.8 Defra has also provided advice (Defra, 2023c) which explains that there is no current requirement to consider the new $PM_{2.5}$ targets in planning decisions and that guidance to local planning authorities will be forthcoming before this position changes. In the future, when planning decisions do need to consider the new targets, the expectation is that this will focus on reducing emissions from new development rather than there being a direct requirement for planning-related air quality assessments to predict $PM_{2.5}$ concentrations.

3.9 For the time being, therefore, no assessment is required, and indeed no robust assessment is possible, in relation to the new $PM_{2.5}$ targets and they are not considered further.

3.10 EU Directive 2008/50/EC (The European Parliament and the Council of the European Union, 2008) sets limit values for nitrogen dioxide, PM_{10} and $PM_{2.5}$, and is implemented in UK law through the Air Quality Standards Regulations (2010)[3]. The limit values for nitrogen dioxide and PM_{10} are the same numerical concentrations as the UK objectives, but achievement of the limit values is a national obligation rather than a local one and concentrations are reported to the nearest whole number. In the UK, only monitoring and modelling carried out by UK Central Government meets the specification required to assess compliance with the limit values. Central Government does not normally recognise local authority monitoring or local modelling studies when determining the likelihood of the limit values being exceeded, unless such studies have been audited and approved by Defra and DfT's Joint Air Quality Unit (JAQU).

3.11 The relevant air quality criteria for this assessment are provided in Table 3-1.

Table 3-1: Air Quality Criteria for Nitrogen Dioxide, PM_{10} and $PM_{2.5}$

Pollutant	Time Period	Value
Nitrogen Dioxide	1-hour Mean	200 µg/m^3 not to be exceeded more than 18 times a year
	Annual Mean	40 µg/m^3
PM_{10}	24-hour Mean	50 µg/m^3 not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m^3 [a]
$PM_{2.5}$	Annual Mean	20 µg/m^3 [b]

[a] A proxy value of 32 µg/m^3 as an annual mean is used in this assessment to assess the likelihood of the 24-hour mean PM_{10} objective being exceeded. Measurements have shown that, above this concentration, exceedances of the 24-hour mean PM_{10} objective are possible (Defra, 2022).

[3] As amended through The Air Quality Standards (Amendment) Regulations 2016 and The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020.

[b] There is no numerical $PM_{2.5}$ objective for local authorities (see Paragraph 3.4). Convention is to assess against the UK limit value which is currently 20 µg/m^3.

3.12 Table 3-2 sets out the relevant critical levels and critical loads for the designated ecological sites in the study area, as taken from the Air Pollution Information System (APIS) website (APIS, 2024). Where critical loads are not available, no assessment can be carried out, although predicted PCs are presented in the report for completeness. The assessment levels for designated ecological sites apply within the boundary of each designated site.

Table 3-2: Assessment Levels for Designated Ecological Sites

Site	Maximum 24-hour Mean NOx	NOx	Annual Mean	
			Nutrient Nitrogen Deposition	Acid Deposition [a]
Arthur Jacob Nature Reserve (LNR)	200 µg/m^3	30 µg/m^3	5 [b]	0.1 [b]
South West London Waterbodies/ Wraysbury Reservoir (Ramsar/SPA/SSSI) [c]			10	- [d]
Staines Moor (SSSI)			10	4.856

[a] MinCLMaxN

[b] Values taken from 'Bogs' habitat type on APIS.

[c] Nutrient Nitrogen Deposition and Acid Deposition values taken from SSSI designation as no data available for Ramsar designation.

[d] Not available on APIS.

3.13 EA guidance (Environment Agency, 2023)describes two assessment levels for maximum 24-hour mean NOx, and advises that the higher 200 µg/m^3 assessment level can be used for detailed assessments where ozone is below the AOT40 critical level and sulphur dioxide is below the lower critical level of 10 µg/m^3 . Background annual mean concentrations of sulphur dioxide are well below 10 µg/m^3 across the UK, and ozone is generally low in urban regions such as Greater London and its surroundings. It is therefore appropriate to use 200 µg/m^3 as the critical level for this assessment.

Construction Dust Criteria

3.14 There are no formal assessment criteria for dust. In the absence of formal criteria, the approach developed by the Institute of Air Quality Management (IAQM)[4] (2024) has been used. Full details of this approach are provided in Appendix A1.

Screening Criteria

Road Traffic Assessments

3.15 Environmental Protection UK (EPUK) and the IAQM recommend a two-stage screening approach (Moorcroft and Barrowcliffe et al, 2017) to determine whether emissions from road traffic generated

[4] The IAQM is the professional body for air quality practitioners in the UK.

by a development have the potential for significant air quality impacts. The approach, as described in Appendix A1, first considers the size and parking provision of a development; if the development is residential and is for fewer than ten homes or covers less than 0.5 ha, or is non-residential and will provide less than 1,000 m^2 of floor space or cover a site area of less than 1 ha, and will provide ten or fewer parking spaces, then there is no need to progress to a detailed assessment.

3.16 The second stage then compares the changes in vehicle flows on local roads that a development will lead to against specified screening criteria. The screening thresholds (described in full in Appendix A1) inside an AQMA are a change in flows of more than 25 Heavy Duty Vehicles (HDVs) or 100 Light Duty Vehicles (LDVs) as an annual average daily traffic (AADT); outside of an AQMA the thresholds are 100 HDVs or 500 LDVs. Where these criteria are exceeded, a detailed assessment is likely to be required, although the guidance advises that "*the criteria provided are precautionary and should be treated as indicative*", and "*it may be appropriate to amend them on the basis of professional judgement*".

Point Source Assessments

3.17 EPUK and the IAQM have developed an approach (Moorcroft and Barrowcliffe et al, 2017) to determine whether emissions from point sources, such as energy plant, have the potential for significant air quality impacts. The first step of the approach, as described in Appendix A1 is to screen the emissions and the emissions parameters to determine whether an assessment is necessary:

"Typically, any combustion plant where the single or combined NOx emission rate is less than 5 mg/sec is unlikely to give rise to impacts, provided that the emissions are released from a vent or stack in a location and at a height that provides adequate dispersion.

In situations where the emissions are released close to buildings with relevant receptors, or where the dispersion of the plume may be adversely affected by the size and/or height of adjacent buildings (including situations where the stack height is lower than the receptor) then consideration will need to be given to potential impacts at much lower emission rates.

Conversely, where existing nitrogen dioxide concentrations are low, and where the dispersion conditions are favourable, a much higher emission rate may be acceptable".

3.18 This screening approach requires professional judgement, and the experience of the consultants preparing the assessment is set out in Appendix A3.

3.19 If it is determined that an assessment of the point source emissions is required then there is a further stage of screening that can be applied to the model outputs. The approach is that any change in concentration smaller than 0.5% of the long-term environmental standard will be negligible, regardless of the existing air quality conditions. Any change smaller than 1.5% of the long-term environmental standard will be negligible so long as the total concentration is less than 94% of the standard and any change smaller than 5.5% of the long-term environmental standard will be negligible so long as the total concentration is less than 75% of the standard. The guidance also explains that:

"Where peak short term concentrations (those averaged over periods of an hour or less) from an elevated source are in the range 11-20% of the relevant Air Quality Assessment Level (AQAL), then their magnitude can be described as small, those in the range 21-50% medium and those above 51% as large. These are the maximum concentrations experienced in any year and the severity of this impact can be described as slight, moderate and substantial respectively, without the need to reference background or baseline concentrations. In most cases, the assessment of impact severity for a proposed development will be governed by the long-term exposure experienced by receptors and it will not be a necessity to define the significance of effects by reference to short-term impacts.

The severity of the impact will be substantial when there is a risk that the relevant AQAL for short-term concentrations is approached through the presence of the new source, taking into account the contribution of other local sources".

3.20 As a first step, the assessment of emissions from the generators within the development has considered the predicted process contributions using the following EPUK/IAQM criteria:

- is the long-term (annual mean) process contribution less than 0.5% of the long-term environmental standard?; and
- is the short-term (24-hour mean or shorter) process contribution less than 10% of the short-term environmental standard?

3.21 Where both of these criteria are met, then the impacts are negligible and thus 'not significant'. Where these criteria are breached then a more detailed assessment, considering total concentrations (incorporating local baseline conditions), has been provided.

4 Assessment Approach

Consultation

4.1 The assessment follows a methodology agreed with SBC via email correspondence between Sophia Norfolk (Principal Environment Officer at SBC) and Faye Wilder (Air Quality Consultants) on 29 October 2023. Specifically, the following key points were agreed:

- traffic generated by the proposed development will be below screening thresholds, therefore detailed roads dispersion modelling is not required;
- emergency generators will be tested using ADMS-6, considering concentrations of NOx, PM_{10}, and $PM_{2.5}$; and
- a construction dust risk assessment will be undertaken using the IAQM's 2024 Guidance.

Study Area

4.2 The study area covers a 10 km x 10 km model domain, centred on the emergency generator exhaust within the proposed development, described further in Paragraph 4.6.

4.3 The construction dust assessment considers the potential for impacts within 250 m of the site boundary, or within 50 m of roads used by construction vehicles within 250 m of the site. The specific areas considered are detailed in Section 6.

Receptors

4.4 Concentrations of nitrogen dioxide, PM_{10} and $PM_{2.5}$ have been predicted at a number of locations close to, the proposed development. Receptors have been identified to represent a range of exposure, including worst-case locations (these being at the façades of the residential and commercial properties closest to the sources, and at nearby ecological sites). Attention has been paid to selecting receptors at locations where the impacts of the generator emissions are likely to be greatest.

4.5 Sixteen existing residential properties have been identified as receptors for the assessment, alongside one nearby school, one nearby pub, one nearby hotel, and one nearby commercial food café. Three ecological sites have also been identified as receptors for the assessment, with receptors selected at worst case locations of the ecological site. These locations are described in Table 4-1 and shown in Figure 4-1.

Table 4-1: Description of Receptor Locations

Receptor	Type	X coordinate	Y coordinate	Heights Modelled (m) [a]
Existing properties				
R1	Residential	5021856	176916	1.5
R2	Residential	503266	176585	1.5
R3	Residential	503340	176549	1.5
R4	Residential	503280	176718	1.5

Receptor	Type	X coordinate	Y coordinate	Heights Modelled (m) [a]
R5	Residential	502992	176027	1.5
R6	Residential	502837	176444	1.5
R7	Residential	502786	176445	1.5
R8	Hotel	503024	176430	1.5
R9	Residential	503184	176765	1.5
R10	Residential	502815	176820	1.5
R11	Residential	503047	176859	1.5
R12	Residential	502133	175675	1.5
R13	Residential	502101	175774	1.5
R14	Residential	502955	176481	1.5
R15	Residential	503054	176792	1.5
R16	Residential	503104	175650	1.5
R17	School	502615	176991	1.5
R18	Residential	502553	177011	1.5
R19	Commercial/Food	503122	176234	1.5
R20	Pub	5030452	175737	1.5
Ecological Sites				
E1	Ecological – LNR	502389	176069	1.5
E2	Ecological – SPA and Ramsar	502703	175715	1.5
E3	Ecological – SPA and Ramsar	502839	175688	1.5
E4	Ecological – SPA and Ramsar	502938	175644	1.5
E5	Ecological – SSSI	503446	175477	1.5
E6	Ecological – SSSI	503376	175450	1.5

[a] A height of 1.5 m is used to represent ground-floor level exposure.

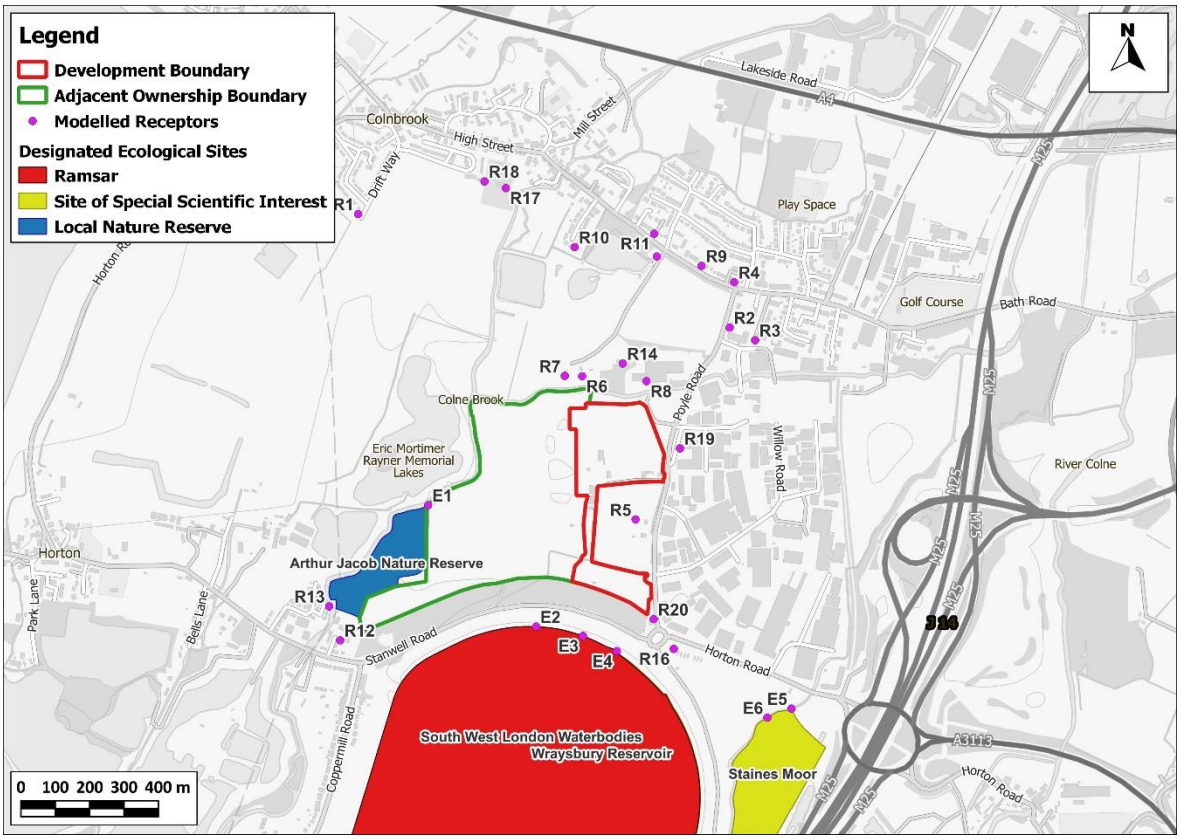

Figure 4-1: Receptor Locations

Additional data sourced from third parties, including public sector information licensed under the Open Government Licence v3.0.

4.6 Selected receptors may be representative of air quality conditions at a number of properties; consideration has been given to how many sensitive locations each modelled receptor represents when considering the impacts of the proposed development and the overall significance of effects.

4.7 Impacts as a result of plant emissions have been predicted over a 10 km x 10 km model domain, with the proposed development at the centre. Concentrations have been predicted across this area using nested Cartesian grids (see Figure 4-2). These grids have a spacing of 5 m x 5 m within 200 m of the facility, 25 m x 25 m within 400 m, 50 m x 50 m within 1,000 m, 250 m x 250 m within 2,000 m, and 500 m x 500 m within 5,000 m of the facility. The receptor grid has been modelled at a height of 1.5 m above ground level.

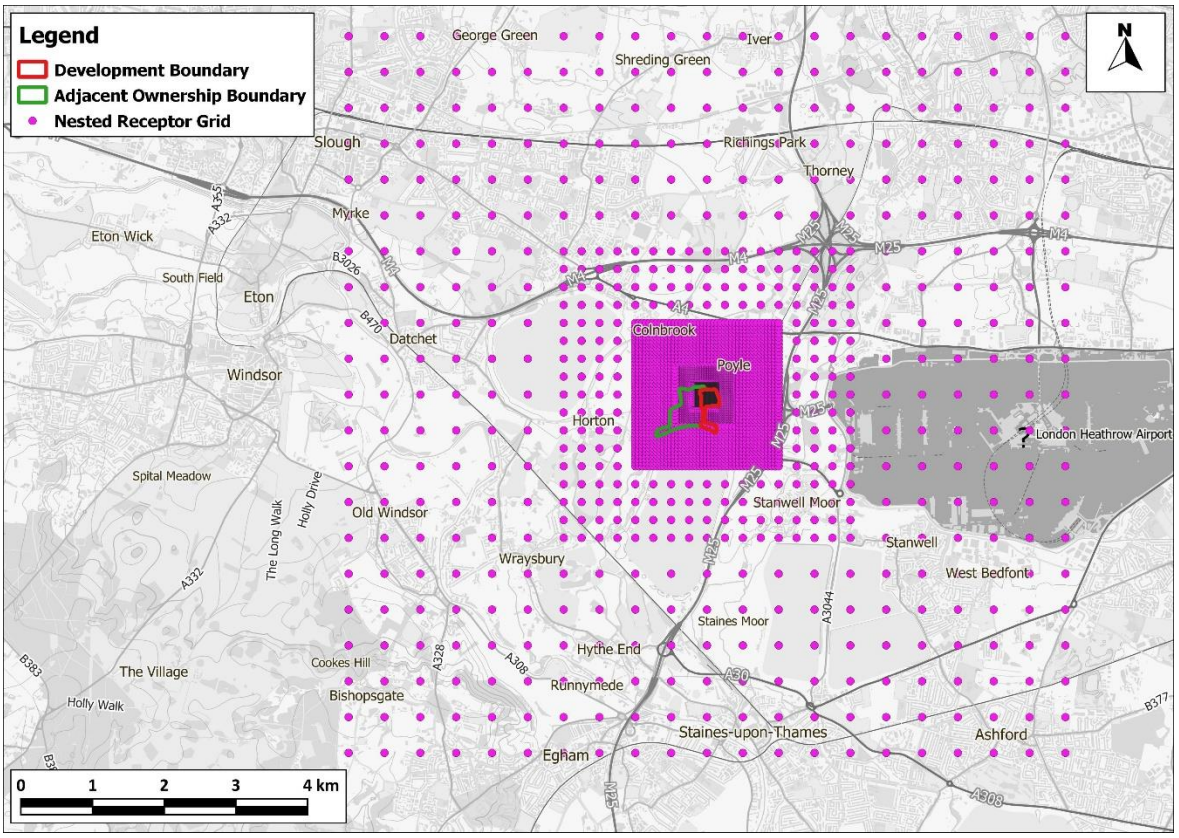

Figure 4-2: Nested Cartesian Grids of Receptors

Additional data sourced from third parties, including public sector information licensed under the Open Government Licence v3.0.

4.8 The construction dust risk assessment approach does not require specific receptors to be identified; instead, the numbers of different types of receptors within given distance bands are counted. These receptor counts are provided in Section 6.

Existing Conditions

4.9 Existing sources of emissions and baseline air quality conditions within the study area have been defined using a number of approaches:

- industrial and waste management sources that may affect the area have been identified using Defra's Pollutant Release and Transfer Register (Defra, 2024b);
- local sources have been identified through examination of the Council's Air Quality Review and Assessment reports;
- information on existing air quality has been obtained by collating the results of monitoring carried out by the local authority. This covers both the study area and nearby sites, the latter being used to provide context for the assessment;
- background concentrations have been defined using Defra's 2018-based background maps (Defra, 2024a). These cover the whole of the UK on a 1x1 km grid. Mapped background concentrations of NO_2, PM_{10} and $PM_{2.5}$ have not been adjusted; and

- whether or not there are any exceedances of the annual mean limit value for nitrogen dioxide in the study area has been identified using the maps of roadside concentrations published by Defra (2020; 2024c). These are the maps used by the UK Government, together with the results from national Automatic Urban and Rural Network (AURN) monitoring sites that operate to the required data quality standards, to identify and report exceedances of the limit value. The national maps of roadside PM_{10} and $PM_{2.5}$ concentrations (Defra, 2024c), which are available for the years 2009 to 2022, show no exceedances of the limit values anywhere in the UK in 2022.

Construction Impacts

4.10 The construction dust assessment considers the potential for impacts within 250 m of the site boundary, or within 50 m of roads used by construction vehicles. The assessment methodology is that provided by IAQM (2024). This follows a sequence of steps. Step 1 is a basic screening stage, to determine whether the more detailed assessment provided in Step 2 is required. Step 2a determines the potential for dust to be raised from on-site works and by vehicles leaving the site. Step 2b defines the sensitivity of the area to any dust that may be raised. Step 2c combines the information from Steps 2a and 2b to determine the risk of dust impacts without appropriate mitigation. Step 3 uses this information to determine the appropriate level of mitigation required to ensure that there should be no significant impacts. Appendix A1 explains the approach in more detail.

Road Traffic Impacts

4.11 The first step in considering the road traffic impacts of the proposed development has been to screen the development and its traffic generation against the criteria set out in the EPUK/IAQM guidance (Moorcroft and Barrowcliffe et al, 2017), as described in Paragraph 3.15 and detailed further in Appendix A1. Where impacts can be screened out there is no need to progress to a more detailed assessment.

Impacts of the Proposed Diesel Generators

4.12 The proposed development will have 47 emergency diesel generators to power the data centre in the event of major grid failure. The specifications for these generators, upon which the assessment is based, are set out in Appendices A3 and A4.

Screening

4.13 The first step in considering the energy plant impacts has been to screen the pollutant emissions against the criteria set out in the EPUK/IAQM guidance (Moorcroft and Barrowcliffe et al, 2017), as described in Paragraphs 3.17 and 3.18. Where plant impacts cannot be screened out against these criteria, a further stage of screening is required, whereby the modelled contributions of the plant are compared to further screening criteria, as described in Paragraphs 3.19 to 3.21. Where impacts can be screened out there is no need to progress to a more detailed assessment. The following sections describe the approach to dispersion modelling of the generator emissions, which has been required for this project.

Emissions Data

4.14 The emissions data input into the model for the generators have been determined using the data set out in the technical datasheets for the plant to be installed, based upon the fuel consumption, fuel composition, typical operating conditions and combustion chemistry. Further details of the emissions data used in this assessment are provided in Appendix A3.

Modelling Methodology

4.15 The impacts of emissions from the proposed generators have been modelled using the ADMS-6 dispersion model. ADMS-6 is a new generation model that incorporates a state-of-the-art understanding of the dispersion processes within the atmospheric boundary layer. The model input parameters are set out in Appendix A3. The air quality modelling has been carried out based on a number of necessary assumptions, detailed further in Paragraph 4.26 and in Appendices A3 and A4. Where possible a realistic worst-case approach has been adopted.

4.16 Each generator will be tested once per month for up to one hour, with only one generator being tested at a time. The generators will also be used when there is power failure from the national grid. Since the timings of the testing and of any loss of power from the grid are unknown, there is uncertainty about the future meteorological conditions that will occur when the generators are operational. For assessment purposes, therefore, a single generator has been modelled as operating continuously throughout the year. This ensures that worst-case meteorological conditions are captured for assessing impacts against short-term assessment levels. For assessment against the nitrogen dioxide annual mean objective, the modelled annual mean concentrations assuming continuous operation by a single generator have then been factored to account for 564 hours of operation (12 hours per generator per annum, for 47 generators). This has been done by multiplying the annual mean model outputs by 0.0644 (i.e. 564/8760).

Assessment Scenarios

4.17 Nitrogen dioxide concentrations as a result of emissions from the energy plant have been predicted for the year 2023 for the following scenarios:

- with the main development building; and
- without the main development building.

4.18 The assessment year of 2023 has been selected as a worst-case approach, since air quality is expected to improve in future years.

4.19 The maximum predicted concentration from any of these scenarios has been used throughout this assessment. This sensitivity testing is considered necessary because ADMS-6 takes a relatively simplistic approach to modelling building downwash effects, thus additional uncertainty is introduced when using the buildings module, but it would not be appropriate to ignore the potential effects of the entrainment of the plume in building downwash.

4.20 Predictions for 2023 are based on a return to 'typical' activity levels and assume no impact as a result of the Covid-19 pandemic in this year, to ensure a worst-case assessment (as the influence of the pandemic has generally been to reduce concentrations of the pollutants considered in this assessment).

Impact Description

4.21 The approach developed jointly by EPUK and the IAQM (Moorcroft and Barrowcliffe et al, 2017) has been used in describing the modelled impacts. The approach identifies impacts at individual receptors based on the percentage change in concentrations relative to the relevant air quality objective, rounded to the nearest whole number, and the absolute concentration relative to the objective. Table 4-2 sets out the method for determining the impact descriptor for annual mean concentrations at individual receptors, having been adapted from the table presented in the guidance document. For the assessment criterion the term Air Quality Assessment Level or AQAL has been adopted, as it covers all pollutants, i.e. those with and without formal standards. Typically, as is

the case for this assessment, the AQAL will be the air quality objective. Note that impacts may be adverse or beneficial, depending on whether the change in concentration is positive or negative.

Table 4-2: Air Quality Impact Descriptors for Individual Receptors for All Pollutants [a]

Long-Term Average Concentration At Receptor In Assessment Year [b]	Change in concentration relative to AQAL [c]				
	0%	1%	2-5%	6-10%	>10%
75% or less of AQAL	Negligible	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Negligible	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Negligible	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Negligible	Moderate	Substantial	Substantial	Substantial

[a] Values are rounded to the nearest whole number.

[b] This is the "Without Scheme" concentration where there is a decrease in pollutant concentration and the "With Scheme" concentration where there is an increase.

[c] AQAL = Air Quality Assessment Level, which may be an air quality objective, GLA target, limit or target value, or an Environment Agency 'Environmental Assessment Level (EAL)'.

Short Term Impacts

4.22 Environment Agency guidance (Environment Agency, 2023) recommends a criterion of 10% of the short-term environmental standard when assessing short-term concentrations. Thus, if the 99.79th percentile of hourly mean process contributions from the facility is less than 10% of the objective level (i.e. <20 µg/m^3 for 24-hour mean NO_2), the contribution can be considered insignificant without the need to consider total concentrations.

4.23 Where the process contribution cannot immediately be screened out, it is added to the baseline concentration to determine the 99.79th percentile of total hourly mean concentrations. Where this total concentration is below 200 µg/m^3, it can be assumed that the short-term objective will not be exceeded, and the impacts are considered to be 'not significant'.

Uncertainty

4.24 The point source dispersion model used in the assessment is dependent upon emission rates, flow rates, exhaust temperatures and other parameters for each source, all of which in reality are variable as the plant will operate at different loads at different times. The actual plant to be installed within the development will also not be confirmed until the proposed development is definitely going ahead, and thus could be different to that assumed for this assessment. The assessment has, however, addressed this by applying worst-case assumptions where necessary, and provided that the actual plant installed adheres to the restrictions set out in Appendix A4, the conclusions of this assessment will remain valid.

4.25 There are then additional uncertainties, as models are required to simplify real-world conditions into a series of algorithms. These uncertainties cannot be easily quantified, and it is not possible to verify the point-source model outputs. Sensitivity tests have been applied to address specific uncertainties and to ensure a worst-case assessment.

Assumptions

4.26 The following assumptions have been made in carrying out the energy plant emissions modelling, with the assumptions generally seeking to reflect a realistic worst-case scenario:

- that the diesel generator will operate for a full hour during testing, which will over-state the emissions from this plant;
- that the tests will be conducted at 100% load;
- that the temperature of the exhaust emissions will not vary significantly between the point of exhaust from the engine and the point of release to the atmosphere; and
- that the Heathrow Airport meteorological monitoring station appropriately represents conditions in the study area (this is discussed further in Appendix A3).

Assessment of Significance

Construction Dust Significance

4.27 Guidance from IAQM (2024) is that, with appropriate mitigation in place, the effects of construction dust will be 'not significant'. The assessment thus focuses on determining the appropriate level of mitigation so as to ensure that effects will normally be 'not significant'.

Operational Significance

4.28 There is no official guidance in the UK in relation to development control on how to assess the significance of air quality impacts. The approach developed jointly by EPUK and the IAQM (Moorcroft and Barrowcliffe et al, 2017) has therefore been used. The overall significance of the air quality impacts is determined using professional judgement, taking account of the impact descriptors; the experience of the consultants preparing the report is set out in Appendix A3. Full details of the EPUK/IAQM approach are provided in Appendix A1.

5 Baseline Conditions

Relevant Features

5.1 The proposed development is located within the administrative area of SBC, approximately 800 m west of the M25, and 1.5 km west of Heathrow Airport. The application site is bounded by Poyle Road to the east, and Stanwell Road to the south. It currently consists of grassland in the western and southern parts of the site, with existing industrial use in the northeast of the site. There is an existing industrial estate located directly east of the proposed development. There are two residential properties approximately 100 m from both Parcel 1 and Parcel 2 of the proposed development.

5.2 The proposed development is located north of the Spelthorne Borough Council AQMA, west of the London Borough of Hillingdon AQMA, and 1.4 km southeast of the Slough AQMA No.2, as highlighted in Figure 1-1.

Industrial Sources

5.3 No significant industrial point sources have been identified that are likely to affect the proposed development, in terms of air quality.

Local Air Quality Monitoring

5.4 SBC operates five automatic monitoring stations within its area, the nearest of which, site 'SLH 3' is located approximately 700 m northeast of the proposed development. Additionally, SBC undertook non-automatic (passive) nitrogen dioxide monitoring at 74 sites during 2023 using diffusion tubes prepared and analysed by SOCOTEC (Didcot) (using the 50% TEA in acetone method). These include thirteen within 800 m of the proposed development, the closest of which being diffusion tube 'SLO 17', located approximately 140 m southeast of the proposed development.

5.5 Annual mean results for the years 2019 to 2023 are summarised in Table 5-1, while results relating to the 1-hour mean objective are summarised in Table 5-2. The monitoring locations are shown in Figure 5-1. The monitoring data have been taken from SBC's 2024 Annual Status Report (ASR) (Slough Borough Council, 2024b).

Table 5-1: Summary of Annual Mean NO_2 Monitoring (2019-2023) (µg/m³)

Site No.	Site Type	Location	2019	2020	2021	2022	2023
SLH 3	Suburban	Slough-Colnbrook-(Pippins)	26.1	16.2	17.8	21.1	-
SLH 7	Other	Slough-Chalvey, M4	32.7	21.3	20.9	-	-
SLO 13	Suburban	Elbow Meadows	28.9	20.9	19.6	21.9	18.2
SLO 17	Suburban	Horton Road (Caravan Park)	33.3	24.9	25.7	28.3	25.6
SLO 96	Roadside	Poyle Rd	28.4	20.5	20.1	23.1	20.7

Site No.	Site Type	Location	2019	2020	2021	2022	2023
SLO 98	Suburban	The Hawthorns -Pippins (2)	-	17.1	18.1	-	-
SLO 99	Suburban	The Hawthorns -Pippins (3)	-	18.0	18.1	-	-
SLO 100	Suburban	The Hawthorns -Pippins (4)	-	16.7	15.4	-	-
SLO 127	Roadside	King John's Palace, Park Park Street	-	-	-	-	24.1
SLO 128	Roadside	Park Street (north)	-	-	-	-	23.0
SLO 129	Roadside	Park Street (south)	-	-	-	-	17.9
SLO 130	Roadside	Bath Road (a)	-	-	-	-	24.6
SLO 131	Roadside	Bath Road (b)	-	-	-	-	-
Objective			**40**				

Table 5-2: Number of Hours With NO_2 Concentrations Above 200 µg/m^3 [a]

Site No.	Site Type	Location	2019	2020	2021	2022	2023
SLH 3	Suburban	Slough-Colnbrook-(Pippins)	0	0	0	0 (74.0)	-
Objective			**18 (200) [c]**				

[a] Values in brackets are 99.79th percentiles, which are presented where data capture is <75%.

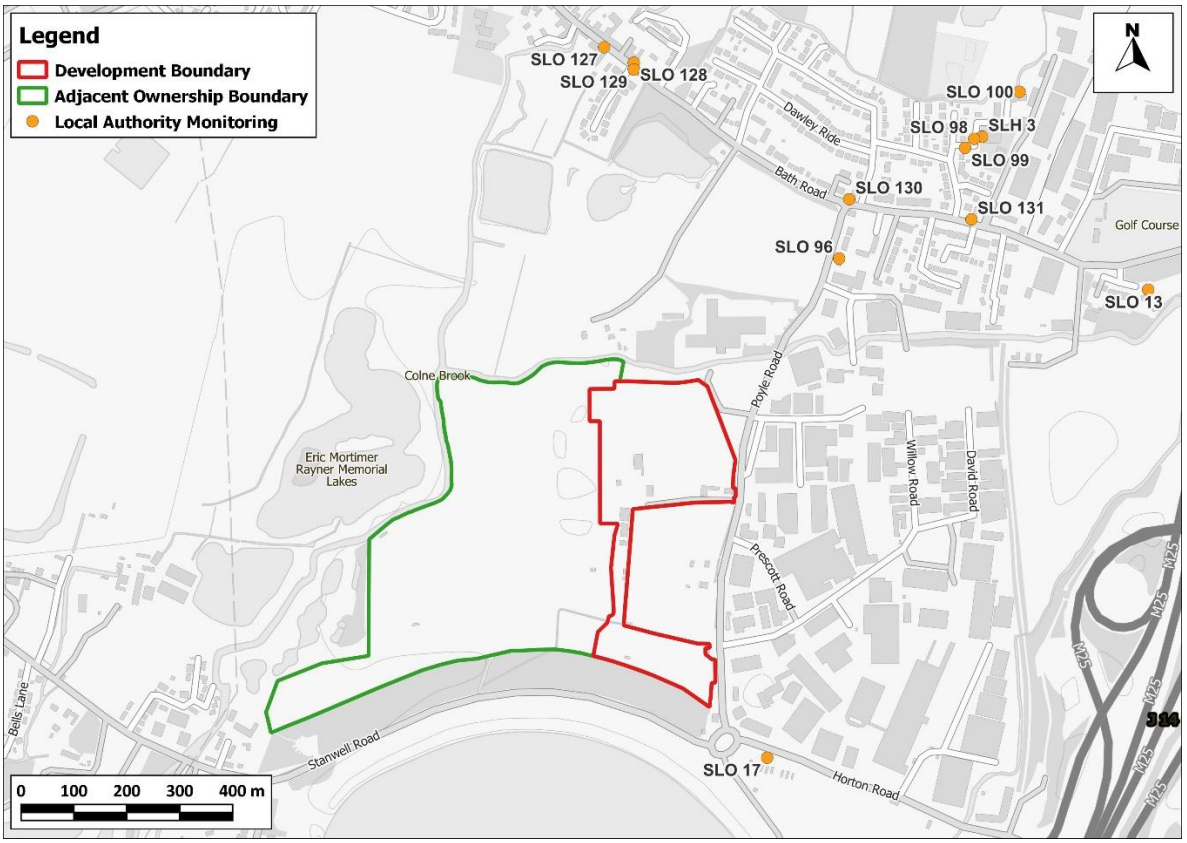

Figure 5-1: Monitoring Locations

Additional data sourced from third parties, including public sector information licensed under the Open Government Licence v3.0.

5.6 As shown in Table 5-1, measured annual mean NO_2 concentrations have been below the annual mean NO_2 objective at all locations for the presented monitoring period of 2019 to 2023. Additionally, as shown in Table 5-2, there have been no exceedances of the 1-hour NO_2 mean in the last five years. At sites which have five years of monitoring data ('SLO 13', 'SLO19' and 'SLO96'), a downward trend in NO_2 concentration can be observed.

5.7 The 'SLH 3' suburban automatic monitoring station, located adjacent to Pippins Primary School approximately 700 m northeast of the proposed development, is the closest station which measures PM_{10} concentrations, however, no data were recorded for 2023. Co-located automatic monitoring stations 'SLH 8' and 'SLH 9', adjacent to the A4, 1.2 km north of the proposed development, were the closest stations which recorded PM_{10} data in 2023. The 'SLH 9' monitor also measures $PM_{2.5}$ concentrations. Annual mean results for the years 2019 to 2023 are summarised in Table 5-3, while results relating to the daily mean objective are summarised in Table 5-4.

Table 5-3: Summary of Annual Mean PM_{10} and $PM_{2.5}$ Monitoring (2019-2023) (µg/m³)

Site No.	Site Type	Location	2019	2020	2021	2022	2023
PM_{10}							
SLH 3	Suburban	Slough Colnbrook-(Pippins)	16.4	17.0	15.2	17.0	-

Site No.	Site Type	Location	2019	2020	2021	2022	2023
SLH 8	Industrial	Slough-Lakeside2 (run by Lakeside Energy from Waste Ltd)	15.0	14.0	12.4	14.5	12.6
SLH 9	Urban Background	Slough-Lakeside2 (run by Lakeside Energy from Waste Ltd) Co-located Osiris	14.0	16.7	12.6	18.3	13.8
Objective			**40**				
$PM_{2.5}$							
SLH 9	Urban Background	Slough-Lakeside2 (run by Lakeside Energy from Waste Ltd) Co-located Osiris	7.0	5.5	5.5	7.6	5.9
Objective			**20 [a]**				

[a] The 20 µg/m³ $PM_{2.5}$ objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

Table 5-4: Number of Days With PM_{10} Concentrations Above 50 µg/m³

Site No.	Site Type	Location	2019	2020	2021	2022	2023
SLH 3	Suburban	SloughColnbrook-(Pippins)	3	0	0	0 (27.9)	-
SLH 8	Industrial	Slough-Lakeside2 (run by Lakeside Energy from Waste Ltd)	3	0	0	1	0
SLH 9	Urban Background	Slough-Lakeside2 (run by Lakeside Energy from Waste Ltd) Co-located Osiris	0 (24)	4	2 (23.2)	7	1
Objective			**35 (50) [a]**				

[a] Values in brackets are 90.4th percentiles, which are presented where data capture is <85%.

5.8 As shown in Table 5-3, there have been no exceedances in the annual mean PM_{10} or $PM_{2.5}$ annual mean objectives at any of the presented monitoring sites within the last five years. Furthermore, as demonstrated in Table 5-4, there have been no exceedances of the 24-hour PM_{10} mean.

5.9 While 2020 and 2021 results have been presented in this Section for completeness, they are not relied upon in any way as they will not be representative of 'typical' air quality conditions due to the considerable impact of the Covid-19 pandemic on traffic volumes and thus pollutant concentrations.

Exceedances of Limit Value

5.10 There are no AURN (Defra, 2024d) monitoring sites within 1 km of the application site with which to identify exceedances of the annual mean nitrogen dioxide limit value. Defra's roadside annual mean nitrogen dioxide concentrations (Defra, 2024c), which are used to identify and report exceedances of the limit value, do not identify any exceedances within 1 km of the application site in 2023. As such, there is considered to be no risk of a limit value exceedance in the vicinity of the proposed development by the time that it is operational.

Background Concentrations

5.11 Estimated background concentrations at the proposed development are set out in Table 5-5 and are all well below the objectives. A range of values is presented as the study area covers multiple 1x1 km grid squares.

Table 5-5: Estimated Annual Mean Background Pollutant Concentrations in 2023 and 2027 (µg/m³)

Year	NO_2	PM_{10}	$PM_{2.5}$
2023	15.1 – 16.3	14.0 – 14.7	9.6 – 9.9
2027	13.4 – 14.6	13.6 – 14.4	9.3 – 9.6
Objective	**40**	**40**	**20** [a]

[a] The 20 µg/m³ $PM_{2.5}$ objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

Baseline Concentrations

5.12 The baseline concentration at the modelled receptors is best described by nearby local monitoring undertaken by the SBC. Table 5-6 sets out the baseline NO_2 concentrations used in this assessment.

Table 5-6: Baseline NO_2 Concentrations Used in Assessment

Location	Value (µg/m³)	Derivation
Annual Mean NO_2 Concentrations		
All Receptors Close to Roads	25.6	Highest concentration across all of the roadside measurements (excluding within AQMAs) in the nearby study area
All Receptors Away from Roads	18.2	Highest concentration across all of the measurements at monitoring sites away from the road network in the study area

Location	Value (µg/m³)	Derivation
1-hour Mean NO_2 Concentrations		
All Receptors Close to A-Roads	51.2	2 x the annual mean
All Receptors Away from A-Roads	36.4	

Designated Ecological Sites

5.13 The estimated annual mean background NOx concentrations at the designated ecological sites have been derived using Defra's background maps (Defra, 2020). The baseline nutrient nitrogen and acid deposition fluxes have been defined using APIS (APIS, 2024) and are 5 km x 5 km grid square averages based on the three year mean between 2019 and 2021. The results are presented in Table 5-7.

5.14 The NOx concentrations are well below the critical level of 30 µg/m³ at the Arthur Jacob Nature Reserve (LNR) and South West London Waterbodies/ Wraysbury Reservoir (Ramsar/SPA/SSSI). Estimated NOx concentrations at the Staines Moor LNR are substantially higher, which appears to be because the 1 km grid square covering the site in the Defra maps is approximately centred on the M25 motorway; actual concentrations at the LNR are expected to be appreciably lower. Baseline nutrient nitrogen fluxes are above the critical loads at sites South West London Waterbodies/ Wraysbury Reservoir (Ramsar/SPA/SSSI) and Staines Moor (SSSI), which is the case for very many designated ecological sites across the UK.

5.15 Table 5-8 sets out the baseline values used in this assessment.

Table 5-7: Background NOx Concentrations and Deposition Fluxes at Designated Ecological Sites

Designated Site	NOx (µg/m³)	Nutrient Nitrogen Deposition (kgN/ha/yr)	Acid Deposition (keq/ha/yr)
Arthur Jacob Nature Reserve (LNR)	22.9	14.0	1.95
South West London Waterbodies/ Wraysbury Reservoir (Ramsar/SPA/SSSI)	20.8	12.3–12.8	1
Staines Moor (SSSI)	41.3	12.8	1

Table 5-8: Baseline NOx Concentrations and Deposition Fluxes Used in Assessment

Pollutant and Averaging Period	Value	Derivation
Arthur Jacob Nature Reserve (LNR)		
Annual Mean NOx (µg/m³)	22.9	Table 5-7
Maximum 24-hour Mean NOx (µg/m³)	45.7	2 x the annual mean

Pollutant and Averaging Period	Value	Derivation
Nutrient Nitrogen Deposition (kgN/ha/yr)	14.0	Table 5-7
Acid Deposition (keq/ha/yr)	1.95	Table 5-7
South West London Waterbodies/ Wraysbury Reservoir (Ramsar/SPA/SSSI) *		
Annual Mean NOx (µg/m^3)	20.8	Table 5-7
Maximum 24-hour Mean NOx (µg/m^3)	41.6	2 x the annual mean
Nutrient Nitrogen Deposition (kgN/ha/yr)	12.8	Table 5-7
Acid Deposition (keq/ha/yr)	1	Table 5-7
Staines Moor (SSSI)		
Annual Mean NOx (µg/m^3)	41.3	Table 5-7
Maximum 24-hour Mean NOx (µg/m^3)	82.5	2 x the annual mean
Nutrient Nitrogen Deposition (kgN/ha/yr)	12.8	Table 5-7
Acid Deposition (keq/ha/yr)	1	Table 5-7

6 Construction Phase Impact Assessment

Construction Traffic

6.1 The volume of construction traffic that will access the site on any given day is unknown. Given the medium size of the site (see below) it is likely that the peak number of construction vehicles accessing the site each day will be below 25 HGVs AADT; thus, the average daily construction traffic flows will be below the relevant screening criterion recommended by EPUK/IAQM guidance (Moorcroft and Barrowcliffe et al, 2017) for within an AQMA.

6.2 It is not considered necessary to assess the impacts of traffic emissions during the construction phase and it can be concluded that the proposed development will not have a significant impact on local roadside air quality as a result of construction traffic emissions.

On-Site Exhaust Emissions

6.3 The IAQM guidance (IAQM, 2024) states:

"Experience of assessing the exhaust emissions from on-site plant (also known as non-road mobile machinery or NRMM) and site traffic suggests that they are unlikely to make a significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed. For site plant and on-site traffic, consideration should be given to the number of plant/vehicles and their operating hours and locations to assess whether a significant effect is likely to occur".

The proposed development is classed as medium sized (see below), and the majority of the site area is more than 50 m from any sensitive receptors. The areas in which NRMM and site traffic will typically operate are thus likely to be located more than 50 m away from any sensitive properties. It is judged that there is no risk of significant effects at existing receptors as a result of on-site machinery emissions.

Construction Dust and Particulate Matter Emissions

6.4 The construction works will give rise to a risk of dust impacts during demolition, earthworks and construction, as well as from trackout of dust and dirt by vehicles onto the public highway. Step 1 of the assessment procedure is to screen the need for a detailed assessment. There are receptors within the distances set out in the guidance (see Appendix A1), thus a detailed assessment is required. The following section sets out Step 2 of the assessment procedure.

Potential Dust Emission Magnitude

Demolition

6.5 There will be a requirement to demolish approximately 12 brick buildings with an approximate total volume of under 18,000 m^3. The method of demolition has not yet been decided. Based on the example definitions set out in Table A1-1 in Appendix A1, the dust emission class for demolition is considered to be *small*.

Earthworks

6.6 The characteristics of the soil at the site have been defined using the British Geological Survey's UK Soil Observatory website (British Geological Survey, 2024), as set out in Table 6-1. Overall, it is considered that, when dry, this soil has the potential to be moderately dusty.

Table 6-1: Summary of Soil Characteristics

Category	Record
Soil Layer Thickness	Deep
Soil Parent Material Grain Size	Mixed (Argillac – Arenaceous [a] – Rudaceous [b])
European Soil Bureau Description	Riverine Clay and Floodplain Sands and Gravel / River Terrace Sand / Gravel
Soil Group	All
Soil Texture	Sand to Sandy Loam [c] / Clay to Sandy Loam

[a] grain size 0.06 – 2.0 mm.

[b] grain size > 2.0 mm.

[c] a loam is composed mostly of sand and silt.

6.7 The parcel boundary covers approximately 87,000 m^2 and most of this will be subject to earthworks, involving removal of the foundations of the demolished buildings and breaking up of a paved area. Dust will arise mainly from vehicles travelling over unpaved ground and from the handling of dusty materials (such as dry soil). Based on the example definitions set out in Table A1-1 in Appendix A1, the dust emission class for earthworks is considered to be *medium*.

Construction

6.8 The proposed development involves the construction of one brick industrial properties, with a total building volume of over 75,000 m^3. Dust will arise from vehicles travelling over unpaved ground, the handling and storage of dusty materials, and from the cutting of concrete. Based on the example definitions set out in Table A2-1 in Appendix A1, the dust emission class for construction is considered to be *large*.

Trackout

6.9 The number of heavy vehicles accessing the site, which may track out dust and dirt, is currently unknown, but given the medium size of the site it is likely that there will be a maximum of 12 outward heavy vehicle movements per day. Based on the example definitions set out in Table A2-1 in Appendix A1, the dust emission class for trackout is considered to be *small*.

6.10 Table 6-2 summarises the dust emission magnitude for the proposed development.

Table 6-2: Summary of Dust Emission Magnitude

Source	Dust Emission Magnitude
Demolition	Small
Earthworks	Medium
Construction	Large
Trackout	Small

Sensitivity of the Area

6.11 This assessment step combines the sensitivity of individual receptors to dust effects with the number of receptors in the area and their proximity to the site. It also considers additional site-specific factors such as topography and screening, and in the case of sensitivity to human health effects, baseline PM_{10} concentrations.

6.12 The IAQM guidance explains that residential properties are 'high' sensitivity receptors to dust soiling, while places of work are a 'medium' sensitivity receptor (Table A2-2 in Appendix A1). Residential properties are also classified as being of 'high' sensitivity to human health effects, while places of work are classified as being of 'medium' sensitivity. There are a small number of workplaces within 20 m of the site, and approximately three residential properties and 10 places of work within 50 m of the site (see Figure 6-1).

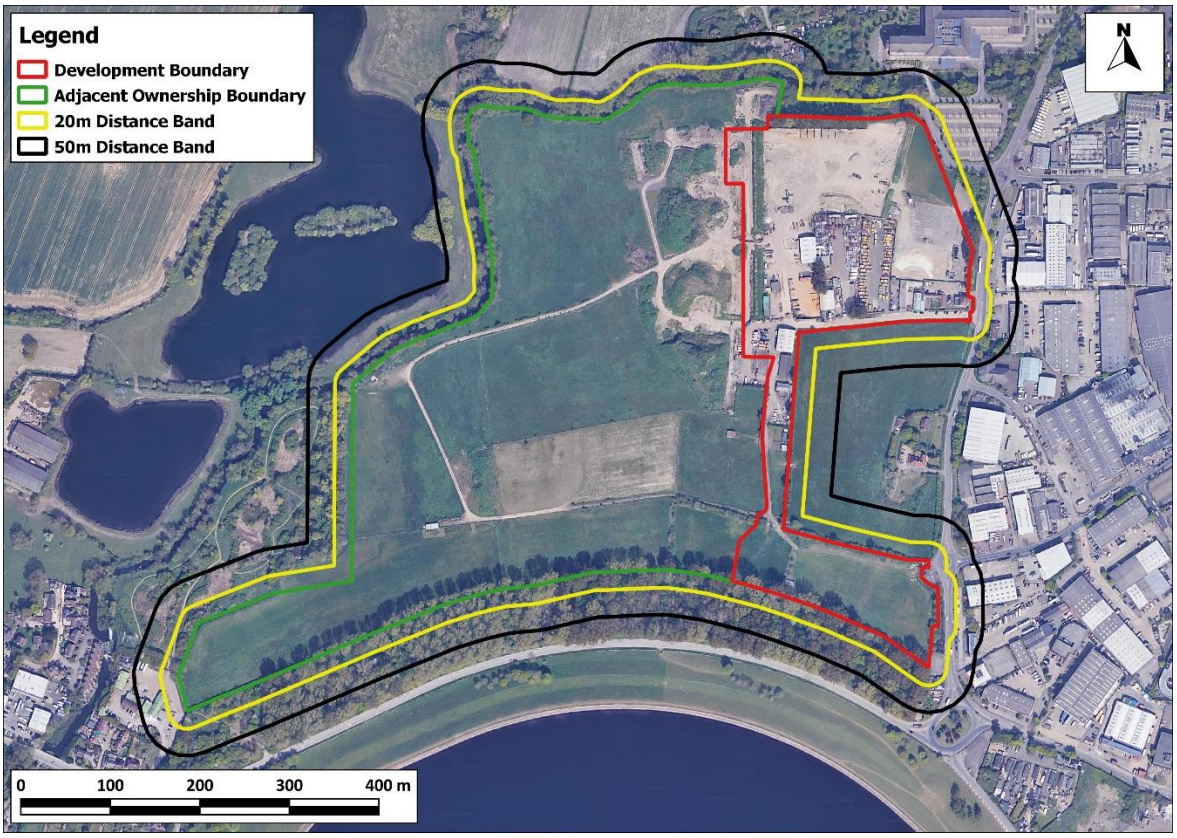

Figure 6-1: 20m and 50 m Distance Bands around Site Boundary

Imagery ©2024 Airbus, Maxar Technologies, Map data ©2024

6.13 The IAQM guidance (IAQM, 2024) explains that there is a risk of material being tracked 250 m from the site exit. Since it is not known which roads construction vehicles will use, it has been assumed that all possible routes could be affected. There are a small number of workplaces within 20 m of the trackout routes, and approximately two residential properties and 10 places of work within 50 m of the roads along which material could be tracked (see Figure 6-2).

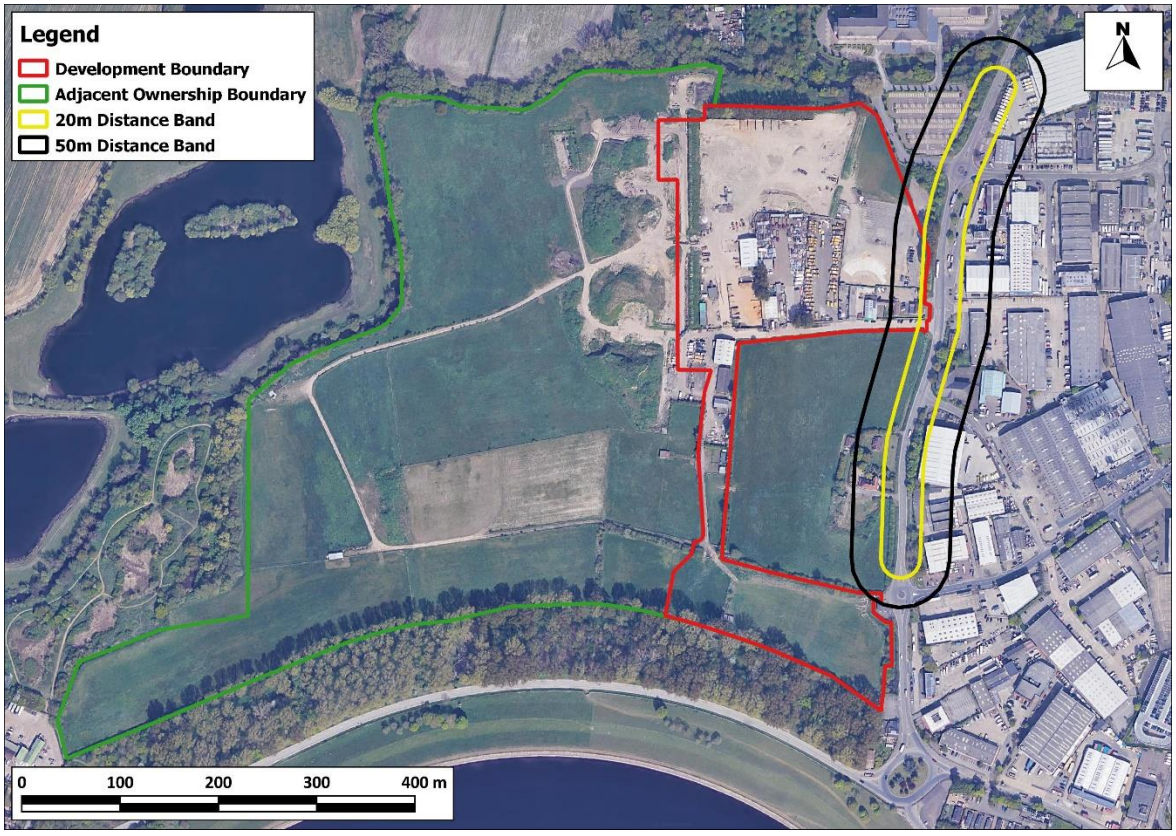

Figure 6-2: 20 m and 50 m Distance Bands around Roads Used by Construction Traffic Within 250 m of the Site Exit

Imagery ©2024 Airbus, Maxar Technologies, Map data ©2024

Sensitivity of the Area to Effects from Dust Soiling

6.14 Using the information set out in Paragraph 6.12 and Figure 6-1 alongside the matrix set out in Table A1-3 in Appendix A1, the area surrounding the onsite works is of 'medium' sensitivity to dust soiling. Using the information set out in Paragraph 6.13 and Figure 6-2 alongside the same matrix, the area is also of 'medium' sensitivity to dust soiling due to trackout.

Sensitivity of the Area to any Human Health Effects

6.15 The matrix in Table A1-4 in Appendix A1 requires information on the baseline annual mean PM_{10} concentration in the area. The properties nearest the site are away from local roads and the existing annual mean PM_{10} concentration is best described by the background concentration from Table 5-5 (14.7 µg/m^3). Using the information set out in Paragraphs 6.12 and Figure 6-1 alongside the matrix in Table A1-4 in Appendix A1, the area surrounding the onsite works is of 'low' sensitivity to human health effects. Using the information set out in Paragraph 6.13 and Figure 6-2 alongside the same matrix, the area surrounding roads along which material may be tracked from the site is also of 'low' sensitivity.

Sensitivity of the Area to any Ecological Effects

6.16 The guidance only considers designated ecological sites within 50 m to have the potential to be impacted by the construction works. There are no designated ecological sites within 50 m of the site boundary or those roads along which material may be tracked, thus ecological impacts will not be considered further.

Summary of the Area Sensitivity

6.17 Table 6-3 summarises the sensitivity of the area around the proposed construction works.

Table 6-3: Summary of the Area Sensitivity

Effects Associated With:	Sensitivity of the Surrounding Area	
	On-site Works	Trackout
Dust Soiling	Medium Sensitivity	Medium Sensitivity
Human Health	Low Sensitivity	Low Sensitivity
Ecological	None	None

Risk and Significance

6.18 The dust emission magnitudes in Table 6-2 have been combined with the sensitivities of the area in Table 6-3 using the matrix in Table A1-6 in Appendix A1, in order to assign a risk category to each activity. The resulting risk categories for the four construction activities, without mitigation, are set out in Table 6-4. These risk categories have been used to determine the appropriate level of mitigation as set out in Section 8 (Step 3 of the assessment procedure).

Table 6-4: Summary of Risk of Impacts Without Mitigation

Source	Dust Soiling	Human Health
Demolition	Low Risk	Negligible
Earthworks	Medium Risk	Low Risk
Construction	Medium Risk	Low Risk
Trackout	Low Risk	Low Risk

6.19 The IAQM guidance does not provide a method for assessing the significance of effects before mitigation, and advises that pre-mitigation significance should not be determined. With appropriate mitigation in place, the IAQM guidance is clear that the residual effect will normally be 'not significant' (IAQM, 2024).

7 Operational Impact Assessment

Assessment of Development-Generated Road Traffic Emissions

7.1 SLR Consulting Limited, the project traffic consultants, have confirmed that the maximum net increase in LDVs generated from the proposed development along any nearby road is 220 AADT (travelling from the site exit north along Poyle Road). These daily trip rates are below the screening threshold of 500 LDVs recommended for use outside of an AQMA in the EPUK/IAQM guidance (Moorcroft and Barrowcliffe et al, 2017) (see Paragraph 3.16).

7.2 AADT flows along Stanwell Road will increase by 33 AADT (net). Considering the small increase in traffic expected along Stanwell Road, and the extremely small modelled NOx process contribution from the generators (see Table 7-4), the number of other committed developments that would be required to cause in combination impacts greater than 1000 AADT, or an increase in 1%, would need to be very large. As such, it is judged that there is no need for detailed roads modelling on the nearby Wraysbury Reservoir internationally designated ecological site. Furthermore, the Wraysbury Reservoir is approximately 65 m from Stanwell Road and separated from it by an elevated hillside which extends south of Stanwell Road, and will act as a barrier from road traffic emissions using Stanwell road, therefore acting as mitigation against any air quality impacts on the road.

7.3 The proposed development will generate very few operational heavy vehicle trips. As such, it is judged that the relevant screening thresholds will not be exceeded and there is no requirement for a detailed assessment of road traffic impacts at existing receptors; it can be concluded that the proposed development will not have a significant impact on local roadside air quality.

Detailed Assessment of Energy Plant Emissions

Human Health

Impacts on Annual Mean NO_2 Concentrations

7.4 The predicted annual mean nitrogen dioxide concentrations at each receptor, including emissions from the proposed energy plant, are shown in Table 7-1 for the baseline year 2023. The concentrations shown for "With Plant" include the baseline concentrations. Concentrations have been calculated following the methodology set out in Section 4 and in Appendix A3.

Table 7-1: Predicted Annual Mean Nitrogen Dioxide (NO_2) Concentrations (µg/m³) [c]

Receptor	Baseline [a]	"With Plant"	% Change [b]	Impact Descriptor
R1	18.2	18.2	0	Negligible
R2	25.6	25.9	1	Negligible
R3	18.2	18.5	1	Negligible
R4	25.6	25.8	1	Negligible
R5	18.2	18.3	0	Negligible
R6	18.2	18.4	0	Negligible
R7	18.2	18.4	0	Negligible

Receptor	Baseline [a]	"With Plant"	% Change [b]	Impact Descriptor
R8	18.2	18.6	1	Negligible
R9	25.6	25.9	1	Negligible
R10	18.2	18.3	0	Negligible
R11	25.6	25.8	0	Negligible
R12	18.2	18.3	0	Negligible
R13	18.2	18.3	0	Negligible
R14	18.2	18.4	0	Negligible
R15	25.6	25.8	1	Negligible
R16	25.6	25.7	0	Negligible
R17	18.2	18.3	0	Negligible
R18	18.2	18.3	0	Negligible
R19	25.6	25.7	0	Negligible
R20	25.6	25.7	0	Negligible
Objective	40	-	-	

[a] The baseline concentration is the 2023 annual average NO_2 concentration, as presented in Table 5-6.

[b] % changes are relative to the objective (40 µg/m^3) and have been rounded to the nearest whole number.

[c] The annual mean AQS do not apply at the locations where rows have been greyed out

7.5 The annual mean nitrogen dioxide concentrations are well below the objective at all receptors.

7.6 The percentage changes in concentrations, relative to the air quality objective (when rounded), are predicted to be 0% at 14 receptors. As per paragraph 3.20, these impacts are described as negligible. The percentage changes in concentrations (rounded) are 1 % at the remaining six receptors, and since the total "with plant" concentrations are below 94% at these receptors, the impacts can also be described as negligible.

7.7 Road traffic emissions are not included in this assessment, so receptors in close proximity to roads may have higher concentrations than presented in Table 7-1. However, as detailed in the previous paragraph, the percentage change in concentrations at these receptors are negligible, as the concentrations are 0–1% of the relevant air quality objective or AQAL the impacts would be considered negligible regardless of the absolute concentration.

Impacts on Short-Term NO_2 Concentrations

7.8 Table 7-2 shows the 99.79th percentile 1-hour mean nitrogen dioxide concentrations for each receptor. As explained in Paragraph 4.16, the approach to assessing short-term impacts has been to assume the generator will operate continuously at full load.

7.9 At all receptors, the total 'with plant' concentration will not exceed nor approach the 1-hour mean nitrogen dioxide objective.

Table 7-2: Predicted 99.79th Percentile 1-hour Mean Nitrogen Dioxide Concentrations (µg/m³)

Receptor (height)	Baseline [a]	"With Plant"	% Change [b]	% of short-term Objective
R1	36.4	51.3	7	25.7
R2	51.2	73.9	11	37.0
R3	36.4	57.1	10	28.6
R4	51.2	71.5	10	35.8
R5	36.4	65.2	14	32.6
R6	36.4	76.4	20	38.2
R7	36.4	77.5	21	38.7
R8	36.4	78.7	21	39.4
R9	51.2	70.0	9	35.0
R10	36.4	55.2	9	27.6
R11	51.2	67.2	8	33.6
R12	36.4	55.6	10	27.8
R13	36.4	57.0	10	28.5
R14	36.4	62.3	13	31.2
R15	51.2	68.7	9	34.3
R16	51.2	66.8	8	33.4
R17	36.4	51.3	7	25.7
R18	36.4	52.5	8	26.3
R19	51.2	82.1	15	41.1
R20	51.2	68.1	8	34.1

[a] Annual baseline has been doubled in accordance with standard Environment Agency practice.

[b] % changes are relative to the objective (200 µg/m³) and have been rounded to the nearest whole number.

7.10 The percentage changes in concentrations, relative to the air quality objective (when rounded), are predicted to be 10% or below at 13 receptors, and thus their impacts can be described as being negligible. The percentage changes in concentrations at five receptors are within 11-20% of the AQAL, so their magnitude can be described as small. At the remaining two receptors, the percentage changes in concentration is 21% of the AQAL thus their magnitude can be described as medium.

7.11 As per paragraph 4.23, where the PC is above 10%, the total PC and background concentrations are taken into account. At all receptors, the total "with plant" emissions are well below the 1-hour mean NO_2 objective, even under the highly worst-case assumption that the generator operates every hour of the year, and the impacts are therefore considered to be 'not significant'.

Contour Plot

7.12 A contour plot of the nitrogen dioxide annual mean process contribution at ground level (1.5 m) has been generated for information and is shown in Figure 7-1. The figure presents the area where the annual mean PC for the proposed generators is greater than 0.5% of the objective, i.e. 0.2 µg/m^3. The 0.5% contour covers an area which extends up to approximately 650 m from the proposed generator exhaust flue.

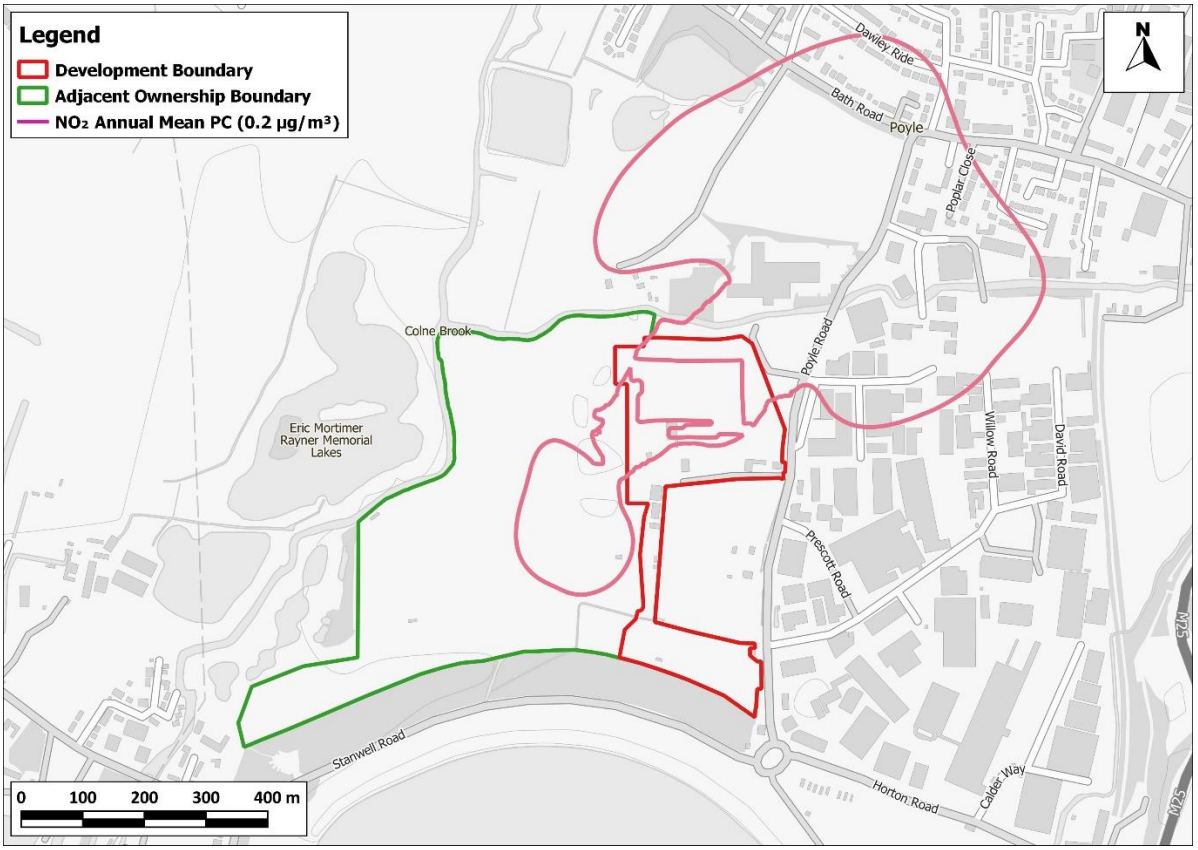

Figure 7-1: Contour Plot of Annual Mean NO_2 PCs

Additional data sourced from third parties, including public sector information licensed under the Open Government Licence v3.0.

Impacts on PM_{10} Concentrations

7.13 Maximum PM_{10} contributions across all discrete receptors for the annual mean and 24-hour mean PM_{10} concentrations are presented in Table 7-3. The maximum PC for the annual mean and the 24-hour mean are below the 1% and 10% criteria respectively, as outlined in 3.20.

7.14 As per paragraph 3.21, the impacts from PM_{10} can be considered 'not significant', thus a more detailed assessment, considering total concentrations and incorporating local baseline conditions is not necessary.

Table 7-3: Maximum PM_{10} PCs at Existing Receptors

Pollutant and Averaging Period	Maximum PC (µg/m³)	Maximum % changes [a]
PM_{10} - Annual Mean	0.0012	0.003
PM_{10} – 90.4th %ile of 24-hour mean	0.069	0.14

[a] % changes are relative to the respective objectives (40 µg/m³ and 50 µg/m³) and have been rounded to the nearest whole number.

Designated Ecological Sites

7.15 Table 7-4 presents the maximum PCs and PECs at any of the designated ecological site receptors. The results presented here are for emissions from the generators only, but including the contribution from the road traffic generated by the proposed development will not appreciably change these results.

Table 7-4: Maximum PCs at Designated Ecological Sites

Pollutant and Averaging period		PC (µg/m³)	PC (% of AQS) [b]	PEC (µg/m³) [a]	PEC (% of AQS) [b]	AQS (µg/m³)
Arthur Jacob Nature Reserve (LNR)						
NOx (µg/m³)	Annual Mean	0.07	0.2%	22.94	76.5%	30
	24-hour	52.34	69.8%	98.08	130.8%	75
Nutrient Nitrogen (kg-N/ha/yr)	Annual Mean	0.007	0.1%	14.01	280.1%	5
Acid Nitrogen (keq/ha/yr)	Annual Mean	0.0005	0.5%	1.95	1950.5%	0.1
South West London Waterbodies/ Wraysbury Reservoir (Ramsar/SPA/SSSI)						
NOx (µg/m³)	Annual Mean	0.08	0.3%	20.88	69.6%	30
	24-hour	50.94	67.9%	92.53	123.4%	75
Nutrient Nitrogen (kg-N/ha/yr)	Annual Mean	0.0084	0.08%	12.81	128.1%	10
Acid Nitrogen (keq/ha/yr)	Annual Mean	0.0006	-	1.00	-	-
Staines Moor (SSSI)						
NOx (µg/m³)	Annual Mean	0.03	0.1%	41.30	137.7%	30
	24-hour	36.39	48.5%	118.94	158.6%	75

Pollutant and Averaging period		PC (µg/m³)	PC (% of AQS) [b]	PEC (µg/m³) [a]	PEC (% of AQS) [b]	AQS (µg/m³)
Nutrient Nitrogen (kg-N/ha/yr)	Annual Mean	0.0034	0.03%	12.80	128.0%	10
Acid Nitrogen (keq/ha/yr)	Annual Mean	0.0002	0.00%	1.00	20.6%	4.856

7.16 Table 7-4 shows that the maximum annual mean NOx PCs are below 1% of the long-term AQS at all of the designated sites within the study area; thus, the impacts can be screened out as not significant under Environment Agency criteria at these sites. The annual mean PEC is above the long-term AQS at Staines Moor (SSSI), but this is due to the existing high baseline conditions, and may be in part an artefact of the 1 km grid square covering this receptor also containing the M25 motorway; actual annual mean NOx concentrations at this location are likely to be appreciably lower.

7.17 The maximum short-term NOx PC is greater than 10% of the short-term AQS at all of designated sites within the study area, and less than the PEC at all sites. The impacts can therefore be screened out as not significant under Environment Agency criteria.

7.18 For nitrogen deposition and acid deposition, the maximum PCs are less than 1% of the long-term critical loads at all sites where there are relevant critical loads against which to assess the PCs. The EA guidance is thus that these PCs are insignificant regardless of the PEC.

7.19 Whilst nitrogen deposition and acid deposition are above the PECs at the Arthur Jacob Nature Reserve (LNR), this is due to existing high baseline conditions. The PCs are below 100% for nitrogen deposition and acid deposition which is the criterion recommended in the EA guidance for locally designated sites, therefore the impacts can be screened out as insignificant.

7.20 Whilst nitrogen deposition is above the PEC at Staines Moor (SSSI), this is due to the existing high baseline conditions. Given that the PC is less than 0.1% of the critical load, effects are likely to be insignificant even with any in combination effects.

Significance of Operational Air Quality Effects

7.21 The operational air quality effects on human health without mitigation are judged to be 'not significant'. This professional judgement is made in accordance with the methodology set out in Appendix A1, and takes account of the assessment that:

- the proposed development will generate traffic well below industry screening thresholds; and
- pollutant concentrations at all of the selected worst-case receptors will be well below the air quality objectives, and all of the impacts are predicted to be negligible, even under conservative worst-case assumptions.

8 Mitigation

Good Design and Best Practice

8.1 The EPUK/IAQM guidance advises that good design and best practice measures should be considered, whether or not more specific mitigation is required. The proposed development incorporates the following good design and best practice measures, which have been accounted for in the assessment as far as is possible:

- provision of 20% electric vehicle (EV) "ready" spaces, equating to 17 EV parking spaces;
- provision of a detailed travel plan setting out measures to encourage sustainable means of transport;
- provision of 37 cycle parking spaces;
- running of the proposed generator flues to 1 m above roof level to ensure a suitable dispersion environment; and
- use of exhaust flues for the proposed generators that discharge vertically upwards, unimpeded by any fixture on top of the stack (e.g. rain cowls).

Recommended Mitigation

Construction Impacts

8.2 Measures to mitigate dust emissions will be required during the construction phase of the development in order to minimise effects upon nearby sensitive receptors.

8.3 The site has been identified as a Low Risk site during demolition and for trackout, and Medium Risk during earthworks and construction, as set out in Table 6-4. Comprehensive guidance has been published by IAQM (2024) that describes measures that should be employed, as appropriate, to reduce the impacts, along with guidance on monitoring during demolition and construction (IAQM, 2018). This reflects best practice experience and has been used, together with the professional experience of the consultant who has undertaken the dust impact assessment and the findings of the assessment, to draw up a set of measures that should be incorporated into the specification for the works. These measures are described in Appendix A6.

8.4 The mitigation measures should be written into a Dust Management Plan (DMP). The DMP may be integrated into a Code of Construction Practice or the Construction Environmental Management Plan, and may require monitoring.

8.5 Where mitigation measures rely on water, it is expected that only sufficient water will be applied to damp down the material. There should not be any excess to potentially contaminate local watercourses.

Road Traffic Impacts

8.6 The assessment has demonstrated that the overall air quality effect of the proposed development will be 'not significant'; development-generated traffic emissions will not have a significant impact on local air quality. It is, therefore, not considered appropriate to propose further mitigation measures for this development.

8.7 Measures to reduce pollutant emissions from road traffic are principally being delivered in the longer term by the introduction of more stringent emissions standards, largely via European legislation (which is written into UK law). The continued implementation SBC's Low Emission Strategy, and the emerging AQAP, will also help to improve air quality.

Energy Plant Impacts

8.8 The assessment has demonstrated that the emissions from the generators within the proposed development will have an insignificant impact on air quality at nearby human receptors. As such, there is no requirement for mitigation beyond the best practice design measures highlighted above. The generators installed within the development should, however, meet the specifications set out in Appendix A4; if the installed generators do not conform to these specifications, additional assessment and/or mitigation may be required.

9 Conclusions

9.1 The assessment has considered the impacts of the proposed development on local air quality in terms of dust and particulate matter emissions during construction, emissions from road traffic generated by the completed and operational development, and emissions from forty-seven diesel generators installed to provide back-up power.

Construction Impacts

9.2 The construction works have the potential to create dust. During construction it will therefore be necessary to apply a package of mitigation measures to minimise dust emissions. Appropriate measures captured through a CEMP have been recommended and, with these measures in place, it is expected that any residual effects will be 'not significant'.

Operational Impacts

Road Traffic Impacts

9.3 The proposed development will generate traffic flows well below industry screening thresholds. The development will have no significant adverse effects on local air quality. Thus, the overall operational air quality effects of the proposed development are judged to be 'not significant' and no additional mitigation has been proposed for operational impacts.

Proposed Generator Impacts

9.4 The assessment has shown that during the worst-case yearly conditions across five years of meteorological conditions, the generators' operation will not cause any exceedances of the annual mean or 1-hour mean NO_2 objectives on human health receptors. The assessment of the generators impacts on nearby designated sites has shown that impacts at the Arthur Jacob Nature Reserve (LNR) and South West London Waterbodies/ Wraysbury Reservoir (Ramsar/SPA/SSSI) are below the EA criteria and can therefore b screened out as 'not significant'; however, significant impacts at Staines Moor (SSSI) cannot be discounted without further assessment.

Policy Implications

9.5 Taking into account these conclusions, it is judged that the proposed development is consistent with Paragraph 191 of the NPPF, being appropriate for its location in terms of its effects on the local air quality environment. It is also consistent with Paragraph 192, as it will not affect compliance with relevant limit values or national objectives. The proposed development is also consistent with Core Policy 7 of SBC's Core Strategy, as it will not cause unacceptable levels of air pollution on existing human health receptors.

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