



Air Quality Assessment: Godstone Road, St Margarets

March 2022



Experts in air quality
management & assessment



Document Control

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Executive Summary

The air quality impacts associated with the proposed residential development of land at Godstone Road, St Margarets, have been assessed. The development will provide three residential properties and three associated car parking spaces, on land currently used as a car park.

Godstone Road is a minor road, and the proposed properties are over 200 m from the closest major road. The assessment has demonstrated that future residents will experience acceptable air quality, with pollutant concentrations below the air quality objectives.

The proposed development will generate fewer vehicle movements than the current car park, and heat and hot water will be provided by air source heat pump. The proposed development will not generate any significant emissions.

Overall, the air quality effects are judged to be 'not significant'.

The proposed development has also been shown to meet the London Plan's requirement that new developments are at least 'air quality neutral'.

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1 Introduction

- 1.1 This report describes the potential air quality impacts associated with the proposed residential development at Godstone Road, St Margarets. The proposed development will provide three new dwellings and associated car parking.
- 1.2 It lies within a borough-wide Air Quality Management Area (AQMA) declared by the London Borough of Richmond upon Thames (LBRuT) for exceedances of the annual mean nitrogen dioxide (NO₂) objective and the annual and 24-hour mean PM₁₀ objectives. The location of the proposed development is shown in Figure 1.

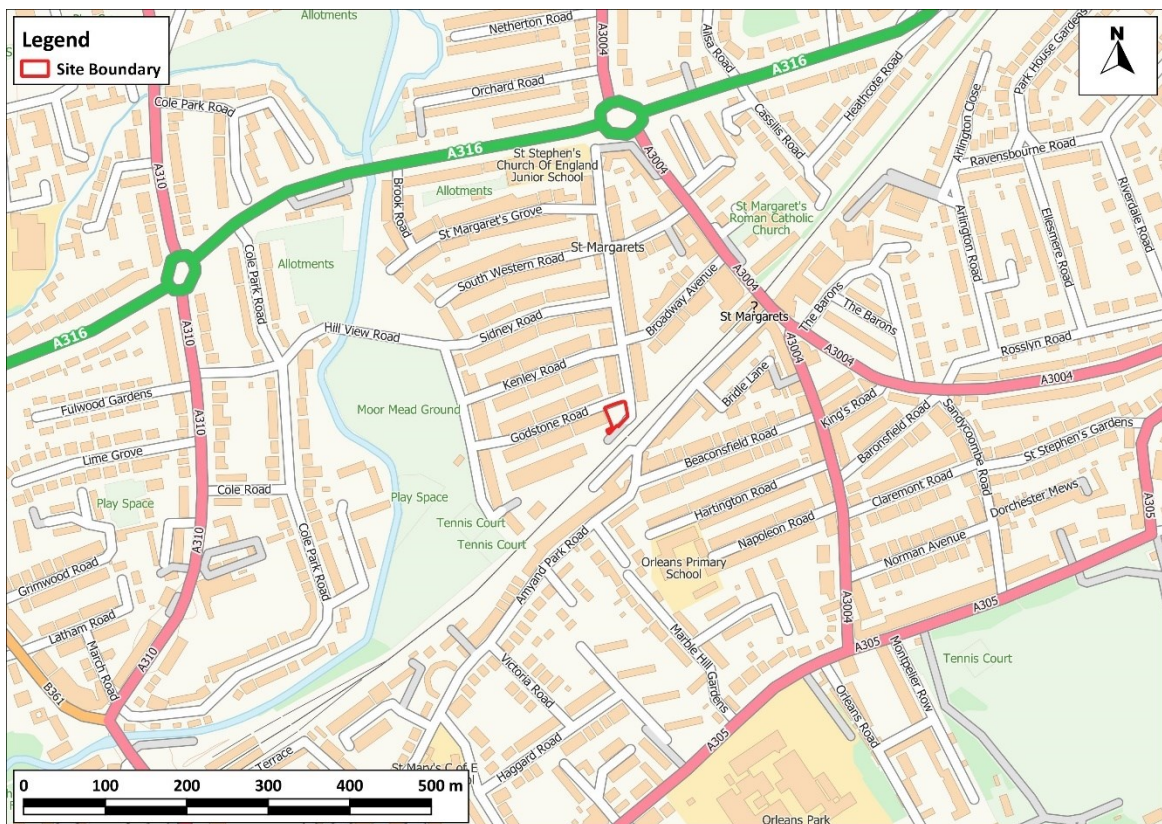


Figure 1: Proposed Development Setting in the Context of Air Quality

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- 1.3 The proposed development replaces an existing car park, and provides only three parking spaces, each with an electric vehicle charging point; there will, therefore, be an overall reduction in vehicle movements as a result of the proposed development. The new homes will be provided with heat and hot water by air source heat pumps. The proposed development will therefore have no effect on local air quality conditions.

- 1.4 The Greater London Authority's (GLA's) London Plan (GLA, 2021a) requires new developments to be air quality neutral. The air quality neutrality of the proposed development has, therefore, been assessed following the methodology provided in the Greater London Authority's (GLA's) Air Quality Neutral London Plan Guidance (LPG) (GLA, 2021b).
- 1.5 The GLA has also released Supplementary Planning Guidance on the Control of Dust and Emissions from Construction and Demolition (GLA, 2014b). The SPG outlines a risk assessment approach for construction dust assessment and helps determine the mitigation measures that will need to be applied. However, the SPG makes clear that only 'major' developments need to prepare a dust risk assessment, which are defined in the London Plan as being developments of ten or more residential units. The proposed development is not, therefore, a major development and a construction dust risk assessment is not required.
- 1.6 This report describes existing local air quality conditions (base year 2019) and considers air quality conditions at the proposed development in 2023, which is the anticipated year of first occupation of any of the new homes.
- 1.7 This report has been prepared taking into account all relevant local and national guidance and regulations.

2 Policy Context and Assessment Criteria

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

Air Quality Strategy

- 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 Air Quality Management Area (AQMA), and prepare an action plan which identifies appropriate measures that will be introduced in pursuit of the objectives.

Clean Air Strategy 2019

- 2.3 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

- 2.4 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.
- 2.5 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 since announced that the phase-out date for the sale of new petrol and diesel cars and vans will

be brought forward to 2030 and that all new cars and vans must be fully zero emission at the tailpipe from 2035. If these ambitions are realised then road traffic-related NOx emissions can be expected to reduce significantly over the coming decades.

Environment Act 2021

- 2.6 The UK's new legal framework for protection of the natural environment, the Environment Act 2021 passed into UK law on 9th 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.
- 2.7 The Act requires the Government to set at least one long-term target (spanning a minimum of 15 years), supported by interim targets set in a five-year cycle, in each of four identified areas: Air Quality, Biodiversity, Water and Resource Efficiency and Waste Reduction. An additional target for mean levels of PM_{2.5} is also required. These targets must be set before November 2022; a scope for what these targets will involve has been outlined but not yet precisely defined. As the targets have not yet been finalised or adopted by the Government, they cannot impact on current planning policy.

Planning Policy

National Policies

- 2.8 The National Planning Policy Framework (NPPF) (2021) 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”.

- 2.9 To prevent unacceptable risks from air pollution, Paragraph 174 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”.

- 2.10 Paragraph 185 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”.

2.11 More specifically on air quality, Paragraph 186 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”.

2.12 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”.

2.13 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”.

2.14 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”.*

2.15 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”.

- 2.16 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”.

- 2.17 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”.

London-Specific Policies

- 2.18 The key London-specific policies are summarised below, with more detail provided, where required, in Appendix A1.

The London Plan

- 2.19 The London Plan (GLA, 2021a) sets out an integrated economic, environmental, transport and social framework for the development of London over the next 20-25 years. The key policy relating to air quality is Policy SI 1 on *Improving air quality*, Part B1 of which sets out three key requirements for developments:

“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*
- c) create unacceptable risk of high levels of exposure to poor air quality”.*

- 2.20 The Policy then details how developments should meet these requirements, stating:

“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*
- 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”.*

2.21 Part C of the Policy introduces the concept of Air Quality Positive for large-scale development, stating:

“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:

- 1) *how proposals have considered ways to maximise benefits to local air quality, and*
- 2) *what measures or design features will be put in place to reduce exposure to pollution, and how they will achieve this.”*

2.22 The proposed development is not large-scale development, thus an Air Quality Positive statement is not required.

2.23 Regarding construction and demolition impacts, Part D of Policy SI 1 of the London Plan states:

“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”.

2.24 Part E of Policy SI 1 states the following regarding mitigation and offsetting of emissions:

“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”.

2.25 The explanatory text around Policy SI 1 of the London Plan states the following with regard to assessment criteria:

“The Mayor is committed to making air quality in London the best of any major world city, which means not only achieving compliance with legal limits for Nitrogen Dioxide as soon as possible and

maintaining compliance where it is already achieved, but also achieving World Health Organisation targets for other pollutants such as Particulate Matter.

The aim of this policy is to ensure that new developments are designed and built, as far as is possible, to improve local air quality and reduce the extent to which the public are exposed to poor air quality. This means that new developments, as a minimum, must not cause new exceedances of legal air quality standards, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits. Where limit values are already met, or are predicted to be met at the time of completion, new developments must endeavour to maintain the best ambient air quality compatible with sustainable development principles.

Where this policy refers to ‘existing poor air quality’ this should be taken to include areas where legal limits for any pollutant, or World Health Organisation targets for Particulate Matter, are already exceeded and areas where current pollution levels are within 5 per cent of these limits”¹.

- 2.26 The London Plan includes a number of other relevant policies, which are detailed in Appendix A1.

London Environment Strategy

- 2.27 The London Environment Strategy was published in May 2018 (GLA, 2018a). The strategy considers air quality in Chapter 4; the Mayor’s main objective is to create a “zero emission London by 2050”. Policy 4.2.1 aims to “reduce emissions from London’s road transport network by phasing out fossil fuelled vehicles, prioritising action on diesel, and enabling Londoners to switch to more sustainable forms of transport”. The strategy sets a target to achieve, by 2030, the guideline value for PM_{2.5} which was set by the World Health Organisation (WHO) in 2005. An implementation plan for the strategy has also been published which sets out what the Mayor will do between 2018 and 2023 to help achieve the ambitions in the strategy.

Mayor’s Transport Strategy

- 2.28 The Mayor’s Transport Strategy (GLA, 2018b) sets out the Mayor’s policies and proposals to reshape transport in London over the next two decades. The Strategy focuses on reducing car dependency and increasing active sustainable travel, with the aim of improving air quality and creating healthier streets. It notes that development proposals should “be designed so that walking and cycling are the most appealing choices for getting around locally”.

¹ The London Plan was developed based on a World Health Organisation guideline for PM_{2.5} of 10 µg/m³ (see Paragraph 2.27).

GLA Air Quality Neutral LPG

- 2.29 The GLA's Air Quality Neutral LPG (GLA, 2021b) Consultation draft was issued in November 2021. It is the only published document that sets out guidance on how an 'air quality neutral' assessment should be undertaken for minor developments, and this has been followed.

Air Quality Focus Areas

- 2.30 The GLA has identified 187 air quality Focus Areas in London. These are locations that not only exceed the EU annual mean limit value for nitrogen dioxide, but also have high levels of human exposure. They do not represent an exhaustive list of London's air quality hotspot locations, but locations where the GLA believes the problem to be most acute. They are also areas where the GLA considers there to be the most potential for air quality improvements and are, therefore, where the GLA and Transport for London (TfL) will focus actions to improve air quality. The proposed development is not located within any of the air quality Focus Areas.

Local Transport Plan

- 2.31 The LBRuT Third Local Implementation Plan (LIP3) sets out a programme of measures and schemes to implement the Mayor's Transport Strategy within the borough (London Borough of Richmond upon Thames, 2019b). It aims to achieve nine outcomes through the adoption of 14 over-arching objectives, with 57 objectives linked to specific outcomes. These include to:

"Reduce the environmental impacts and pollution levels due to transport, and encourage improvements in air quality, particularly near schools, town centres, along major roads and areas that already exceed acceptable air quality standards."

- 2.32 Three LIP3 projects and programmes link to the Mayor's Transport Strategy outcomes. These are:

- *"Electric vehicle charge points"*
- *Air quality infrastructure and monitoring (air quality monitoring, green walls, air filters, etc)*
- *Air quality revenue (campaigns, awareness, behaviour change, focused on schools and town centres)".*

Local Policies

- 2.33 The LBRuT Local Plan was adopted in July 2018 (London Borough of Richmond upon Thames, 2018). One of the strategic objectives within this plan is to:

"Reduce or mitigate environmental impacts and pollution levels (such as air, noise, light, odour, fumes, water and soil) and encourage improvements in air quality, particularly along major roads and areas that already exceed acceptable air quality standards."

2.34 More specifically, Policy LP 10 concerns local environmental impacts, pollution and land contamination. In terms of air quality, Policy LP 10 states:

“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.”*

2.35 The LBRuT Sustainable Construction Checklist Guidance Document SPD (London Borough of Richmond upon Thames, 2020a) was adopted in June 2020, and forms a mandatory part of the planning application for residential developments providing one or more new dwellings, or 100 m² or more floor space for non-residential developments. It provides a list of relevant policies relating to energy use and pollution, including pollution during the construction process, and incorporates policies outlined in the adopted Local Plan.

2.36 The SPD states the following in relation to electric vehicle charging points:

“The London Plan² requires 20% of parking space to have active provision for electric vehicle charging and 80% passive provision. The Council’s ambition is that charging facilities are provided in such a way as to enable direct access to charging facilities for all vehicles. Consequently, the Council supports development making provision for 100% active electric vehicle parking. This does however not mean that every parking space where parking is shared communally needs to be equipped with a charging point, as one fast or rapid charging point may cater for many vehicles. Applicants will need to demonstrate that their development would be able to operate satisfactorily in the future expectation of all vehicles being electrically powered”.

2.37 The LBRuT also adopted an Air Quality Supplementary Planning Document for Air Quality (London Borough of Richmond upon Thames, 2020c) in June 2020. The SPD describes the air quality planning policy context; the planning conditions and obligations that will be required to mitigate adverse air quality impacts, including contributions to the Air Quality Action Fund to off-set impacts

² The SPD refers to a version of the London Plan that has since been superseded.

off-site where mitigation on-site is not possible; the minimum design features to reduce air quality emissions and exposure; and the requirements for the assessment of air quality.

2.38 The LBRuT is currently preparing a new Local Plan. The Pre-publication version, published in December 2021 (London Borough of Richmond upon Thames, 2021b) states the following within Policy 53. Local Environmental Impacts in relation to Air Quality:

“D. The Council promotes good air quality design and new technologies. All developments must comply with the new London Plan 2021 Policy S11 Improving Air Quality.

E. Major developments and large-scale development subject to an Environmental Impact Assessment (EIA) are required to achieve “Air Quality Positive”.

F. All developments must be at least “Air Quality Neutral”. Proposals that would materially increase exceedances of local air pollutants will be resisted unless the development mitigates this impact through physical measures and/or financial contributions to implement proposals in Richmond’s Local Air Quality Management Plan.

G. 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; this also applies to change of use to residential at street level;*
- 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;*
- 5. mitigation measures to reduce the impact of transport from the development upon air quality, including support for active travel, electric vehicles and car club membership.*

H. The Council will require financial contributions towards off-site air quality measures where a proposed development is not air quality neutral, or mitigation measures do not reduce the impact upon poor air quality. Specific guidance for air quality in new developments is set out in the Council’s Air Quality SPD (2020).”

Air Quality Action Plans

National Air Quality Plan

2.39 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, 2018) 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 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 EU limit values that are the focus of the Air Quality Plan.

Local Air Quality Action Plan

2.40 The LBRuT declared a borough-wide AQMA in 2000 for exceedances of the annual mean NO₂ objective, and the annual mean and 24-hour mean PM₁₀ objectives. The Council's most recent Air Quality Action Plan was published in 2019 for the period up to 2024 (London Borough of Richmond upon Thames, 2019a). The plan focuses on the following five priorities:

- *"Monitoring of air quality"*
- *"Changing our environment"* – to encourage sustainable and active transport and promote electric vehicle uptake
- *"Changing behaviour"* – including campaigns and initiatives and improving communication
- *"Tackling pollution"* – such as anti-idling initiatives, dealing with bonfires and regulating demolition and construction activities.
- *"Protecting our schools"*.

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 PM₁₀ were to have been achieved by 2005 and 2004 respectively, and continue to apply in all future years thereafter. The PM_{2.5} objective is to be achieved by 2020. Measurements across the UK have shown that the 1-hour nitrogen dioxide objective is unlikely to be exceeded at roadside locations where the annual mean concentration is below 60 µg/m³ (Defra, 2021). Measurements have also shown that the 24-hour mean PM₁₀ objective could be exceeded at roadside locations where the annual mean concentration is above 32 µg/m³ (Defra, 2021).
- 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, 2021). The annual mean objectives for nitrogen dioxide and PM₁₀ 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 PM₁₀ 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 EU Directive 2008/50/EC (The European Parliament and the Council of the European Union, 2008) sets limit values for nitrogen dioxide, PM₁₀ 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 PM₁₀ are the same numerical concentrations as the UK objectives, whilst for PM_{2.5} is 20 µg/m³. Achievement of these values is a national obligation rather than a local one. 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 As amended through The Air Quality Standards (Amendment) Regulations 2016 and The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020.

3.5 The relevant air quality criteria for this assessment are provided in Table 1.

Table 1: Air Quality Criteria for Nitrogen Dioxide, PM₁₀ and PM_{2.5}

Pollutant	Time Period	Objective
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
Fine Particles (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
Fine Particles (PM _{2.5}) ^a	Annual Mean	25 µg/m ³

^a The PM_{2.5} objective, which is to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

GLA PM_{2.5} Target

3.6 As explained in Paragraph 2.27, the GLA has set a target to achieve an annual mean PM_{2.5} concentration of 10 µg/m³ by 2030. This target was derived from an air quality guideline set by WHO in 2005. In 2021, WHO updated its guidelines, but the London Environment Strategy (GLA, 2018a) considers the 2005 guideline of 10 µg/m³. While there is no explicit requirement to assess against the GLA target of 10 µg/m³, it has nevertheless been included within this assessment.

Screening Criteria for Railway Locomotive Emissions

- 3.7 Defra guidance (Defra, 2021) states that stationary coal-fired (steam) locomotives can give rise to elevated levels of sulphur dioxide close to the point of emission. In addition, large numbers of moving diesel locomotives can give rise to high levels of nitrogen dioxide close to railway tracks.
- 3.8 The guidance outlines where there may be the potential for an exceedance of the nitrogen dioxide objectives as a result of emissions from diesel locomotives. Residential properties within 30 m of railway lines where there are large numbers of diesel locomotive movements (these lines are identified in the Defra guidance), and where background annual mean nitrogen dioxide concentrations are greater than 25 µg/m³, may be at risk of elevated nitrogen dioxide concentrations. Only locations which meet these criteria require further assessment.
- 3.9 The guidance also outlines where there may be the potential for exceedances of the 15-minute sulphur dioxide objective as a result of emissions from steam locomotives. The guidance outlines that there is only the potential for an exceedance where there is exposure within 15 m. Only locations which meet this criterion, and where steam locomotives are regularly stationary (at least three times a day), require further assessment.

Descriptors for Air Quality Impacts and Assessment of Significance

- 3.10 There is no official guidance in the UK in relation to development control on how to describe air quality impacts, nor how to assess their significance. The approach developed jointly by Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM)⁴ (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 air quality conditions at the proposed development. Full details of the EPUK/IAQM approach are provided in Appendix A2. The approach includes elements of professional judgement, and the experience of the consultants preparing the report is set out in Appendix A3.

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

4 Assessment Approach

Existing Conditions

4.1 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, 2022b);
- 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 LB of Sutton, as well as modelled annual mean NO₂, PM₁₀ and PM_{2.5} concentrations presented in the London Atmospheric Emissions Inventory (LAEI) database (GLA, 2021c). The assessment has been based on 2019 pollutant concentrations, to ensure a worst-case assessment that does not take into account temporary reductions in pollutant concentrations as a result of reduced activity levels during the Covid-19 pandemic; 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) (2022c). 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 PM₁₀ and PM_{2.5} concentrations (Defra, 2022c), which are available for the years 2009 to 2019, show no exceedances of the limit values anywhere in the UK in 2019.

Impact of Existing Sources on Future Residents of the Development

4.2 The impacts of concentrations of nitrogen dioxide, PM₁₀ and PM_{2.5} on new residents of the proposed development have been assessed qualitatively. The assessment considers air quality conditions across the site, taking account of background pollutant concentrations, proximity to local road traffic, and modelled annual mean nitrogen dioxide, PM₁₀ and PM_{2.5} concentrations presented in the LAEI database (GLA, 2021c).

4.3 The assessment examines air quality conditions in 2019, and assumes these are representative at the time the development is occupied; this assumption is considered to be conservative as it is generally expected that nitrogen dioxide, PM₁₀ and PM_{2.5} concentrations will decline in future years; the earliest year of occupation of the proposed development is 2023.

- 4.4 The potential for significant impacts as a results of emissions from trains on the Waterloo to Reading line, near to the proposed development, has been considered by comparing the specific development scenario to the criteria set out in the Defra guidance (Defra, 2021).

‘Air Quality Neutral’

- 4.5 The new London Plan (GLA, 2021a) introduced the requirement for all developments to consider their air quality neutrality, whereas previously only ‘major’ developments were required to do so. The approach to assessing the air quality neutrality of minor developments set out in the GLA’s Air Quality Neutral LPG (GLA, 2021b) Consultation draft has been followed.

5 Baseline Conditions

Relevant Features

- 5.1 The proposed development site is located within an existing residential area, approximately 200 m southwest of St Margarets train station. It is bounded to the north by Godstone Road, to the east by Winchester Road, to the west by existing residential properties and to the south by the St Margarets Business Centre access road and beyond that, the Waterloo to Reading railway line.

Industrial sources

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

Local Air Quality Monitoring

- 5.3 The LBRuT operates three automatic monitoring stations within its area, none of which are close to the proposed development. The Council also operates a number of nitrogen dioxide monitoring sites using diffusion tubes prepared and analysed by Gradko (using the 50% TEA in acetone method), including six locations within approximately 750 m of the proposed development. Results for the years 2013 to 2020, taken from the LBRuT's 2020 and 2021 Air Quality Annual Status Report (London Borough of Richmond upon Thames, 2020b) (London Borough of Richmond upon Thames, 2021a), are summarised in Table 2 and the monitoring locations are shown in Figure 2.

Table 2: Summary of Nitrogen Dioxide (NO₂) Monitoring (2013-2020) ^a

Site No.	Site Type	Location	2013	2014	2015	2016	2017	2018	2019	2020
15	Kerbside	Richmond Road, Twickenham	40	40	37	41	38	34	32	26
56	Roadside	A316 St Margarets	46	38	37	51	50	43	39	31
58	Kerbside	London Road, Twickenham	58	50	46	50	47	43	40	33
59	Kerbside	Whitton Road, Twickenham	46	42	40	44	39	40	34	27
71	Roadside	A316, St Stephens Primary School	-	-	-	-	-	-	52	43
72	Roadside	St Margarets Road	-	-	-	-	-	-	42	33
Objective			40							

^a Exceedances of the objectives are shown in bold.

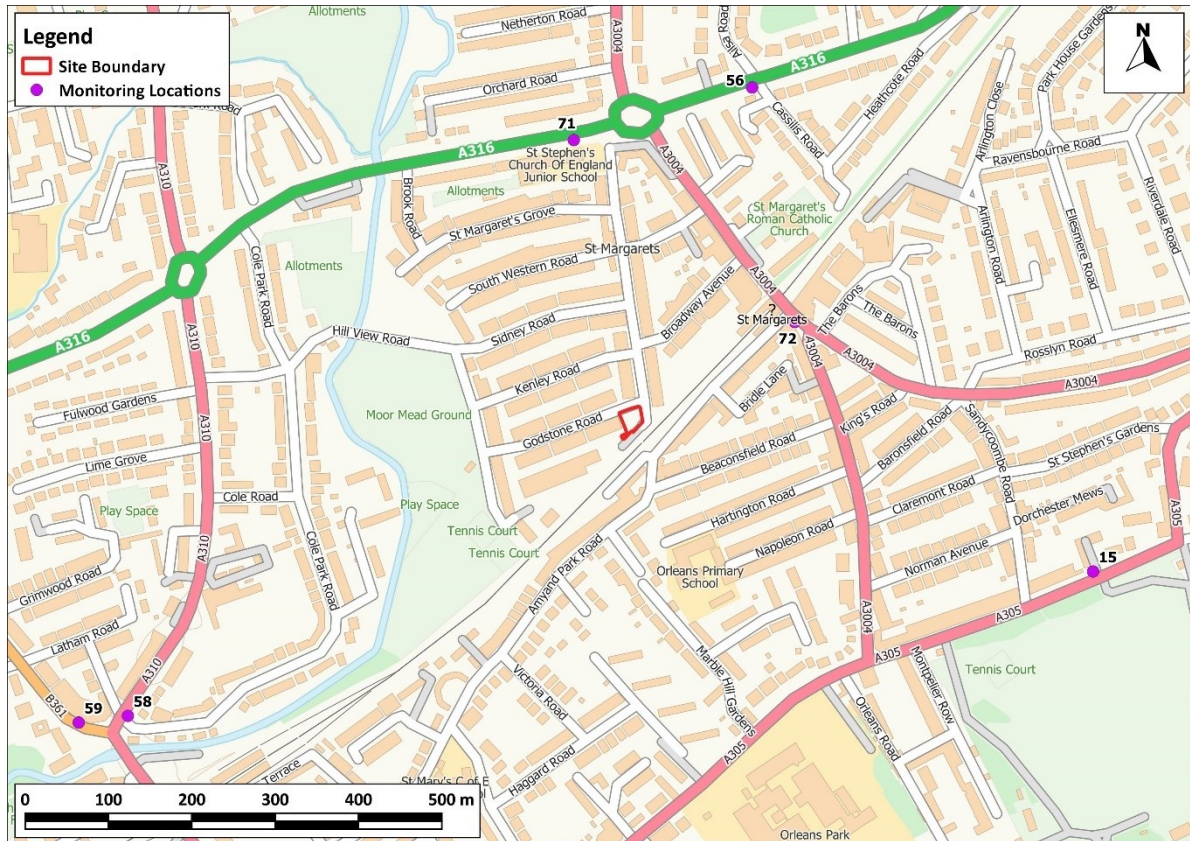


Figure 2: Monitoring Locations

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- 5.4 While 2020 results have been presented in this Section for completeness, they are not relied upon 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.
- 5.5 Measured annual mean concentrations have exceeded the objective at each site in recent years. By 2019, the objective was met at each of the four long-term kerbside and roadside monitoring sites. Measured concentrations at two new sites exceeded the objective; the highest concentration was measured at site 71, located within 3 m of the kerb of the A316 (London Borough of Richmond upon Thames, 2021a) which experiences traffic volumes in excess of 50,000 vehicles per day. The 2019 measured concentration also exceeded the annual mean objective at site 72, which is located within 1 m of the kerb of the A3004 St Margaret's Road and which experiences traffic volumes in excess of 18,000 vehicles per day. These monitoring sites are not representative of the application site.
- 5.6 The measured concentrations are below $60 \mu\text{g}/\text{m}^3$, indicating that the 1-hour mean objective is unlikely to be exceeded.

- 5.7 At all four of the long-term monitoring sites, measured concentrations have reduced between 2013 and 2019.
- 5.8 Available PM₁₀ and PM_{2.5} monitoring data for the years 2013 to 2020 are presented in Table 3, taken from the LBRuT's 2020 and 2021 Air Quality Annual Status Report (London Borough of Richmond upon Thames, 2020b) (London Borough of Richmond upon Thames, 2021a). The measured concentrations have been well below their respective objectives in each of the years presented and have reduced at each site between 2013 and 2019. The GLA target for PM_{2.5} was marginally exceeded in 2018 and 2019.

Table 3: Summary of PM₁₀ and PM_{2.5} Automatic Monitoring (2013-2020)

Site No.	Site Type	Location	2013	2014	2015	2016	2017	2018	2019	2020
PM₁₀ Annual Mean (µg/m³)										
RI1	Roadside	Castlenau Library	22	20	22	20	18	19	15	15
RI2	Suburban	Wetlands Centre	20	18	17	16	15	15	16	16
RHG	Roadside	Mobile AQ Unit	25	-	-	-	18	21	20	-
TD0	Suburban	Teddington AURN	-	-	-	-	-	-	-	13
Objective			40							
PM₁₀ No. Days >50 µg/m³										
RI1	Roadside	Castlenau Library	10	4	5	7	4	1	3	0
RI2	Suburban	Wetlands Centre	6	3	1	3	3	0	3	0
RHG	Roadside	Mobile AQ Unit	8	-	-	-	1	1	8	-
TD0	Suburban	Teddington AURN	-	-	-	-	-	-	-	2
Objective			35							
PM_{2.5} Annual Mean (µg/m³)										
TD0	Suburban	Teddington AURN	17	-	-	-	10	11	12	8
Objective/GLA target			25/10^a							

^a The PM_{2.5} objective, which is to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it. 10 µg/m³ is the GLA target for annual mean PM_{2.5}; again, there is no requirement for local authorities to meet this.

Exceedances of EU Limit Value

- 5.9 There are several AURN monitoring sites within the Greater London Urban Area that have measured exceedances of the annual mean nitrogen dioxide limit value (Defra, 2022d). Furthermore, Defra's roadside annual mean nitrogen dioxide concentrations (Defra, 2022c), which are used to identify and report exceedances of the limit value, identify exceedances of this limit value in 2019 along many roads in London, including the A316 approximately 350 m north of the proposed development. The Greater London Urban Area has thus been reported to the EU as exceeding the limit value for annual mean nitrogen dioxide concentrations. Defra's predicted concentrations for 2023 (Defra, 2020) do

not identify any exceedances within 5 km of the development site. 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.

- 5.10 Defra's Air Quality Plan requires the GLA to prepare an action plan that will "*deliver compliance in the shortest time possible*", and the 2015 Plan assumed that a CAZ was required. The GLA has already implemented an LEZ and a ULEZ, thus the authority has effectively already implemented the required CAZ. These have been implemented as part of a package of measures including 12 Low Emission Bus Zones, Low Emission Neighbourhoods, the phasing out of diesel buses and taxis and other measures within the Mayor's Transport Strategy.

6 Impact Assessment

- 6.1 Defra guidance (Defra, 2021) states that there is only the potential for an exceedance of the annual mean nitrogen dioxide objective with respect to locomotive emissions where there is long-term exposure within 30 m of railway lines, these lines experience a high volume of diesel passenger trains, and the annual mean background concentration of nitrogen dioxide is above 25 $\mu\text{g}/\text{m}^3$. The application site falls outside these criteria; whilst there will be exposure within 30 m of the railway lines, the background concentration is below 25 $\mu\text{g}/\text{m}^3$ (21.0 $\mu\text{g}/\text{m}^3$ in 2023, based on Defra's 2018-based background maps (Defra, 2022a)), and these specific railway lines are not identified in the Defra guidance as having a high volume of diesel passenger trains. It is also judged that there will not be any steam locomotives using the line and which regularly wait within 15 m of the proposed development site. It can, therefore, be concluded that there is no risk of an objective exceedance within the proposed development as a result of emissions from the nearby railway lines.
- 6.2 The proposed development is located at the junction of Godstone Road, which is a quiet residential road, and Winchester Road. Beyond the application site, Winchester Road is only used for access to St Margarets Business Centre. Both roads experience low traffic volumes.
- 6.3 The proposed development is over 200 m from the nearest major road. Defra's Technical Guidance (Defra, 2021) states that "*concentrations fall-off rapidly on moving away from the source*", and defines urban background monitoring locations as being 50 m from major sources of pollution. Pollutant concentrations at the proposed development will therefore be close to background levels.
- 6.4 There is no monitoring of PM_{10} and $\text{PM}_{2.5}$ carried out in close proximity to the proposed development, however, measured concentrations (including at the roadside monitoring site TH0004, adjacent to the A12, which experiences traffic volumes in the region of 40,000 vehicles per day), have been well below the objectives for a number of years. It is, therefore, judged that future residents will be exposed to concentrations of PM_{10} and $\text{PM}_{2.5}$ which are well below the objectives.
- 6.5 Measured nitrogen dioxide concentrations described in Table 2 are all within 0.6 – 2.9 m of the kerb of main roads (based on details presented in the 2020 ASR (London Borough of Richmond upon Thames, 2021a)) and are unlikely to be representative of conditions at the proposed development, where concentrations are likely to be significantly lower.
- 6.6 Modelled annual mean nitrogen dioxide, PM_{10} and $\text{PM}_{2.5}$ concentrations presented in the LAEI database (GLA, 2021c) are consistent with the above; the database shows that the annual mean concentrations in 2019 at the proposed development are 26.0 $\mu\text{g}/\text{m}^3$ for nitrogen dioxide, 15.5 $\mu\text{g}/\text{m}^3$ for PM_{10} , and 10.3 $\mu\text{g}/\text{m}^3$ for $\text{PM}_{2.5}$, which are all well below the relevant objectives. The predicted $\text{PM}_{2.5}$ annual mean concentration marginally exceeds the GLA target in 2019; however, it is the aspiration of the Mayor to meet this target by 2030, and large areas of Greater London currently exceed 10 $\mu\text{g}/\text{m}^3$.

- 6.7 Air quality is expected to continue to improve in future, and therefore it is judged that pollutant concentrations at the proposed development will remain well below the air quality objectives, and will be below the GLA target value, in the anticipated opening year of 2023; future residents will thus experience acceptable air quality.

Significance of Operational Air Quality Effects

- 6.8 The operational air quality effects, without mitigation, are judged to be 'not significant'. This professional judgement is made in accordance with the methodology set out in Appendix A2.
- 6.9 More specifically, the judgement that the air quality effects will be 'not significant', without mitigation, takes account of the assessment that concentrations of nitrogen dioxide, PM₁₀ and PM_{2.5} will be well below the relevant objectives, and that the proposed development will not increase local emissions.
- 6.10 Although the GLA target for PM_{2.5} is predicted to be marginally exceeded at the application site in 2019, this is the case across most of London. It is the aspiration of the Mayor to achieve this target by 2030 and will be driven by regional scale policies.

7 'Air Quality Neutral'

- 7.1 The purpose of the London Plan's requirement that development proposals be 'air quality neutral' is to prevent the gradual deterioration of air quality throughout Greater London. The 'air quality neutrality' of a proposed development, as assessed in this section, does not directly indicate the potential of the proposed development to have significant impacts on human health (this has been assessed separately in the previous section).

Building Emissions

- 7.2 The proposed development does not include any combustion plant for the routine provision of electricity, heating or hot water and will thus have no direct building emissions. It is, therefore, better than air quality neutral in terms of building emissions.

Road Transport Emissions

- 7.3 The proposed development provides one car parking space for each property; this is in line with the maximum parking provision described in Policy T6.1 of the London Plan, which allows up to one space per dwelling for three-bedroom properties in outer London with a PTAL rating of 2 – 3. On this basis, the proposed development can be assumed to meet the requirement to be air quality neutral in terms of transport emissions.

Summary

- 7.4 The proposed development complies with the requirement that all new developments in London should be at least air quality neutral.

8 Mitigation

- 8.1 The EPUK/IAQM guidance advises that good design and best practice measures should be considered whether more specific mitigation is required or not. The proposed development incorporates the following good design and best practice measures:
- adoption of a Construction Method Statement to minimise the environmental impacts of the construction works;
 - provision of an electric vehicle charging point for each parking space;
 - provision of secure cycle parking for each property; and
 - use of air source heat pumps to avoid the need for on-site combustion.
- 8.2 The assessment has demonstrated that new residents of the development will experience acceptable air quality, and that the overall effect will be 'not significant'. It is therefore not considered necessary to propose additional measures for this development.
- 8.3 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 local air quality plan that the GLA is required to produce in order to address limit value exceedances in its area will also help to improve air quality.

9 Conclusions

- 9.1 The air quality impacts associated with the proposed residential development of land at Godstone Road, St Margarets have been assessed. The proposed development is located adjacent to roads which experience low traffic flows, over 200 m away from the nearest major road. Future residents will, therefore, experience acceptable air quality, with pollutant concentrations close to background levels and well below the air quality objectives. Whilst the GLA target for PM_{2.5} is marginally exceeded in 2019, the target is an aspiration for 2030, and such exceedances are commonplace across much of London. Concentrations of nitrogen dioxide, PM₁₀ and PM_{2.5} will decline in future years and are expected to be lower by the opening year of 2023.
- 9.2 The proposed development will generate fewer vehicle movements than the existing use of the site, and heat and hot water will be provided by air source heat pumps. The proposed development will not increase local emissions, and the overall operational air quality effects of the development are judged to be 'not significant'.
- 9.3 The proposed development complies with the requirement that all new developments in London should be at least air quality neutral. It will have no adverse effects on local air quality and does not introduce new exposure within an area of poor air quality. Therefore, no mitigation has been proposed.

Policy Implications

- 9.4 Taking into account these conclusions, it is judged that the proposed development is consistent with Paragraph 185 of the NPPF, being appropriate for its location both in terms of its effects on the local air quality environment and the air quality conditions for future residents. It is also consistent with Paragraph 186, as it will not affect compliance with relevant limit values or national objectives. The proposed development is compliant with Policy SI 1 of the London Plan in the following ways:
- it will not lead to further deterioration of existing poor air quality;
 - it will not cause or extend and exceedances of legal air quality limits;
 - it will not create new exposure to poor air quality; and
 - it will be air quality neutral.
- 9.5 The proposed development is also consistent with Policy LP 10 of LBRuT's Local Plan, as it will reduce environmental impacts relative to the existing use of the site, install electric vehicle charging points at each car parking space and will utilise ASHP's to remove the need for on-site combustion plant for energy provision.

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11 Glossary

AADT	Annual Average Daily Traffic
AQC	Air Quality Consultants
AQMA	Air Quality Management Area
AURN	Automatic Urban and Rural Network
BEB	Building Emissions Benchmark
CAZ	Clean Air Zone
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
EPUK	Environmental Protection UK
Exceedance	A period of time when the concentration of a pollutant is greater than the appropriate air quality objective. This applies to specified locations with relevant exposure
EU	European Union
EV	Electric Vehicle
Focus Area	Location that not only exceeds the EU annual mean limit value for NO ₂ but also has a high level of human exposure
GLA	Greater London Authority
HDV	Heavy Duty Vehicles (> 3.5 tonnes)
HMSO	Her Majesty's Stationery Office
HGV	Heavy Goods Vehicle
IAQM	Institute of Air Quality Management
JAQU	Joint Air Quality Unit
LAQM	Local Air Quality Management
LB	London Borough
LDV	Light Duty Vehicles (<3.5 tonnes)
LEZ	Low Emission Zone
LGV	Light Goods Vehicle
µg/m³	Microgrammes per cubic metre
NO	Nitric oxide

NO₂	Nitrogen dioxide
NO_x	Nitrogen oxides (taken to be NO ₂ + NO)
NPPF	National Planning Policy Framework
Objectives	A nationally defined set of health-based concentrations for nine pollutants, seven of which are incorporated in Regulations, setting out the extent to which the standards should be achieved by a defined date. There are also vegetation-based objectives for sulphur dioxide and nitrogen oxides
OLEV	Office for Low Emission Vehicles
PHV	Private Hire Vehicle
PM₁₀	Small airborne particles, more specifically particulate matter less than 10 micrometres in aerodynamic diameter
PM_{2.5}	Small airborne particles less than 2.5 micrometres in aerodynamic diameter
PPG	Planning Practice Guidance
RDE	Real Driving Emissions
SCR	Selective Catalytic Reduction
SPG	Supplementary Planning Guidance
Standards	A nationally defined set of concentrations for nine pollutants below which health effects do not occur or are minimal
TEA	Triethanolamine – used to absorb nitrogen dioxide
TEB	Transport Emissions Benchmark
TfL	Transport for London
ULEZ	Ultra Low Emission Zone
ZEC	Zero Emission Capable

12 Appendices

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A1 London-Specific Policies and Measures

London Plan

Electric Vehicle Charging

A1.1 To support the uptake of zero tailpipe emission vehicles, Policy T6.1 of the London Plan states:

“All residential car parking spaces must provide infrastructure for electric or Ultra-Low Emission vehicles. At least 20 per cent of spaces should have active charging facilities, with passive provision for all remaining spaces”.

London Environment Strategy

A1.2 The air quality chapter of the London Environment Strategy sets out three main objectives, each of which is supported by sub-policies and proposals. The Objectives and their sub-policies are set out below:

“Objective 4.1: Support and empower London and its communities, particularly the most disadvantaged and those in priority locations, to reduce their exposure to poor air quality.

- *Policy 4.1.1 Make sure that London and its communities, particularly the most disadvantaged and those in priority locations, are empowered to reduce their exposure to poor air quality*
- *Policy 4.1.2 Improve the understanding of air quality health impacts to better target policies and action*

Objective 4.2: Achieve legal compliance with UK and EU limits as soon as possible, including by mobilising action from London Boroughs, government and other partners

- *Policy 4.2.1 Reduce emissions from London’s road transport network by phasing out fossil fuelled vehicles, prioritising action on diesel, and enabling Londoners to switch to more sustainable forms of transport*
- *Policy 4.2.2 Reduce emissions from non-road transport sources, including by phasing out fossil fuels*
- *Policy 4.2.3 Reduce emissions from non-transport sources, including by phasing out fossil fuels*
- *Policy 4.2.4 The Mayor will work with the government, the London boroughs and other partners to accelerate the achievement of legal limits in Greater London and improve air quality*

- *Policy 4.2.5 The Mayor will work with other cities (here and internationally), global city and industry networks to share best practice, lead action and support evidence based steps to improve air quality*

Objective 4.3: Establish and achieve new, tighter air quality targets for a cleaner London by transitioning to a zero emission London by 2050, meeting world health organization health-based guidelines for air quality

- *Policy 4.3.1 The Mayor will establish new targets for PM_{2.5} and other pollutants where needed. The Mayor will seek to meet these targets as soon as possible, working with government and other partners*
- *Policy 4.3.2 The Mayor will encourage the take up of ultra low and zero emission technologies to make sure London's entire transport system is zero emission by 2050 to further reduce levels of pollution and achieve WHO air quality guidelines*
- *Policy 4.3.3 Phase out the use of fossil fuels to heat, cool and maintain London's buildings, homes and urban spaces, and reduce the impact of building emissions on air quality*
- *Policy 4.3.4 Work to reduce exposure to indoor air pollutants in the home, schools, workplace and other enclosed spaces"*

A1.3 While the policies targeting transport sources are significant, there are less obvious ones that will also require significant change. In particular, the aim to phase out fossil-fuels from building heating and cooling and from NRMM will demand a dramatic transition.

Low Emission Zone (LEZ)

A1.4 The LEZ was implemented as a key measure to improve air quality in Greater London. It entails charges for vehicles entering Greater London not meeting certain emissions criteria, and affects diesel-engined lorries, buses, coaches, large vans, minibuses and other specialist vehicles derived from lorries and vans. Since 1 March 2021, a standard of Euro VI has applied for HGVs, buses and coaches, while a standard of Euro 3 has applied for large vans, minibuses and other specialist diesel vehicles since 2012.

Ultra Low Emission Zone (ULEZ)

A1.5 London's ULEZ was introduced on 8 April 2019. The ULEZ currently operates 24 hours a day, 7 days a week in the same area as the current Congestion Charging zone. All cars, motorcycles, vans and minibuses are required to meet exhaust emission standards (ULEZ standards) or pay an additional daily charge to travel within the zone. The ULEZ standards are Euro 3 for motorcycles, Euro 4 for petrol cars, vans and minibuses and Euro 6 for diesel cars, vans and minibuses. The ULEZ does not include any requirements relating to heavy vehicle (HGV, coach and bus) emissions, as these are addressed by the amendments to the LEZ described in Paragraph A1.4.

A1.6 On 25 October 2021, the ULEZ was expanded to cover the entire area within the North and South Circular roads, applying the emissions standards set out in Paragraph A1.5.

Other Measures

A1.7 From 2018 all taxis presented for licencing for the first time must be zero emission capable (ZEC). This means they must be able to travel a certain distance in a mode which produces no air pollutants. From 2018 all private hire vehicles (PHVs) presented for licensing for the first time must meet Euro 6 emissions standards. From 1 January 2020, all newly manufactured PHVs presented for licensing for the first time must be ZEC (with a minimum zero emission range of 10 miles). The Mayor's aim is that the entire taxi and PHV fleet will be made up of ZEC vehicles by 2033.

A1.8 The Mayor has also proposed to make sure that TfL leads by example by cleaning up its bus fleet, implementing the following measures:

- TfL will procure only hybrid or zero emission double-decker buses from 2018;
- a commitment to providing 3,100 double decker hybrid buses by 2019 and 300 zero emission single-deck buses in central London by 2020;
- introducing 12 Low Emission Bus Zones by 2020;
- investing £50m in Bus Priority Schemes across London to reduce engine idling; and
- retrofitting older buses to reduce emissions (selective catalytic reduction (SCR) technology has already been fitted to 1,800 buses, cutting their NOx emissions by around 88%).

A2 EPUK & IAQM Planning for Air Quality Guidance

A2.1 The guidance issued by EPUK and IAQM (Moorcroft and Barrowcliffe et al, 2017) is comprehensive in its explanation of the place of air quality in the planning regime. Key sections of the guidance not already mentioned above are set out below.

Air Quality as a Material Consideration

“Any air quality issue that relates to land use and its development is capable of being a material planning consideration. The weight, however, given to air quality in making a planning application decision, in addition to the policies in the local plan, will depend on such factors as:

- *the severity of the impacts on air quality;*
- *the air quality in the area surrounding the proposed development;*
- *the likely use of the development, i.e. the length of time people are likely to be exposed at that location; and*
- *the positive benefits provided through other material considerations”.*

Recommended Best Practice

A2.2 The guidance goes into detail on how all development proposals can and should adopt good design principles that reduce emissions and contribute to better air quality management. It states:

“The basic concept is that good practice to reduce emissions and exposure is incorporated into all developments at the outset, at a scale commensurate with the emissions”.

A2.3 The guidance sets out a number of good practice principles that should be applied to all developments that:

- include 10 or more dwellings;
- where the number of dwellings is not known, residential development is carried out on a site of more than 0.5 ha;
- provide more than 1,000 m² of commercial floorspace;
- are carried out on land of 1 ha or more.

A2.4 The good practice principles are that:

- New developments should not contravene the Council's Air Quality Action Plan, or render any of the measures unworkable;
- Wherever possible, new developments should not create a new “street canyon”, as this inhibits pollution dispersion;

- Delivering sustainable development should be the key theme of any application;
- New development should be designed to minimise public exposure to pollution sources, e.g. by locating habitable rooms away from busy roads;
- The provision of at least 1 Electric Vehicle (EV) “rapid charge” point per 10 residential dwellings and/or 1000 m² of commercial floorspace. Where on-site parking is provided for residential dwellings, EV charging points for each parking space should be made available;
- Where development generates significant additional traffic, provision of a detailed travel plan (with provision to measure its implementation and effect) which sets out measures to encourage sustainable means of transport (public, cycling and walking) via subsidised or free-ticketing, improved links to bus stops, improved infrastructure and layouts to improve accessibility and safety;
- All gas-fired boilers to meet a minimum standard of <40 mgNO_x/kWh;
- Where emissions are likely to impact on an AQMA, all gas-fired CHP plant to meet a minimum emissions standard of:
 - Spark ignition engine: 250 mgNO_x/Nm³;
 - Compression ignition engine: 400 mgNO_x/Nm³;
 - Gas turbine: 50 mgNO_x/Nm³.
- A presumption should be to use natural gas-fired installations. Where biomass is proposed within an urban area it is to meet minimum emissions standards of 275 mgNO_x/Nm³ and 25 mgPM/Nm³.

A2.5 The guidance also outlines that offsetting emissions might be used as a mitigation measure for a proposed development. However, it states that:

“It is important that obligations to include offsetting are proportional to the nature and scale of development proposed and the level of concern about air quality; such offsetting can be based on a quantification of the emissions associated with the development. These emissions can be assigned a value, based on the “damage cost approach” used by Defra, and then applied as an indicator of the level of offsetting required, or as a financial obligation on the developer. Unless some form of benchmarking is applied, it is impractical to include building emissions in this approach, but if the boiler and CHP emissions are consistent with the standards as described above then this is not essential”.

A2.6 The guidance offers a widely used approach for quantifying costs associated with pollutant emissions from transport. It also outlines the following typical measures that may be considered to offset emissions, stating that measures to offset emissions may also be applied as post assessment mitigation:

- Support and promotion of car clubs;
- Contributions to low emission vehicle refuelling infrastructure;
- Provision of incentives for the uptake of low emission vehicles;
- Financial support to low emission public transport options; and
- Improvements to cycling and walking infrastructures.

Screening

Impacts of the Local Area on the Development

“There may be a requirement to carry out an air quality assessment for the impacts of the local area’s emissions on the proposed development itself, to assess the exposure that residents or users might experience. This will need to be a matter of judgement and should take into account:

- *the background and future baseline air quality and whether this will be likely to approach or exceed the values set by air quality objectives;*
- *the presence and location of Air Quality Management Areas as an indicator of local hotspots where the air quality objectives may be exceeded;*
- *the presence of a heavily trafficked road, with emissions that could give rise to sufficiently high concentrations of pollutants (in particular nitrogen dioxide), that would cause unacceptably high exposure for users of the new development; and*
- *the presence of a source of odour and/or dust that may affect amenity for future occupants of the development”.*

Impacts of the Development on the Local Area

A2.7 The guidance sets out two stages of screening criteria that can be used to identify whether a detailed air quality assessment is required, in terms of the impact of the development on the local area. The first stage is that you should proceed to the second stage if any of the following apply:

- 10 or more residential units or a site area of more than 0.5 ha residential use; and/or
- more than 1,000 m² of floor space for all other uses or a site area greater than 1 ha.

A2.8 Coupled with any of the following:

- the development has more than 10 parking spaces; and/or
- the development will have a centralised energy facility or other centralised combustion process.

A2.9 If the above do not apply then the development can be screened out as not requiring a detailed air quality assessment of the impact of the development on the local area. If they do apply then you proceed to stage 2, which sets out indicative criteria for requiring an air quality assessment. The stage 2 criteria relating to vehicle emissions are set out below:

- the development will lead to a change in LDV flows of more than 100 AADT within or adjacent to an AQMA or more than 500 AADT elsewhere;
- the development will lead to a change in HDV flows of more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere;
- the development will lead to a realigning of roads (i.e. changing the proximity of receptors to traffic lanes) where the change is 5m or more and the road is within an AQMA;
- the development will introduce a new junction or remove an existing junction near to relevant receptors, and the junction will cause traffic to significantly change vehicle acceleration/deceleration, e.g. traffic lights or roundabouts;
- the development will introduce or change a bus station where bus flows will change by more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere; and
- the development will have an underground car park with more than 100 movements per day (total in and out) with an extraction system that exhausts within 20 m of a relevant receptor.

A2.10 The criteria are more stringent where the traffic impacts may arise on roads where concentrations are close to the objective. The presence of an AQMA is taken to indicate the possibility of being close to the objective, but where whole authority AQMAs are present and it is known that the affected roads have concentrations below 90% of the objective, the less stringent criteria are likely to be more appropriate.

A2.11 On combustion processes (including standby emergency generators and shipping) where there is a risk of impacts at relevant receptors, the guidance states that:

“Typically, any combustion plant where the single or combined NO_x 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. As a guide, the 5 mg/s criterion equates to a 450 kW ultra-low NO_x gas boiler or a 30kW CHP unit operating at <95mg/Nm³.

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”.

A2.12 Should none of the above apply then the development can be screened out as not requiring a detailed air quality assessment of the impact of the development on the local area, provided that professional judgement is applied; the guidance importantly states the following:

“The criteria provided are precautionary and should be treated as indicative. They are intended to function as a sensitive ‘trigger’ for initiating an assessment in cases where there is a possibility of significant effects arising on local air quality. This possibility will, self-evidently, not be realised in many cases. The criteria should not be applied rigidly; in some instances, it may be appropriate to amend them on the basis of professional judgement, bearing in mind that the objective is to identify situations where there is a possibility of a significant effect on local air quality”.

A2.13 Even if a development cannot be screened out, the guidance is clear that a detailed assessment is not necessarily required:

“The use of a Simple Assessment may be appropriate, where it will clearly suffice for the purposes of reaching a conclusion on the significance of effects on local air quality. The principle underlying this guidance is that any assessment should provide enough evidence that will lead to a sound conclusion on the presence, or otherwise, of a significant effect on local air quality. A Simple Assessment will be appropriate, if it can provide this evidence. Similarly, it may be possible to conduct a quantitative assessment that does not require the use of a dispersion model run on a computer”.

A2.14 The guidance also outlines what the content of the air quality assessment should include, and this has been adhered to in the production of this report.

Assessment of Significance

A2.15 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 within the EPUK/IAQM guidance has, therefore, been used in this assessment. The guidance is that the assessment of significance should be based on professional judgement, with the overall air quality impact of the development described as either ‘significant’ or ‘not significant’. In drawing this conclusion, the following factors should be taken into account:

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

- the potential for cumulative impacts. In such circumstances, several impacts that are described as '*slight*' individually could, taken together, be regarded as having a significant effect for the purposes of air quality management in an area, especially where it is proving difficult to reduce concentrations of a pollutant. Conversely, a '*moderate*' or '*substantial*' impact may not have a significant effect if it is confined to a very small area and where it is not obviously the cause of harm to human health; and
- the judgement on significance relates to the consequences of the impacts; will they have an effect on human health that could be considered as significant? In the majority of cases, the impacts from an individual development will be insufficiently large to result in measurable changes in health outcomes that could be regarded as significant by health care professionals.

A2.16 The guidance is clear that other factors may be relevant in individual cases. It also states that the effect on the residents of any new development where the air quality is such that an air quality objective is not met will be judged as significant.

A2.17 A judgement of the significance should be made by a competent professional who is suitably qualified. A summary of the professional experience of the staff contributing to this assessment is provided in Appendix A3.

A3 Professional Experience

Stephen Moorcroft, BSc (Hons) MSc DIC CEnv MEnvSc MIAQM

Mr Moorcroft is a Director of Air Quality Consultants and has worked for the company since 2004. He has over 35 years' postgraduate experience in environmental sciences. Prior to joining Air Quality Consultants, he was the Managing Director of Casella Stanger, with responsibility for a business employing over 100 staff and a turnover of £12 million. He also acted as the Business Director for Air Quality services, with direct responsibility for a number of major Government projects. He has considerable project management experience associated with Environmental Assessments in relation to a variety of development projects, including power stations, incinerators, road developments and airports, with particular experience related to air quality assessment, monitoring and analysis. He has contributed to the development of air quality management in the UK, and has been closely involved with the LAQM process since its inception. He has given expert evidence to numerous public inquiries, and is frequently invited to present to conferences and seminars. He is a Member of the Institute of Air Quality Management.

Dr Denise Evans, BSc (Hons) PhD MEnvSc MIAQM

Dr Evans is an Associate Director with AQC, with more than 22 years' relevant experience. She has prepared air quality review and assessment reports for local authorities, and has appraised local authority air quality assessments on behalf of the UK governments, and provided support to the Review and Assessment helpdesk. She has extensive modelling experience, completing air quality and odour assessments to support applications for a variety of development sectors including residential, mixed use, urban regeneration, energy, commercial, industrial, and road schemes, assessing the effects of a range of pollutants against relevant standards for human and ecological receptors. Denise has acted as an Expert Witness and is a Member of the Institute of Air Quality Management.