OLDFIED ROAD, HAMPTON

SHURGARD UK LIMITED

AIR QUALITY ASSESSMENT

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1.0 INTRODUCTION

Proposed Development

1.1 Ardent Consulting Engineers Ltd. (ACE) have been commissioned by Shurgard UK Limited to carry out an Air Quality Assessment (AQA) in support of a detailed planning application for a proposed self-storage development located within the London Borough of Richmond-upon-Thames (LBRT).

1.2 The development description is as follows:

"Demolition and redevelopment of the site to provide self-storage unit (Use Class B8) and business centre (Use Class E) with associated car and cycle parking, and landscaping."

Scope

1.3 This AQA describes existing air quality within the study area and considers both the suitability of the Site for the proposed development and the potential impact of the proposed development on local air quality during both the construction and operational phases.

1.4 The main air pollutants of concern related to the construction phase are dust and particulate matter (PM_{10}) from on-site construction activities and as a result of material tracked out by construction vehicles, and emissions of nitrogen dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$) from construction vehicles which may impact on existing sensitive human receptors. There is also the potential for impacts on nearby designated ecological sites as a result of emissions of nitrogen oxides (NO_X), NO_2 and ammonia (NH_3) from construction vehicles.

1.5 The main air pollutants of concern related to the operational phase are emissions of NO_2, PM_{10} and $PM_{2.5}$ associated with operational traffic which may impact on existing sensitive human receptors. There is also the potential for impacts on existing designated ecological sites as a result of emissions of NO_X, NO_2 and NH_3 from operational vehicles.

1.6 In terms of the suitability of the Site for its proposed end-use, the main air pollutants of concern are concentrations of NO_2, PM_{10} and $PM_{2.5}$ within the Site as

a result of emissions from the local road network and background pollutant concentrations.

1.7 The proposed energy strategy is anticipated to consist of Solar PV Panels and heat pumps, and so is fully electric. An assessment has been carried out to determine whether the proposed development is 'air quality neutral' in terms of transport and building emissions.

1.8 This AQA has been prepared taking into account relevant local and national guidance, policy and legislation.

2.0 LEGISLATION, POLICY AND GUIDANCE

National Air Quality Legislation and Strategy; Human Health

The Air Quality Strategy

2.1 The Air Quality Strategy (Defra, 2007) established the policy framework for ambient air quality management in the UK, with the objective of ensuring a quality of ambient air for all that would not pose a significant risk to health or quality of life. This document set out the National Air Quality Objectives (NAQOs) and the policy for achieving them. A revised Air Quality Strategy (Defra, 2023) has since been released, updating the strategy to include consideration of new and revised conditions, legislation and policies, including the $PM_{2.5}$ targets as published in 2023. The Air Quality Strategy was produced as a requirement of part IV of the Environment Act (UK Government, 1995) and amended in The Environment Act (UK Government, 2021) which set out a system of Local Air Quality Management (LAQM) requiring local authorities to regularly review and assess air quality within their boundary and appraise plans in light of these assessments.

2.2 Where a NAQO is unlikely to be met, the local authority must designate an Air Quality Management Area (AQMA) and draw up an Air Quality Action Plan (AQAP) which should include measures expected to ensure that the NAQOs are met within the AQMA.

2.3 Whilst the $PM_{2.5}$ targets are considered a regional or national responsibility and are therefore excluded from the requirements of monitoring and management as set out within Local Air Quality Management, Local Authorities are expected to control emissions of $PM_{2.5}$ where possible in order to support wider policies and national actions.

National Air Quality Objectives

2.4 The assessment of potential air quality impacts associated with the proposed development has been evaluated with respect to the current air quality standards for the protection of human health, as set out in the Air Quality Standards Regulations 2010 (Statutory Instrument, 2010, No 1001) and The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 (Defra, 2020b).

2.5 In the context of the proposed development, the key pollutants of concern are nitrogen dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$), which, in the borough of Broxbourne, are primarily associated with road traffic emissions and construction works.

2.6 It is widely accepted that there is no safe level for $PM_{2.5}$ and on 31st January 2023, the Government published an Environmental Improvement Plan, which includes an Annual Mean Concentration Target (AMCT) of 10 µg/m^3, to be achieved by the end of 2040. The Plan also includes an interim target of 12 µg/m^3, to be achieved by the end of January 2028. The 10 µg/m^3 target for $PM_{2.5}$ has been adopted into UK law via the Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (Statutory Instruments, 2023).

Table 2-1: NO_2, PM_{10} and $PM_{2.5}$ Objectives

Pollutant	Time Period	Objective	To be achieved by and maintained thereafter
NO_2	1-hour mean	200 µg/m^3 not to be exceeded more than 18 times a year [a]	31 December 2005
	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 [b]	31 December 2005
	Annual mean	40 µg/m^3	
$PM_{2.5}$	Annual mean	20 µg/m^3	1 January 2020
	Interim AMCT	12 µg/m^3	21 January 2028
	Long-term AMCT	10 µg/m^3	31 December 2040
(a) Equivalent to the 99.8th percentile of 1-hour means. (b) Equivalent to the 90.4th percentile of the 24-hour means.			

2.7 Analysis of long-term monitoring data suggests that if the annual mean NO_2 concentration is less than 60 µg/m^3 then the 1-hour mean NO_2 objective is

unlikely to be exceeded where road transport is the main source of pollution (Defra, 2022). This concentration has therefore been used in this AQA to screen whether an exceedance of the 1-hour mean objective is likely. Similarly, an annual mean PM_{10} concentration of 32 µg/m^3 is used to screen whether an exceedance of the 24-hour mean PM_{10} objective is likely.

2.8 The Local Air Quality Management Technical Guidance 2020 (LAQM.TG(20)) (Defra, 2022) provides guidance to local authorities in London as to where objectives apply. These are summarised in **Table 2-2**.

Table 2-2: Relevant Exposure

Averaging Period	Relevant Locations	NAQOs should apply	NAQOs don't usually apply
Annual mean	Where individuals are exposed for a cumulative period of 6 month in a year	Facades of residential properties, schools, hospitals	Gardens, facades of offices, hotels and shops or kerbside sites
24-hour mean	Where individuals are expected to be exposed for 24-hours or longer	As above, with the addition of hotels and gardens of residences	Kerbside sites and areas where the public is unlikely to spend significant time
1-hour mean	Where individuals are expected to spend one hour or longer	As above, with the addition of parts of car parks, bus stations, railway stations etc. which are not fully enclosed, and any outdoor locations where members of the public might reasonably be expected to spend one hour or longer	Locations not publicly accessible or where occupation is not regular

National Air Quality Legislation; Ecology

2.9 Poor air quality can have a negative impact on ecological habitats as well as human health. The Conservation of Habitats and Species Regulations (Statutory Instrument, 2017) was put in place in order to protect ecological sites following the publication of European Directive 92/43/EEC (European Economic Community (EEC), 1992) regarding the designation of Special Areas of Conservation (SACs)

and 2009/147/EC (European Community, 2009) regarding the designation of Special Protection Areas (SPAs). These regulations require that the competent authority (the planning authority in this case) consider whether a development will have a likely significant effect on an SAC or SPA (known as 'European Sites'). Should this be considered to be likely then an 'appropriate assessment' is required to identify whether the new development will indeed have a significant adverse effect on the ecological site(s).

2.10 The Wildlife and Countryside Act (UK Government, 1981) sets out the requirement for the identification of areas of land that are considered to be of 'special interest' (due to flora, fauna and / or geological or physiographical features) as Sites of Special Scientific Interest (SSSIs), and the Countryside and Rights of Way (CROW) Act (HM Government, 2000) sets out the specific protections afforded to SSSI, stating that where a development is 'likely to damage' a SSSI then the appropriate conservation body must be consulted.

2.11 The Environment Act (UK Government, 1995) and the Natural Environment and Rural Communities Act (HM Government, 2006) set out a general requirement for conservation of biodiversity.

Critical Levels

2.12 Critical levels have been set for a number of gaseous pollutants. These are the concentrations of pollutants below which there is no known harmful effects on vegetation or ecosystems. These levels have been set by UK government and are considered to be relevant objectives for all internationally designated sites such as SACs and SPAs, as well as for nationally designated sites such as SSSIs, and locally designated sites such as Sites of Importance for Nature Conservation (SINCs). The relevant critical levels are set out in **Table 2-3**.

Table 2-3: Ecological Critical Levels

Pollutant	Time Period	Objective
Nitrogen Oxides (expressed as NO_2)	Annual Mean	30 µg/m³
Ammonia (NH_3)	Annual Mean	3 µg/m³ (unless lichens or bryophytes are present, then 1 µg/m³)

Critical Loads

2.13 Critical loads represent the amount of pollutant deposited to a given ecosystem over a year, below which it is understood that there is no harmful effect to the ecosystem. Critical loads have been identified for a number of different types of ecosystem, based on their sensitivity to adverse effects. Critical loads for the deposition of nitrogen have been set for the protection from eutrophication, whilst critical loads for the purpose of protection against acidification have been set for deposition of both nitric acid and sulphuric acid, together termed as acid deposition. Critical loads for sensitive ecological sites vary throughout the UK.

Planning Policy

National Planning Policy

2.14 The National Planning Policy Framework (NPPF) (Department for Levelling Up, Housing and Communities, 2023)sets out the Government's planning policies for England and how they expect these to be implemented. Consideration of air quality within planning is considered an important element of this framework which recommends that transport and the potential impact on the environment should be considered at an early stage in order to allow for mitigation or even avoidance of impacts through location and layout of developments.

2.15 It is recommended that both the impacts of a potential development on the environment and the risk to new development from existing pollution be taken into account when planning policy is drafted. Furthermore these should contribute to compliance with relevant limit values or objectives and should be consistent with any local AQAP.

2.16 The NPPF also recommends that *"existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed."*

2.17 The NPPF also states that:

"*Planning policies and decisions should contribute to and enhance the natural and local environment by:*

- *Protecting and enhancing…sites of biodiversity or geological values…*
- *minimising impacts on…biodiversity…"*

2.18 The Planning Practice Guidance (PPG) provides guidance on how planning can enact the policies set out in NPPF. It is set out as separate papers for different sectors and therefore the 'Air Quality' PPG (Ministry of Housing, Communities and Local Government, 2019) is aimed at addressing policy relating specifically to air quality. This document gives guidelines for when air quality is likely to be relevant to a planning decision:

"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."

2.19 The 'Air Quality' PPG also states that more detailed information such as whether the development could have a significant impact on air quality, baseline air quality and whether occupiers of the development could experience poor air quality may be required in order to make an informed decision. Further, it notes that any assessment should be proportionate, taking into account the scale of the proposed development, as well as any potential impacts.

2.20 Some suggestions on mitigation measures are set out within the PPG, such as separation distances, filtration/ventilation, green infrastructure, promotion of low emission forms of transport, control of dust and emissions from construction and, finally, contributing funding to measures such as those identified in AQAPs to offset impacts from the development.

Regional Policy

The London Plan

2.21 In London, a London Plan has been developed (Mayor of London, 2021). This includes a number of references to air quality, however, these are all incorporated into policy SI1: Air Quality, which states:

A. Development Plans, through relevant strategic, site-specific and area-based policies, should seek opportunities to identify and deliver further improvements to air quality and should not reduce air quality benefits that result from the Mayor's or boroughs' activities to improve air quality.

B. To tackle poor air quality, protect health and meet legal obligations the following criteria should be addressed:

1. Development proposals should not:

a) lead to further deterioration of existing poor air quality;

b) create any new areas that exceed air quality limits, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits; and

c) create unacceptable risk of high levels of exposure to poor air quality.

2. In order to meet the requirements in Part 1, as a minimum:

a) development proposals must be at least Air Quality Neutral;

b) development proposals should use design solutions to prevent or minimise increased exposure to existing air pollution and make provision to address local problems of air quality in preference to post-design or retro-fitted mitigation measures;

c) major development proposals must be submitted with an Air Quality Assessment. Air quality assessments should show how the development will meet the requirements of B1; and

d) development proposals in Air Quality Focus Areas or that are likely to be used by large numbers of people particularly vulnerable to poor

air quality, such as children or older people should demonstrate that design measures have been used to minimise exposure.

C. *Masterplans and development briefs for large-scale development proposals subject to an Environmental Impact Assessment should consider how local air quality can be improved across the area of the proposal as part of an air quality positive approach. To achieve this a statement should be submitted demonstrating:*

   a) *how proposals have considered ways to maximise benefits to local air quality; and*

   b) *what measures or design features will be put in place to reduce exposure to pollution, and how they will achieve this.*

D. *In order to reduce the impact on air quality during the construction and demolition phase development proposals must demonstrate how they plan to comply with the Non-Road Mobile Machinery Low Emission Zone and reduce emissions from the demolition and construction of buildings following best practice guidance.*

E. *Development proposals should ensure that where emissions need to be reduced to meet the requirements of Air Quality Neutral or to make the impact of development on local air quality acceptable, this is done on-site. Where it can be demonstrated that emissions cannot be further reduced by on-site measures, off-site measures to improve local air quality may be acceptable, provided that equivalent air quality benefits can be demonstrated within the area affected by the development."*

The London Environment Strategy

2.22 The London Environmental Strategy (Mayor of London, 2018) considers policies aimed at improving the environment in London, across a number of different areas such as air quality, noise and climate change. There are a number of objectives but notable in relation to air quality is the objective: *"for London to have the best air quality of any major world city by 2050, going beyond the legal requirements to protect human health and minimise inequalities."*

2.23 Chapter 4 of the Environmental Strategy relates specifically to air quality and identifies a number of key issues to be addressed:

- Achieving legal compliance as quickly as possible;
- Diesel vehicles, especially cars and vans;
- Tackling all sources of pollution;
- Government action;
- Maximising co-benefits between air quality and climate change policies; and
- Further reductions are needed in PM_{10} and $PM_{2.5}$, particularly from transboundary pollution, tyre and brake wear and wood burning.

Local Policy

LBRT Local Plan

2.24 The LBRT Local Plan (LBRT, 2018) was adopted in July 2018 and sets out the council's vision for how the Borough will develop and the policies which will guide new developments. The Local Plan includes the following relevant policies and strategic objectives:

- Strategic Objective 'A Sustainable Future' states that:

  "…4. Reduce or mitigate environmental impacts and pollution levels (such as air…)… and encourage improvements in air quality, particularly along major roads and areas that already exceed acceptable air quality standards…"

- Policy LP 10 Local Environmental Impacts, Pollution and Land Contamination states:

  "… Air Quality

  B. The Council promotes good air quality design and new technologies. Developers should secure at least 'Emissions Neutral' development. To consider the impact of introducing new developments in areas already subject to poor air quality, the following will be required:

  1. an air quality impact assessment, including where necessary, modelled data;

  2. mitigation measures to reduce the development's impact upon air quality, including the type of equipment installed, thermal insulation and ducting abatement technology;

  3. measures to protect the occupiers of new developments from existing sources;

  4. strict mitigation for developments to be used by sensitive receptors such as schools, hospitals and care homes in areas of existing poor air quality; this also applies to proposals close to developments used by sensitive receptors…."

Air Quality Supplementary Planning Guidance

2.25 LBRT published their Air Quality SPD in June 2020 (LBRT, 2020) which addresses common air quality issues affecting the borough, and to provide a consistent approach to new development. This guidance has been used to inform the scope of assessment.

LBRT AQAP

2.26 Under LLAQM (Mayor of London, 2019), LBRT are required to regularly review and assess air quality within the Borough and determine whether or not the air quality objectives are likely to be achieved.

2.27 In December 2000, the 'Richmond AQMA' was declared as a result of exceedances of the annual mean NO_2 objective and the annual and 24-hour mean PM_{10} objective. The AQMA incorporates the entire borough.

2.28 Following the declaration of the AQMA, an Air Quality Action Plan (AQAP) was developed in order to tackle poor air quality in the Borough (LBRT, 2020). The most recent AQAP outlines the actions that Richmond will deliver during the period to reduce concentrations of air pollution and exposure to air pollution, as well as to affect positively the health and quality of life of residents and visitors to the Borough between 2020 - 2025.

Assessment Guidance

2.29 This assessment has been based on a number of guidance documents, the most significant of which are set out below:

Local Air Quality Management Technical Guidance (LAQM.TG(22))

2.30 The LAQM guidance (Defra, 2022) was published for use by local authorities for review and assessment work, but also includes a number of technical guidelines on carrying out modelling assessment and management of monitoring data which set out best practice and are, therefore, relevant to all air quality assessments.

London Local Air Quality Management Technical Guidance (LLAQM.TG(19))

2.31 The LLAQM.TG(19) guidance (Mayor of London, 2019) was published for use by London local authorities for review and assessment work and includes a number of technical guidelines on carrying out modelling assessment and management of monitoring data which set out best practice and are, therefore, relevant to all air quality assessments.

Land-Use Planning and Development Control: Planning For Air Quality

2.32 The Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM) have published joint guidance on the assessment of air quality impacts for planning purposes (EPUK & IAQM, 2017). This includes

information on when an air quality assessment is required, what should be included in an assessment and the assessment of significance.

The Control of Dust and Emissions During Construction and Demolition Supplementary Planning Guidance (SPG)

2.33 The Greater London Authority (GLA) have produced an SPG (GLA, 2014) which includes a methodology for identifying the risk of potential dust sources associated with demolition, construction, earthworks and trackout in London. This is then used to identify the level of mitigation necessary in order for the overall residual effect to be 'not significant'.

Guidance on the Assessment of Dust from Demolition and Construction

2.34 The IAQM have produced guidance which includes a methodology for identifying the risk magnitude of potential dust sources associated with demolition, construction, earthworks and trackout (IAQM, 2024). This is then used to identify the level of mitigation necessary in order for the overall residual effect to be 'not significant'. 'The Control of Dust and Emissions During Construction and Demolition' SPG (GLA, 2014) published by the GLA is based on the previous iteration of this guidance, where the GLA's SPG also states that the latest version of the IAQM guidance should be used as opposed to the GLA's SPG.

A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites

2.35 The IAQM guidance 'Assessment of Air Quality Impacts on Designated Nature Conservation Sites', (IAQM, 2020) sets out the appropriate approach for this element of assessment. Due to the complexity of ecological impacts, an air quality professional alone can only identify whether emissions are unlikely to have a significant impact when compared against the relevant critical load / level. Where it cannot be ascertained that emissions are below this level, the combined input of both an air quality professional and an ecologist is required; the former to identify any changes to concentrations of deposition and the latter to consider the overall effect taking into consideration the location and sensitivity of any given habitat.

London Plan Guidance; Air Quality Neutral

2.36 In February 2023, the 'London Plan Guidance; Air Quality Neutral' (GLA, 2023) was published by the GLA following a period of consultation. This guidance sets out the updated methodology for considering the 'air quality neutrality' of new developments, including details of updated 'air quality neutral' benchmarks (see **Appendix B**), as well as recommendations regarding mitigation and offsetting.

3.0 METHODOLOGY

3.1 The methodology set out in the following sections has been identified as being the most appropriate approach to assess potential impacts associated with the proposed development, along with any required mitigation.

Baseline Air Quality

3.2 Information regarding the 'current'[1] and future[2] baseline air quality has been obtained by collating the results of monitoring carried out by LBRT, referring to maps of AQMAs and Air Quality Focus Areas (AQFAs), considering any exceedances of the EU Limit Values that are identified by Defra's Pollution Climate Mapping (PCM) model (Defra, 2020a) or measured by any nearby Automatic Urban and Rural Network (AURN) monitoring site(s) and considering predicted background concentrations, which have been defined based on the national pollution maps published by Defra (Defra, 2020b).

Construction Dust Impacts

3.3 There is the potential for dust and PM_{10} from on-site activities and off-site trackout during the construction phase to have an impact on sensitive human and ecological receptors within the study area.

3.4 The suspension of dust and PM_{10} is related to weather conditions and wind direction, ground and particle characteristics and on-site activities. There is the potential for impacts to occur when dust generating activities coincide with dry, windy conditions and where sensitive receptors are located downwind of the dust source.

3.5 Separation distance is an important factor as large particles (>30 µm), which are responsible for most dust annoyance, largely deposit within 100 m of sources. Intermediate particles (10-30 µm) can travel 200-500 m but are less likely to trigger annoyance. Significant annoyance is therefore generally limited to a few hundred metres of the source. Small particles (<10 µm) are deposited slowly

[1] The 'current' baseline year for the purposes of this assessment has been taken to be 2022 as this is the most recent year for which representative local monitoring data are available.
[2] The future baseline year has been taken to be 2025 as this is the earliest year that any part of the proposed development is anticipated to be occupied.

and may travel up to 1 km. Whilst these particles are responsible for most impacts on human health, impacts are not likely to be experienced at significant distance due to dispersion effects.

3.6 The assessment of construction dust impacts has been carried out following the IAQM '*Guidance on the Assessment of Dust from Construction and Demolition*' (IAQM, 2024), as per the guidance within the GLA's '*The Control of Dust and Emissions During Construction and Demolition*' SPG (GLA, 2014). Within the IAQM guidance, an 'impact' is described as a change in pollutant concentration or dust deposition and an 'effect' is described as the consequence of an impact.

3.7 The assessment considered three potential dust impacts:

- Loss of amenity due to dust soiling;
- Human health effects due to an increase in concentrations of PM_{10}; and
- Harm caused to ecological receptors due to dust deposition.

3.8 Full details of the approach taken to assessing dust are provided in **Appendix C**, the stages of the assessment are:

- Identify whether there are sensitive receptors within the relevant distances (study area) for site activities during the construction phase;
- Assess the risk of dust impacts for each site activity type (demolition, earthworks, construction and trackout) – this includes identifying the emissions magnitude for each activity type, the sensitivity of the area and then combining these factors to identify risk;
- Identify mitigation measures, based on assessed risk, sufficient to ensure off-site effects are 'not significant'; and
- Assess impacts with mitigation in place. This should normally result in residual effects which are 'not significant'.

3.9 The IAQM guidance makes it clear that no assessment of the significance of effects without mitigation should be carried out as mitigation measures will be required due to planning conditions as well as best practice for construction companies. The

IAQM guidance also states that the residual effect, taking into account the proposed mitigation, will usually be 'not significant'.

Construction and Operational Road Traffic Impacts

Human Health

3.10 The EPUK/IAQM guidance 'Land Use Planning and Development Control: Planning for Air Quality' (EPUK & IAQM, 2017) includes a list of indicative criteria for where a detailed air quality assessment is likely to be needed. The criteria relating to screening air quality impacts relating to additional traffic are:

- An increase in Light Duty Vehicle (LDV) traffic of >500 annual average daily traffic (AADT) (or >100 AADT within or adjacent to an AQMA); and / or
- An increase in Heavy Duty Vehicle (HDV) traffic of >100 AADT (or >25 AADT within or adjacent to an AQMA).

3.11 The above criteria apply to any individual link and therefore, a development generating >500 AADT (or >100 AADT within an AQMA) may be considered to fall below the screening criteria where the increase is spread over a number of different road links.

3.12 Where it is not possible to screen out significant effects from road sources, detailed modelling is then generally required.

Ecology

3.13 Based on the IAQM guidance (IAQM, 2020) there is a potential for 'significant' effects on ecology as a result of transport emissions in cases where sensitive designated ecological sites are located within 200 m of a road where a development alone, or in combination with other committed developments, will increase traffic flows by >1,000 total AADT and / or >200 HDV AADT.

3.14 In cases where committed development traffic is not available and / or the screening criteria referenced by the IAQM guidance is exceeded, then an alternative screening criteria of >50 total AADT and / or >10 HDV AADT for proposed development traffic only is commonly used.

3.15 Where it is not possible to screen out significant effects from road sources, detailed modelling and / or additional assessment in conjunction with an ecologist is then generally required.

Site Suitability

Screening Assessment

3.16 The potential for exceedances of the relevant objectives at sensitive locations within the proposed development has been screened qualitatively, taking into consideration the location of the Site in relation to nearby emission sources (e.g. local roads and railway lines), the layout of the proposed development and baseline air quality conditions within the Site and in the surrounding area.

3.17 The potential for significant effects as a result of emissions associated with moving locomotives using the nearby railway line has been assessed using the screening criteria outlined within the LAQM.TG(22) (Defra, 2022). This guidance outlines that there is only a risk of exceedances of the annual mean NO_2 objective as a result of moving locomotives in instances where:

- There is relevant exposure within 30 m of rail lines with a heavy traffic of diesel passenger trains (as set out within the guidance);
- Background annual mean NO_2 concentrations are >25 µg/m^3;
- And the adjacent railway line experiences a heavy traffic of diesel locomotives (as listed in Table 7-2 of LAQM.TG(22)).

3.18 Where it is not possible to screen out the potential for significant effects, detailed assessment is then generally required.

Air Quality Impacts Significance Criteria

3.19 In the absence of official guidance in the UK on how to assess the significance of the air quality impacts on a new development, this assessment has been limited to a comparison of predicted pollutant concentrations within the proposed development, against the relevant objectives (see **Table 2-1** and **Table 2-2**).

Air Quality Neutral

3.20 The approach set out within the '*London Plan Guidance; Air Quality Neutral*' Air Quality Neutral London Plan Guidance (GLA, 2023) has been followed in order to assess whether the proposed development is 'air quality neutral'.

4.0 BASELINE CONDITIONS

Site Context and Study Area

4.1 The Site is bound to the north by railway lines, to the east by a supermarket building, to the south by residential properties along Oldfield Road, and to the west by further residential properties along Oldfield Road.

4.2 There are several locally designated ecological sites in close proximity to the Site, including the Hydes Field and Hampton Water Treatment Works London SINCs located approximately 450 m west and 160 m south respectively.

4.3 The study area in relation to air quality has been defined as:

- For the construction dust risk assessment, the study area is the area up to 250 m from the Site boundary and up to 50 m of the route(s) used by construction vehicles on the public highway (up to 250 m from the Site exit(s)).
- For the assessment of the effect of traffic generated by the proposed development on human health, the study area incorporates all main roads (and adjacent sensitive human receptors) along which such traffic may travel;
- For the assessment of the effect of traffic generated by the proposed development on ecology, the study area incorporates all main roads located within 200 m of designated ecological sites along which such traffic may travel, as well as parts of the designated ecological site(s) located within 200 m of the road(s). This is based on the IAQM guidance (IAQM, 2020);
- For the assessment of Site suitability, the study area has been identified as the area within the boundary of the Site and sources which will influence this area.

EU Limit Values and Clean Air Zones

4.4 The Site is located within the Low Emissions Zone (LEZ) which currently charges Heavy Goods Vehicles (HGVs), Light Goods Vehicles (LGVs), buses / minibuses and coaches that do not meet Euro VI (NO_X and particulate matter (PM))

standards, and vans, minibuses and specialist diesel vehicles that do not meet Euro 3 PM standards. The Site is located within the current Ultra-Low Emission Zone (ULEZ) which charges cars, motorcycles, vans and other specialist vehicles (up to and including 3.5 tonnes) and minibuses (up to and including 5 tonnes) that do not meet the required ULEZ emissions standards when driving within the zone. The ULEZ standards are Euro III (NO_X), Euro IV (NO_X) and Euro VI (NO_x and PM) standards.

4.5 There are no AURN sites located in close proximity and therefore representative of pollutant concentrations to the Site.

LLAQM

4.6 LBRT has assessed air quality within its area as part of its responsibilities under LLAQM. LBRT declared the 'Richmond AQMA' in 2000 as a result of exceedances of the annual mean NO_2 objective and the annual mean and 24-hour mean PM_{10} objective. The AQMA incorporates the entire borough.

AQFAs

4.7 The GLA has declared 187 AQFAs within Greater London. AQFAs are locations that exceed the annual mean NO_2 Limit Value as well as being locations with high levels of human exposure to NO_2. The Site is not located within an AQFA, in which the nearest AQFA is the 'Feltham High Street' AQFA, located approximately 3.8 km northwest of the Site.

Monitoring

4.8 LBRT carried out NO_2 monitoring at 3 no. automatic and 64 no. diffusion tube monitoring sites in 2022. The closest locations to the Site are identified in **Figure 4-1** and measured concentrations for 2016 to 2022[3] are shown in **Table 4-1.**

[3] As a result of the Covid-19 pandemic and associated behavioural changes and measures implemented by the governing authorities (e.g. lockdowns, travel restrictions etc.) measured concentrations during 2020 are not considered to be representative of 'normal' conditions. As such, measured 2020 concentrations are presented for information only, and have not been discussed or given weight in determining the conclusions of this assessment.

4.9 Diffusion tube monitoring site 2 measured no exceedances of the annual mean NO_2 objective between 2016 and 2022. Site 83(78) only opened in 2022, so no long-term data is available. However, during 2022 the stie did not record an exceedance of the annual mean objective.

4.10 Overall, there is a clear trend of decreasing measured annual mean NO_2 concentrations at diffusion tube 2, but there is insufficient data to determine a trend at diffusion tube 83(78).

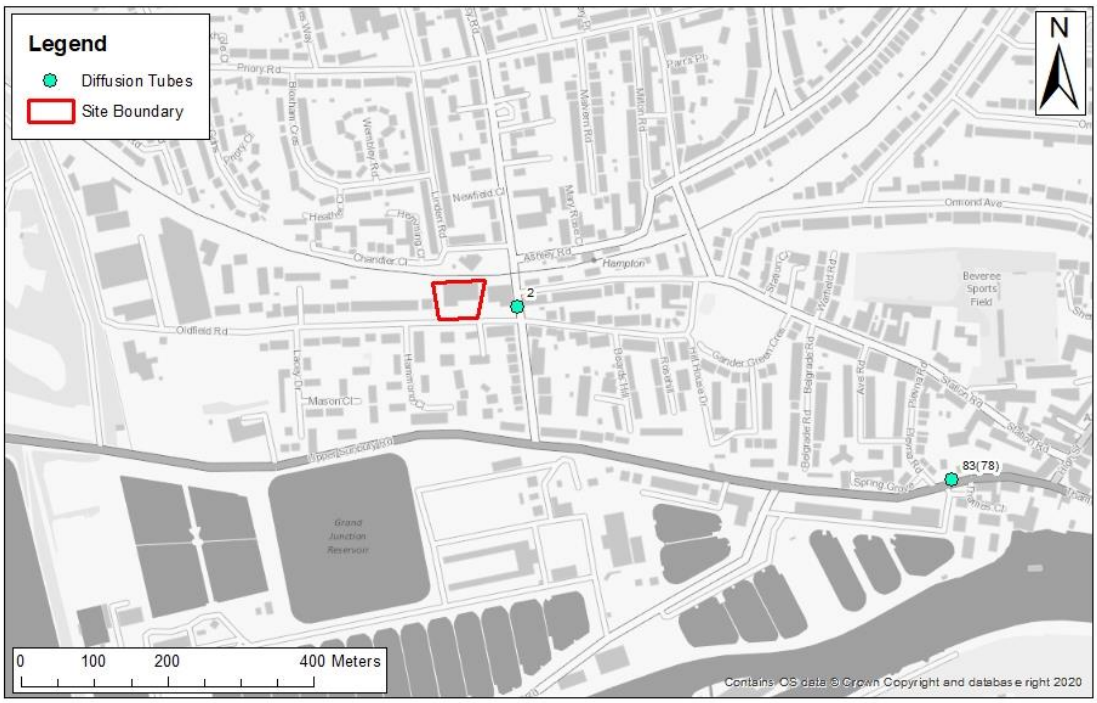

Figure 4-1: Local Monitoring Locations

Table 4-1: Measured Annual Mean NO_2 Concentrations (µg/m^3)

Site ID	Site Name	Site Type	2016	2017	2018	2019	2020	2021	2022
Diffusion Tube Sites									
2	Percy Rd, Hampton (nr. Level crossing/Waitrose)	Roadside	31	29	32	29	21	24	21
83(78)	Thames Street, A308, Hampton TW12	Kerbside	-*	-*	-*	-*	-*	-*	30
Objective			**40**						

Exceedances of the annual mean objective are shown in **BOLD.**
Data taken from LBRT's 2022 Air Quality Annual Status Report (ASR) (LBRT, 2023).
*No data available.

4.11 Whilst LBRT undertook monitoring of PM_{10} and $PM_{2.5}$, there are no monitoring locations within proximity and therefore reflective of the Site.

Predicted Background Concentrations

4.12 Predicted annual mean background concentrations of NO_2, PM_{10} and $PM_{2.5}$ have been obtained from national maps provided by Defra (Defra, 2020b).

4.13 The predicted background NO_2, PM_{10} and $PM_{2.5}$ concentrations are all below the relevant objectives within the Site and in both the 'current'[1] and future[2].

4.14 The new annual mean $PM_{2.5}$ target introduced by The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (UK Government, 2023) is not applicable until 2040. However, it is noted that the background $PM_{2.5}$ concentration in 2022 is slightly above the new concentration target of 10 µg/m^3, but meets the target in 2025. Concentrations are below the interim 2028 target of 12 µg/m^3 in both years.

Table 4-2: Predicted Annual Mean Background Concentrations ($\mu g/m^3$)

Year	Location	NO_2	PM_{10}	$PM_{2.5}$
2022	Development Site	16	15	11
2025	Development Site	15	15	10
Objectives:		**40**	**40**	**20**

Predicted concentrations are rounded as appropriate taking into consideration the level of accuracy of the data source as well as the relevant objectives.

5.0 PREDICTED IMPACTS

Construction Dust Impacts

Screening Assessment

5.1 The primary potential effects during the construction phase relate to annoyance and loss of amenity caused by dust soiling, health impacts relating to PM_{10} and ecological impacts due to dust deposition. Based on the screening criteria set out by the IAQM, it is considered necessary to carry out a construction dust risk assessment as there are sensitive human and ecological receptors located within 250 m of the Site boundary and within 50 m of the roads along which dust may be tracked out by construction vehicles.

5.2 There are no ecological sites located within proximity of the site in which dust may be tracked. Therefore, the assessment of dust deposition on ecological sites has not been considered as part of this construction dust risk assessment.

Further Assessment

Dust Emission Magnitude

5.3 The dust emission magnitude relating to demolition, earthworks and construction activities and as a result of trackout have been determined based on the GLA and IAQM guidance (as set out in **Appendix C**).

5.4 Proposals include the partial demolition of existing buildings with an estimated total building volume of between 12,000 to 75,000 m^3. The dust emission magnitude associated with demolition activities is therefore considered to be 'medium'.

5.5 Proposed earthworks activities could extend up to approximately 3,200 m^2 (the approximate area of the Site). The soil composition at the Site is deep, with a sand to sandy loam and sandy loam texture, and a river terrace sand / gravel subsoil. Grains are arenaceous[4] to rudaceous[5] in size (UK Soil Observatory, 2023). As such the soil composition is considered to have the potential to be slightly dusty. Based

[4] Typical particle size of between 0.06 to 2.0 mm.

[5] Typical particle size of > 2.0 mm.

on the above, the dust emission magnitude associated with the earthwork activities is considered to be 'medium'.

5.6 The proposed development will involve the construction of self-storage facilities. The total building volume associated with the application is estimated to be between 12,000 m^3 and 75,000 m^3, with the dust emission magnitude associated with construction activities is therefore considered to be 'medium'.

5.7 The peak number of HDV movements exiting the Site which may track material onto roads is anticipated to be between 20 - 50 per day[6]. The dust emission magnitude associated with trackout activities is therefore considered to be 'medium'.

Area Sensitivity

5.8 The sensitivity of the area to dust soiling and human health impacts has been assessed based on the criteria shown in **Appendix C**.

5.9 Residential properties are considered to be of 'high' sensitivity to dust soiling impacts. There are between 1 – 10 residential properties within 20 m of the Site boundary. The sensitivity of the area surrounding the Site to dust soiling impacts is therefore considered to be 'medium'.

5.10 The latest guidance published by the IAQM does not detail to which distances trackout can occur from different sized sites. As such, the distances set out in the GLA's SPG has been used. Therefore, trackout can occur on roads up to 200 m. The routing of construction vehicles is anticipated to travel east along Oldfield Road and then south onto Upper Sunbury Road before dispersing onto the wider road network, therefore, the assumption has been made that dust and mud may be tracked up to 200 m along these sections of road from the Site exit. There are between 10 to 100 residential properties within 20 m of roads which may be subject to trackout. The sensitivity to dust soiling impacts relating to trackout is therefore considered to be 'high'.

5.11 Residential properties are considered to be of 'high' sensitivity in terms of human health impacts. For the purposes of the construction dust risk assessment, the

[6] Information provided by the project's transport consultant; Caneparo Associates.

assumption has been made that annual mean concentrations of PM_{10} within the study area are comparable to background levels in the current year (i.e. 15 µg/m^3, as shown in **Table 4-2**). Taking into account the assumed background PM_{10} concentrations and the number of sensitive receptors located within 20 m of the Site boundary (see Paragraph 5.9) and within 20 m of the roads where trackout may occur (see in Paragraph 5.10), the sensitivity of the surrounding area to human health impacts is, therefore, considered to be 'low' for both on-site activities and trackout.

Risk of Impacts

5.12 The risk of construction dust impacts, without mitigation, has been assessed based on the tables provided in **Appendix C** and the identified risks are shown in **Table 5-1**.

Table 5-1: Risk of Construction Dust Impacts Without Mitigation

Potential Impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium	Medium	Medium	Medium
Human Health	Low	Low	Low	Low

5.13 Overall, taking into consideration the risks set out in **Table 5-1**, appropriate mitigation measures corresponding to a 'medium' risk site are required. The recommended list of mitigation measures is set out in **Section 6.0**.

5.14 The IAQM recommends that no judgement of the significance of construction dust effects should be made without taking mitigation into account. This is due to the fact that mitigation measures are assumed to be secured by planning conditions and legal requirements as well as construction codes of conduct. Following implementation of the recommended mitigation (as set out in **Section 6.0**), residual effects will be 'not significant'.

Construction Road Traffic Impacts

5.15 Construction traffic generation is not currently known; however, it is reasonable to assume that volumes of construction traffic will be less than volumes of operational traffic based on the nature of the proposed development. As such, impacts associated with construction traffic are anticipated to be less than impacts associated with operational traffic (see Paragraphs 5.18 to 5.21).

5.16 Additionally, it should also be taken into consideration that any impacts associated with the construction phase will be temporary in nature. Furthermore, it is anticipated that a Construction Logistics Plan (CLP) will be developed and will include measures to minimise emissions associated with construction vehicles, thus further reducing any potential impacts.

5.17 On the basis of the above, it is likely that the overall effect of construction traffic on nearby existing sensitive human receptors is likely to be 'not significant'.

Operational Road Traffic Impacts

5.18 The proposed development is anticipated to generate 83 total AADT (comprising 4 HDV AADT) during the operational phase[7].

Human Health

5.19 The volume of operational traffic falls below the relevant EPUK/IAQM screening criteria (see Paragraphs 3.10 and 3.11).

5.20 On the basis of the above, it is judged that the overall effect of operational traffic on nearby sensitive existing human receptors will be 'not significant' without the need for a detailed assessment.

Ecology

5.21 There are several designated ecological sites located in the vicinity of the Site, as described in Paragraph 4.2. Operational traffic is expected to travel along Oldfield Road with the majority of trips headed south towards Upper Sunbury

[7] Information provided by the project's transport consultant: ACE.

Road, and therefore adjacent to the 'Hampton Water Treatment Works' London SINC.

5.22 London SINCs are considered to be of local importance only (hence their local designation status). As such, they are not legally protected in relation to air quality impacts. The screening criteria is not exceeded within 200 m of any nationally or international designated sites.

5.23 On the basis of the above, it is possible to screen out the overall effect of operational traffic on the nearby designated ecological sites as being 'not significant'.

Site Suitability

Screening Assessment

5.24 The proposed development will introduce new areas of sensitive exposure which are sensitive to the short-term NO_2 and PM_{10} objectives (i.e. the proposed self-storage facilities). Whilst these sensitive introduced receptors are located within the 'Richmond AQMA', they are located adjacent to Oldfield Road, which is a minor road; predicted to have a traffic flow of 1,014 AADT in 2019. Furthermore, the site is set back approximately 35 m away from the nearest notable emissions source (i.e. Percy Road). As pollutant concentrations rapidly disperse with distance from the source, the proposed self-storage facility is likely to experience concentrations relative to background concentrations as shown in **Table 4-4** i.e. well below the relevant objective limits.

5.25 Sensitive locations within the proposed development are located <30 m from nearby railway lines. Furthermore, background annual mean concentrations of NO_2 within the Site are predicted to be 35 µg/m^3 in 2021 (see **Table 4-2**), >25 µg/m^3, as discussed in **Paragraph 3.17**. However, these lines are not identified by the LAQM.TG(22) as having a heavy traffic of diesel passenger trains (i.e. they are not list in Table 7-2 of the guidance). As such, according to the screening criteria set out in LAQM.TG(22) (see **Paragraph 3.17**), it is possible to screen out the potential risk of exceeding the annual mean NO_2 objective as a result of emissions associated with moving locomotives.

Air Quality Neutral Calculations

5.26 Air quality neutral calculations have been carried following the methodology set out in the 'London Plan Guidance; Air Quality Neutral' (GLA, 2023).

Building Emissions

5.27 The proposed long-term energy strategy is anticipated to comprise heat pumps and Solar PV panels and will therefore not have any associated on-site building emissions.

5.28 On the basis of the above, the proposed development will be better than 'air quality neutral' in terms of building emissions.

Transport Emissions

5.29 The air quality neutral calculation and comparison of transport emissions and transport emissions benchmarks (TEBs) for the proposed development are described in **Table 5-2** to **Table 5-4.**

Table 5-2: Proposed Development TEBs

Land Use	No. Dwellings or GIA (m^2)	Standard Benchmark Trip Rate (trips / dwelling or GIA (m^2) /annum)	TEB (trips / annum) [a]
Storage and Distribution	5,584	6.5	36,296
Office and Light Industrial	168	1	168

[a] Calculations are based on unrounded numbers and only rounded numbers are presented.

Table 5-3: Proposed Development Trip Rates

Land Use	Development Trip Rate (trips / day)	Development Trip Rate (trips / annum) [a]
Storage and Distribution	73	26,663
Office and Light Industrial	10	3,653

Table 5-4: Comparison of Proposed Development Trip Rates and TEBs

Land Use	Total TEB (trips / annum)	Development Trip Rate (trips / annum)	Comparison (trips / annum)
Storage and Distribution	36,296	26,663	-9,633
Office and Light Industrial	170	3,653	+3,485
Total	36,464	30,316	-6,148

Calculations are based on unrounded numbers and only rounded numbers are presented.

5.30 The proposed development trip rate is below the calculated total TEB. Therefore, the proposed development is considered to be better than 'air quality neutral' in terms of transport emissions. Therefore, no additional mitigation is considered to be necessary.

6.0 MITIGATION

Embedded Mitigation

6.1 The proposed development is expected to provide the following transport-related mitigation measures which will reduce emissions associated with the proposed operational transport[6]:

- A travel plan has been developed that promotes walking and cycling, the use of public transport and car sharing;
- Cycle parking spaces will be provided on-site in accordance with the London Plan.
- EV Charging points will be provided on-site in accordance with the London Plan.

Construction Dust

6.2 The following standard mitigation measures have been identified as being appropriate for a 'medium' risk site, although where measures relate to demolition, earthworks and trackout activities only measures relating to a 'low' risk site will be sufficient. This is based on the recommendations within the GLA's SPG on '*The Control of Dust and Emissions during Construction and Demolition*' (GLA, 2014).

6.3 An Air Quality and Dust Management Plan (AQDMP) should be submitted to LBRT prior to works commencing on the Site.

Site Management

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on Site;
- Develop a Dust Management Plan (DMP);
- Display the name and contact details of person(s) accountable for air quality pollutant emissions and dust issues on the Site boundary;
- Display the head or regional office contact information;

- Record and respond to all dust and air quality pollutant emissions complaints;
- Make a complaints log available to the local authority when asked;
- Carry out regular Site inspections to monitor compliance with air quality and dust control procedures, record inspection results, and make an inspection log available to the local authority when asked;
- Increase the frequency of site inspections by those accountable for dust and air quality pollutant emissions issues when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions; and
- Record any exceptional incidents that cause dust and air quality pollutant emissions, either on- or off- site, and the action taken to resolve the situation in the log book.

Preparing and maintaining the site

- Plan site layout: machinery and dust causing activities should be located away from receptors;
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on Site;
- Fully enclose Site or specific operations where there is a high potential for dust production and the Site is active for an extensive period;
- Install green walls, screens or other green infrastructure to minimise the impact of dust and pollution;
- Avoid Site runoff of water or mud;
- Keep site fencing, barriers and scaffolding clean using wet methods;
- Remove materials from Site as soon as possible;
- Cover, seed or fence stockpiles to prevent wind whipping;

- Carry out regular dust soiling checks of buildings within 100m of Site boundary and cleaning to be provided if necessary;
- Agree monitoring locations with the Local Authority;
- Where possible, commence baseline monitoring at least three months before phase begins; and
- Put in place real-time dust and air quality pollutant monitors across the Site and ensure they are checked regularly.

Operating vehicle/machinery and sustainable travel

- Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone (LEZ);
- Ensure all non-road mobile machinery (NRMM) comply with the standards set within the GLA's SPG;
- Ensure all vehicles switch off engines when stationary - no idling vehicles;
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where possible;
- Impose and signpost a maximum-speed-limit of 10 mph on any surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate);
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials; and
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).

Operations

- Only use cutting, grinding or sawing equipment fitted, or in conjunction, with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems;

- Ensure an adequate water supply on the Site for effective dust/particulate matter mitigation (using recycled water where possible);
- Use enclosed chutes, conveyors and covered skips;
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate; and
- Ensure equipment is readily available on Site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

- Reuse and recycle waste to reduce dust from waste materials; and
- Avoid bonfires and burning of waste materials.

Demolition

- Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust);
- Ensure water suppression is used during demolition operations;
- Avoid explosive blasting, using appropriate manual or mechanical alternatives; and
- Bag and remove any biological debris or damp down such material before demolition.

Construction

- Avoid scabbling (roughening of concrete surfaces) if possible; and
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place;

- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery; and
- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.

Trackout

- Regularly use a water-assisted dust sweeper on the access and local roads, to remove, as necessary, to remove any material tracked out of the site;
- Avoid dry sweeping of large areas;
- Ensure vehicles entering and leaving the Site are securely covered to prevent escape of materials during transport;
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the Site where reasonably practicable);

Road Traffic Impacts

6.4 The overall effects, without mitigation, of construction and operational traffic generated by the proposed development on existing human and ecological receptors in the study area will be 'not significant'.

6.5 Furthermore, any construction phase impacts will be temporary in nature and are expected to be mitigated to some extent by measures outlined within a CLP.

6.6 Based on the above, no further mitigation measures are considered to be necessary.

Site Suitability

6.7 Future[2] baseline concentrations of pollutants at sensitive locations within the proposed development Site are predicted to be well below the relevant objectives. Therefore, air quality for future users of the proposed development is considered to be good and no mitigation is recommended as being necessary.

Air Quality Neutral

6.8 The proposed development is considered to be better than 'air quality neutral' in terms of both building and transport emissions. Therefore, no additional mitigation is considered to be necessary.

7.0 CONCLUSIONS

7.1 The potential air quality impacts associated with the proposed development have been assessed.

7.2 There is the potential for dust and PM_{10} impacts during the construction phase. However, with the proposed mitigation measures in place, the overall residual effect will be 'not significant'.

7.3 The impacts of construction and operational traffic generation associated with the proposed development on nearby existing human and ecological receptors has been considered and volumes of traffic will fall below the relevant screening criteria. As such, the overall effect of development traffic on nearby existing human and ecological receptors will be 'not significant'.

7.4 The impact of pollutant concentrations within the Site on future use of the proposed development has been qualitatively assessed. Taking into consideration the sensitivity of the proposed use, proximity of the development Site to nearby emission sources (including nearby roads) and baseline air quality conditions within the Site and in the local area, it is anticipated that pollutant concentrations at sensitive locations within the proposed development will be below the relevant objectives. As such, it is judged that the future use of the proposed development will experience good air quality and is therefore suitable for its proposed end-use.

7.5 The development is considered to be better than 'air quality neutral' in terms of both building and transport emissions.

7.6 Overall, it is concluded that there are no air quality constraints to the proposed development which is in accordance with local, regional and national policy and guidance.

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Appendix A Glossary

Abbreviations	Meaning
AADT	Annual Average Daily Traffic
ACE	Ardent Consulting Engineers
AQA	Air Quality Assessment
AQAP	Air Quality Action Plan
AQDMP	Air Quality Dust Management Plan
AQFA	Air Quality Focus Area
AQMA	Air Quality Management Area
ASHP	Air-Source Heat Pump
ASR	Annual Status Report
AURN	Automatic Urban and Rural Network
BEB	Building Emission Benchmark
CEMP	Construction Environmental Management Plan
CROW Act	Countryside and Rights of Way Act
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
Diffusion Tube/DT	A passive sampler used for collecting NO_2 in the air
DMP	Dust Management Plan
EC	European Commission
EEC	European Economic Community
EPUK	Environmental Protection UK
GIA	Gross Internal Area
GLA	Greater London Authority
HDV	Heavy Duty Vehicle; a vehicle with a gross vehicle weight greater than 3.5 tonnes, includes Heavy Goods Vehicles and buses
HGV	Heavy Goods Vehicle
IAQM	Institute of Air Quality Management
LAQM	Local Air Quality Management
LBRT	London Borough of Richmon-upon-Thames
LDV	Light Duty Vehicle; a vehicle with a gross vehicle weight equal to or less than 3.5 tonnes, includes Light Goods Vehicles, cars and motorbikes
LEZ	Low Emission Zone
LGV	Light Goods Vehicle
LLAQM	London Local Air Quality Management
NAQO	National Air Quality Objective as set out in Air Quality Strategy and the Air Quality Regulations
NH_3	Ammonia
NO_2	Nitrogen Dioxide
NO_X	Nitrogen Oxides, generally considered to be nitric oxide and NO_2. The main source is from combustion of fossil fuels, including petrol and diesel used in road vehicles and natural gas used in gas-fired boilers.
NPPF	National Planning Policy Framework
NRMM	Non-road mobile machinery
PCM	Pollution Climate Mapping
PM_{10} or $PM_{2.5}$	Small airborne particles less than 10/2.5 µg in diameter
PPG	Planning Practice Guidance

Abbreviations	Meaning
Receptor	A location where the effects of pollution may occur
SAC	Special Area of Conservation
SINC	Site of Importance for Nature Conservation
SPA	Special Protection Area
SPG	Supplementary Planning Guidance
SSSI	Site of Special Scientific Interest
TEB	Transport Emission Benchmark
ULEV	Ultra-Low Emission Vehicle
ULEZ	Ultra-Low Emission Zone

Appendix B Air Quality Neutral Benchmarks

B1 'London Plan Guidance; Air Quality Neutral'

Building Emissions

B1.1 **Table B.1** shows the benchmark emissions rates set out within the 'London Plan Guidance; Air Quality Neutral' (GLA, 2023) based on the type of the type of technology used for various types of development class[8]. Benchmark emissions rates are based on achievable emission rates for the type of technology used.

Table B.1: Benchmark Emissions Rates (g NO_X/m^2/annum)

Land Use	Individual Gas Boilers	Gas Boiler Network	CHP + Gas Boiler Network	Heat Pumps + Gas Boiler Network
Residential	3.5	5.7	7.8	5.7
Retail	0.53	0.97	4.31	0.97
Restaurant / bars	1.76	3.23	14.34	3.23
Offices	1.43	2.62	11.68	2.62
Industrial	1.07	1.95	8.73	1.95
Storage and distribution	0.55	1.01	4.50	1.01
Hotel	9.47	15.42	38.16	15.42
Care homes and hospitals	9.15	14.90	36.86	14.90
Schools, nurseries, doctor's surgeries, other non-residential institutions	0.90	1.66	7.39	1.66
Assembly and leisure	2.62	4.84	21.53	4.84

[8] Separate use classes for commercial uses, including retail and offices, have now been replaced by use class E. If these separate uses are specified in the development proposal, they should be used for this assessment. Where the separate use is not specified, or where use class E has been specified, the benchmark for retail should be used (GLA, 2023).

Transport Emissions

B1.2 **Table B.2** shows the benchmark trips rates set out within the 'London Plan Guidance; Air Quality Neutral' (GLA, 2023) based on the number of residences / GIA for various types of development class[9]. Benchmark trip rates are based on data from TRAVL (Trip Rate Assessment Valid for London) and are defined for different land uses and different areas of London.

Table B.2: Benchmark Trip Rates (annual trips/dwelling or m²) [a]

Land Use	Central Activities Zone	Inner London	Outer London
Residential	68	114	447
Office / Light Industrial	2	1	16
Retail (Superstore)	39	73	216
Retail (Convenience)	18	139	274
Restaurant / Café	64	137	170
Drinking establishment	0.8	8	-
Hot food takeaway	-	32.4	590
Industrial	-	5.6	6.5
Storage and distribution	-	5.5	6.5
Hotel	1	1.4	6.9
Care home / hospital	-	1.1	19.5
Schools, nurseries, doctor's surgeries, other non-residential institutions	0.1	30.3	44.4
Assembly and leisure	3.6	10.5	47.2

[a] Annual trips / dwelling is applicable to proposed residential land use. Annual trips / m² is applicable to all other land uses.

[9] Separate use classes for commercial uses, including retail and offices, have now been replaced by use class E. If these separate uses are specified in the development proposal, they should be used for this assessment. Where the separate use is not specified, or where use class E has been specified, the benchmark for office / light industrial should be used (GLA, 2023).

Appendix C IAQM Dust Assessment Approach

C1.1 Step 1 is the screen the need for an assessment against the following criteria:

- 'Human receptor' within:
  - 250 m (50 m in London) of the boundary of the site; or
  - 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).
- 'Ecological receptor' within:
  - 50 m of the boundary of the site; or
  - 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).

C1.2 Where there are no sensitive receptors within these distances, it can be concluded that the impact is negligible and no further assessment relating to construction dust impacts is required.

C2 Step 2: Assess the risk of dust impacts

C2.1 The risk of dust at sufficient quantum to cause annoyance/health/ecological impacts should be based on:

- The scale and nature of the works (potential dust emission magnitude) (**Table B.1**); and
- The sensitivity of the area to dust impacts based on the matrices shown in **Table B.2**, **Table B.3**, and **Table B.4**.

C2.2 These factors are then combined to determine the risk of dust impacts without mitigation applied for each of the four activities (Demolition, Earthworks, Construction and Trackout) following the matrices shown in **Table C.5**, **Table C.6** and **Table C.7**.

Table C.1: Potential Dust Emission Magnitude

Size	Definition
Demolition	
Small	Total building volume <12,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <6 m above ground, demolition during wetter months.
Medium	Total building volume 12,000 m^3 – 75,000 m^3, potentially dusty construction material, demolition activities 6-12 m above ground level.
Large	Total building volume >75,000 m^3, potentially dusty construction material (e.g. Concrete), on-site crushing and screening, demolition activities >12 m above ground level.
Earthworks	
Small	Total site area <18,000 m^2, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <4 m in height.
Medium	Total site area 18,500 m^2 – 110,000 m^2, moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 3 m – 6 m in height.
Large	Total site area >110,000 m^2, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >6 m in height.
Construction	
Small	Total building volume <12,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber).
Medium	Total building volume 12,000 m^3 – 75,000 m^3, potentially dusty construction material (e.g. concrete), on site concrete batching.
Large	Total building volume >75, 000 m^3, on site concrete batching, sandblasting.
Trackout	
Small	<20 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50 m.
Medium	20-50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 m – 100 m.
Large	>50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100 m.

Table C.2: Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		<20	<50	<100	<350
High	>100	High	High	Low	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table C.3: Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
High	>32 µg/m³ [a]	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		<10	High	Medium	Low	Low	Low
	28-32 µg/m³ [b]	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		<10	High	Medium	Low	Low	Low
	24-28 µg/m³ [c]	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		<10	Medium	Low	Low	Low	Low
	<24 µg/m³ [d]	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		<10	Low	Low	Low	Low	Low
Medium	>32 µg/m³ [a]	>100	High	Medium	Low	Low	Low
		10-100	Medium	Low	Low	Low	Low
		<10	Medium	Low	Low	Low	Low
	28-32 µg/m³ [b]	>100	Low	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		<10	Low	Low	Low	Low	Low
	24-28 µg/m³ [c]	>100	Low	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		<10	Low	Low	Low	Low	Low
	<24 µg/m³ [d]	>100	Low	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		<10	Low	Low	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low	Low

[a] >18µg/m³ in Scotland
[b] 16-18 µg/m³ in Scotland
[c] 14-16 µg/m³ in Scotland
[d] <14 µg/m³ in Scotland

Table C.4: Sensitivity of the Area to Ecological Impacts

Receptor Sensitivity	Distance from the Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

Table C.5: Risk of Impacts – Demolition

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table C.6: Risk of Impacts – Earthworks and Construction

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table C.7: Risk of Impacts – Trackout

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Negligible
Low	Low Risk	Low Risk	Negligible

C3 Step 3: Site-specific Mitigation

C3.1 Based on the outcome of Step 2, appropriate mitigation measures are recommended. The guidance includes a list of mitigation measures for Low,

Medium and High Risk sites but final recommendations should be based on professional judgement and take into account particular site sensitivities and differences in risk for different activities or areas of the site. The mitigation recommended in the guidance are shown in **Table B.8**.

Table C.8: Mitigation Measures (H = Highly Recommended, D = Desirable and N = Not Recommended)

Mitigation Measure	Low Risk	Medium Risk	High Risk
Communications			
1. Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	N	H	H
2. Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.	H	H	H
3. Display the head or regional office contact information	H	H	H
Dust Management			
4. Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk, and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site. In London additional measures may be required to ensure compliance with the Mayor of London's guidance. The DMP may include monitoring of dust deposition, dust flux, real-time PM_{10} continuous monitoring and/or visual inspections.	D	H	H
Site Management			
5. Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.	H	H	H
6. Make the complaints log available to the local authority when asked.	H	H	H
7. Record any exceptional incidents that cause dust and/or air emissions, either on- or off- site, and the action taken to resolve the situation in the log book.	H	H	H
8. Hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes.	N	N	H

Mitigation Measure	Low Risk	Medium Risk	High Risk
Monitoring			
9. Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of site boundary, with cleaning to be provided if necessary.	D	D	H
10. Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked	H	H	H
11. Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	H	H	H
12. Agree dust deposition, dust flux, or real-time PM_{10} continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.	H	H	H
Preparing and maintaining the site			
13. Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	H	H	H
14. Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.	H	H	H
15. Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period	D	H	H
16. Avoid site runoff of water or mud.	H	H	H
17. Keep site fencing, barriers and scaffolding clean using wet methods.	D	H	H
18. Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.	D	H	H
19. Cover, seed or fence stockpiles to prevent wind whipping.	D	H	H
Operating vehicle/machinery and sustainable travel			
20. Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable	H	H	H
21. Ensure all vehicles switch off engines when stationary - no idling vehicles.	H	H	H
22. Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.	H	H	H

Mitigation Measure	Low Risk	Medium Risk	High Risk
23. Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate)	D	D	H
24. Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	N	N	H
25. Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)	N	D	H
Operations			
26. Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.	H	H	H
27. Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.	H	H	H
28. Use enclosed chutes and conveyors and covered skips.	H	H	H
29. Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	H	H	H
30. Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	D	H	H
Waste Management			
31. Avoid bonfires and burning of waste materials.	H	H	H
Demolition			
32. Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).	D	D	H
33. Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.	H	H	H
34. Avoid explosive blasting, using appropriate manual or mechanical alternatives.	H	H	H
35. Bag and remove any biological debris or damp down such material before demolition.	H	H	H

Mitigation Measure	Low Risk	Medium Risk	High Risk
Earthworks			
36. Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.	N	D	H
37. Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable	N	D	H
38. Only remove the cover in small areas during work and not all at once.	N	D	H
Construction			
39. Avoid scabbling (roughening of concrete surfaces) if possible	D	D	H
40. Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.	D	H	H
41. Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.	N	D	H
42. For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.	N	D	D
Trackout			
43. Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.	D	H	H
44. Avoid dry sweeping of large areas.	D	H	H
45. Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.	D	H	H
46. Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.	N	H	H
47. Record all inspections of haul routes and any subsequent action in a site log book.	D	H	H
48. Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.	N	H	H
49. Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	D	H	H
50. Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.	N	H	H
51. Access gates to be located at least 10 m from receptors where possible.	N	H	H

C4 Step 4: Determine Significant Effects

C4.1 Recommended mitigation measures should be sufficient to ensure that the impact is normally 'not significant'. There may at times be limitations to appropriate mitigation measures (such as lack of water) and therefore, an assessment should always be made based on the characteristic of each site and the surrounding area.

C5 Step 5: Dust Assessment Report

B4.2 The dust assessment report should include enough detail to ensure that the basis for the determination of emission magnitude and sensitivity of the area, and therefore the site risk, are clear. The required mitigation so also be set out within the report, along with a description of the mechanism that will ensure that the appropriate level of mitigation will be implemented (such as through a planning condition).