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WOODSIDE (READING) LTD

75-77 LONDON STREET, READING

AIR QUALITY ASSESSMENT

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75-77 LONDON STREET, READING
AIR QUALITY ASSESSMENT

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1 INTRODUCTION

RF Environmental Ltd (RFE) has been commissioned to undertake an air quality assessment in support of a planning application for a proposed residential development at 75-77 London Street within the administrative boundary of Reading Borough Council (RBC).

The operational phase of the proposed development has the potential to result in air quality impacts on introduced receptors which may be exposed to poor air quality and the existing receptors due to a change in pollutant concentrations as a result of the proposed development.

The construction phase of the proposed development has the potential to result in temporary air quality impacts due to dust generating activities and from construction vehicle exhaust emissions.

Emissions from road vehicles are a key source of air pollution. The main pollutants of health concern from road traffic are nitrogen dioxide (NO_2) and fine particles (PM_{10} and $PM_{2.5}$). These pollutants have been considered in this assessment.

1.1 Proposed Development

The proposed development consists of two parts. Part 1 involves the redevelopment of the existing Georgian building, including an extension and the introduction of three flats at ground floor level. Part 2 consists of the construction of two buildings comprising a total of 12 no. new flats. Seven car parking spaces are included within the proposals and electrical charging points are proposed.

The site plans are presented in Figure A1 of Appendix A.

The proposed first year of construction is 2023 and the earliest proposed operational year is 2023.

1.2 Site Location

The site is located in an urban setting within the administrative area of RBC. The surrounding area is a mix of commercial and residential properties. The site is bound by the A327 to the west of the site. This road comprises a single one-way lane for general traffic travelling southwards from Queens Road, a bus and taxi lane either side and a recess dedicated for short term parking outside the proposed development. The Queens Road junction is located c. 165m north of the site, which is a major multilane road. The site is bounded by East Street to the west, which is a dead-end road, and bound by adjoining properties to the south and north.

2 LEGISLATION, POLICY AND GUIDANCE

2.1 Legislation

The following pieces of legislation are relevant to the assessment:

Environment Act 2021
The Environment Act 2021[1] makes provisions about targets, plans and policies about air quality. Part 1 of the Act requires the Secretary of State to set long-term targets for priority areas including air quality. Under the Act, the Secretary of State will need to set a target for $PM_{2.5}$. Part 4 of the Act amends the Environment Act 1995[2] and the Clean Air Act 1993[3].

Environment Act 1995
The Environment Act 1995 requires the Secretary of State to produce and review a national Air Quality Strategy which contains standards, objectives and measures for improving air quality. The UK government and the devolved administrations published the latest Air Quality Strategy for England, Scotland, Wales and Northern Ireland in July 2007[4]. The Strategy provides air quality standards and objectives for key air pollutants, which are designed to protect human health and the environment.

Part 4 of the Environment Act requires every local authority to carry out a review on the likely future air quality within the relevant period within the authority's area. Where, as a result of an air quality review, it appears that any air quality standards or objectives are not being achieved, or are not likely within the relevant period to be achieved, the local authority shall designate an air quality management area (AQMA). If a local authority has designated an AQMA, the local authority must prepare an action plan in relation to that area.

Local authorities in England undertake review and assessment against the Strategy's national objectives prescribed in the Air Quality Regulations (2000)[5], as amended[6].

Environmental Protection Act (1990)
Section 79 of the Environmental Protection Act 1990[7] allows local authorities to take enforcement action if dust emissions become a statutory nuisance.

[1] 2021 c.30. Environment Act 2021. HMSO.
[2] 1995 c.25. Environment Act 1995. HMSO.
[3] 1993 c 11. Clean Air Act 1993. HMSO
[4] The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Department for Environment, Food and Rural Affairs in partnership with the Scottish Executive, Welsh Assembly Government and Department of the Environment Northern Ireland, July 2007
[5] SI 2000 No. 928. Environmental Protection, England. The Air Quality (England) Regulations 2000. HMSO.
[6] SI 2002 No. 3043. Environmental Protection, England. The Air Quality (England) (Amendment) Regulations 2002. HMSO.
[7] 1990 c.43. Environmental Protection Act. HMSO.

2.2 Planning Policy

2.2.1 National Policies

National Planning Policy Framework (NPPF)

The National Planning Policy Framework (NPPF) (2021)[8] sets out the government's planning policies for England and how these are expected to be applied.

Paragraph 105 refers to the promotion of sustainable transport and how this can contribute to improving air quality. It states:

"The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making".

Paragraph 186 focusses on how air quality should be considered during planning decisions. It states:

"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".

2.2.2 Local Policy

RBC Local Air Quality Management

RBC's Local Plan[9] was adopted on 4th November 2019. The Local Plan sets out the planning policies for development in Reading up to 2036 and is the main consideration in deciding planning applications. The Local Plan replaces previous development plans including the Core Strategy, Reading Central Area Action Plan and Sites and Detailed Policies Document.

The Local Plan includes a policy on air quality which aims to ensure that increased development within Reading does not lead to a net increase in emissions as well as ensuring any increased exposure within the poorest areas of air quality is accompanied by appropriate mitigation. Policy EN15 on Air Quality states that:

[8] Ministry of Housing, Communities and Local Government. National Planning Policy Framework. July 2021.
[9] Reading Borough Council. Reading Borough Local Plan 2019.

"Development should have regard to the need to improve air quality and reduce the effects of poor air quality.

i. Development that would detrimentally affect air quality will not be permitted unless the effect is to be mitigated. The following criteria should be taken into account:

- *Whether the proposal, including when combined with the cumulative effect of other developments already permitted, would worsen air quality;*
- *Whether the development is within, or accessed via, an Air Quality Management Area; and*
- *Whether it can be demonstrated that a local worsening in air quality that would not detrimentally affect human health or the environment would be offset by an overall improvement in air quality, for instance through reduction in the need to travel.*

ii. Where a development would introduce sensitive uses (such as residential, schools and nurseries, hospitals, care facilities) into, or intensify such uses within, an Air Quality Management Area, detrimental effects on that use will be mitigated. Mitigation measures should be detailed in any planning application. If there are significant detrimental effects that cannot be mitigated, the application should be refused.

iii. Where required, planning obligations will be used to secure contributions to measures to tackle poor air quality or for air quality monitoring."

2.3 Guidance

National Planning Practice Guidance

The government has revised and updated the national planning practice guidance[10] to support the NPPF in order to make it more accessible. The guidance includes advice on: planning and air quality; the role of Local Plans with regard to air quality; when air quality is likely to be relevant to a planning decision; what should be included within an air quality assessment; and how impacts on air quality can be mitigated. The guidance encourages early communication with local planning authorities, which has been included in the proposed development assessment work undertaken to date.

Construction Guidance

The Institute of Air Quality Management (IAQM)[11] has published guidance on the assessment of dust from construction and demolition. Based on this guidance, the main air quality impacts that may arise during construction activities are:

- dust deposition, resulting in the soiling of surfaces;
- visible dust plumes, which are evidence of dust emissions;

[10] Ministry of Housing, Communities and Local Government. 2019. Planning Practice Guidance: Air Quality. Available from: https://www.gov.uk/guidance/air-quality--3 (Accessed 5 January 2022)

[11] Holman et al (2014). IAQM Guidance on the assessment of dust from demolition and construction, Institute of Air Quality Management, London. www.iaqm.co.uk/text/guidance/construction-dust-2014.pdf

- elevated PM_{10} concentrations, as a result of dust generating activities on site; and
- an increase in concentrations or airborne particles and nitrogen dioxide due to exhaust emissions from diesel powered vehicles and equipment on site.

Activities on construction sites are assessed to reflect their different potential impacts and the construction activities are sub-divided between demolition, earthworks, construction and trackout. The sensitivity of the area is taken into account and the assessment is used to define appropriate mitigation measures.

Operational Guidance

For operational impacts, the Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) produced guidance to ensure that air quality is adequately considered in the land-use planning and development control processes[12].

The guidance document is particularly applicable to assessing the effect of changes in exposure of members of the public resulting from residential and mixed-use developments, especially those within urban areas where air quality is poorer. It is also relevant to other forms of development where a proposal could affect local air quality and for which no other guidance exists.

2.4 Air Quality Criteria

The ambient air quality criteria for the protection of public health were set by the standards implementing the UK National Air Quality Strategy (AQS).

The current air quality standards and objectives relevant to the LAQM framework and this assessment are summarised in Table 2.1.

Pollutant	Time Period	Objective
Nitrogen Dioxide (NO_2)	1-hour Mean	200 µg/m^3 not to be exceeded more than 18 times a year
	Annual Mean	40 µg/m^3
PM_{10}	1-hour Mean	50 µg/m^3 not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m^3
$PM_{2.5}$[a]	Annual Mean	25 µg/m^3

TABLE 2.1: UK AIR QUALITY OBJECTIVES FOR NITROGEN DIOXIDE AND PARTICULATES

a The PM2.5 objective is not currently covered in Regulations and there is currently no requirement for local authorities to meet it.

[12] Land-Use Planning & Development Control: Planning for Air Quality. Guidance from Environmental Protection UK and the Institute of Air Quality Management for the consideration of air quality within the land-use planning and development control processes. EPUK & IAQM. January 2017

3 ASSESSMENT METHOD

3.1 Baseline method

A review of baseline conditions has been undertaken to understand existing air quality in the area.

3.1.1 Data sources

3.1.1.1 Local Air Quality Management

The latest publicly-available air quality monitoring data are for 2019, which is considered the most representative baseline year due to the impacts of the Covid pandemic in more recent years.

Monitoring data collected by RBC as part of their Local Air Quality Management (LAQM) duties was obtained to inform the baseline.

3.1.1.2 Defra Background Maps

The background pollutant concentrations across the study area have been defined using the national pollution maps published by Defra[13]. These cover the whole of the UK on a 1x1 km grid and are published for each year from 2018 until 2030.

Defra monitoring data was used to predict future concentrations of NO_2, PM_{10} and $PM_{2.5}$ at the proposed development site, which provides an indication of the concentrations for the opening year of the proposed development and the predicted trend in background pollutants over time.

Predictions of total pollutant concentrations include contributions from local emissions sources (such as roads, chimney stacks, etc.) and local background concentrations.

3.1.2 Receptors

The AQS objectives only apply where members of the public are likely to be regularly present for the averaging time of the objective. The IAQM guidance (2014) states that the annual mean objectives apply to all locations where members of the public might be regularly exposed. LAQM Technical Guidance (TG16)[14] provides the following examples of where annual mean AQS Objectives should apply:

- residential properties;
- schools;
- hospitals; and
- care homes.

The 24-hour mean objective applies to all locations where the annual mean objective would apply, together with hotels and gardens of residential properties. The one-hour mean

[13] Department for Environment, Food and Rural Affairs. (Defra). 2018. Background mapping for local authorities. https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018 (Accessed 17 January 2022).
[14] Defra. 2018. Local Air Quality Management. Technical Guidance TG16

objective applies at these locations as well as at any outdoor location where a member of the public might reasonably be expected to stay for one hour or more, such as shopping streets, parks and sports grounds, as well as bus stations and railway stations that are not fully enclosed.

Annual mean NO_2 concentrations over 60 µg/m^3 are used as an indication of potential exceedances of the 1-hour mean NO_2 objective.

Online mapping and aerial photograph resources was used to identify existing receptors and the location of future roadside receptor locations.

The development will introduce residential receptors to the area, which are considered as part of this assessment.

Dust deposition due to demolition, earthworks, construction and trackout has the potential to affect sensitive habitats and plant communities. The sensitivity of receptors can be defined as High, Medium or Low, as defined in the IAQM construction dust guidance[15]. The guidance only considers designated ecological sites within 50 m to have the potential to be impacted by the construction works. There are no designated ecological sites within 50 m of the site boundary or those roads along which material may be tracked, thus ecological impacts will not be considered further.

3.2 Assessing Impacts of Construction Phase

There is the potential for fugitive dust emissions to occur during the construction-phase activities. The dust emissions from construction have been assessed in accordance with the IAQM document 'Guidance on the Assessment of Dust from Demolition and Construction'.

The IAQM guidance requires that construction dust impacts are assessed up to 350m from the boundary of the site. The construction phase study area also covers 50m from the edge of the road(s) used by construction vehicles on the public highway up to 500m from the site exit. For small sites this is 50m from the site exit.

3.3 Assessing Impacts of the Operational Phase

The first step in considering the operational impacts of the proposed development has been to screen the proposed development against the criteria set out in the EPUK/IAQM guidance. Where impacts can be screened out there is no need to progress to a more detailed assessment.
The first stage is intended to screen out smaller development and/or developments where impacts can be considered to have insignificant effects. To meet the criteria in Stage 1, the development must have:

- 10 or more residential units or a site area of more than 0.5 ha; or
- more than 1,000 m^2 of floor space for all other uses or a site area greater than 1 ha.

[15] Institute of Air Quality Management. Guidance on the assessment for dust from demolition and construction. V1.1. 2014.

This must be combined with any of the following:

- more than 10 parking spaces within the development; or
- the development has a centralised energy facility or combustion process.

The development is proposing 15 residential units and seven parking spaces. Therefore, an air quality assessment looking at the impacts of the local area on the development and the impacts of the proposed development on the area has been carried out.

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, the criteria for which are set out below. 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 is likely to be more appropriate.

- A change of LDV flows of:- more than 100 annual average daily traffic (AADT) within or adjacent to an AQMA- more than 500 AADT elsewhere.
- A change of HDV flows of: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere.
- Where the change is 5m or more and the road is within an AQMA.
- Where a junction is added or removed close to existing receptors
- Where one or more substantial combustion processes, where there is a risk of impacts at relevant receptors.

4 BASELINE CONDITIONS

The site is located in urban surroundings in a mixed residential and commercial area. The site is bounded to the west by the A327 and to the east by East Street.

4.1 Air Quality Management Areas

There is currently one large AQMA in Reading covering all the major arterial roads in and out of the town as well as the central area. The AQMA is declared for exceedances of the Annual NO_2 objective.

The site is situated within the AQMA.

4.2 Local Air Quality Monitoring

Data were taken from RBC's latest air quality annual status report[16].

RBC undertakes monitoring of nitrogen dioxide (NO_2) concentrations using passive diffusion tubes across the administrative area. RBC operates three automatic monitoring stations measuring NO_2 and PM_{10}. RBC reports on one AURN monitoring site measuring NO_2, PM_{10} and $PM_{2.5}$. RBC undertook nitrogen dioxide monitoring across 60 diffusion tube sites during 2019.

The closest roadside automatic monitoring station (RD4) is located on the A4 and measures NO_2 and $PM_{10.}$ RD4 is located c. 1.8km east of the site and situated 3.5m from the kerbside.

The diffusion tube nearest to the site is located at Wycliffe Baptist Church on Sidmouth Street, c. 195m northeast of the site, and is situated 3.5m from the kerb. The next closest diffusion tube monitoring location to the site is located c.200m southwest at 44 Crown Street on the A4, near the A327 junction, and is situated 4.5m from the kerb. There is an additional diffusion tube (Red Cow) located a short distance away on the junction of the A4 and the A327 and is located 1.5m from the kerb.

The closest NO_2 urban background monitoring location is an AURN site located over 1.5km east of the site in Reading Old Cemetery.

The results are summarised in TABLE 4.1 and the monitoring locations are shown in Figure A2 of Appendix A.

[16] RBC 2019 Air Quality Annual Status Report. June 2020.

Site ID	Easting, Northing	Site Type	Annual Mean Concentration (µg/m³)				
			2015	2016	2017	2018	2019
RD4	473703, 173409	Roadside	-	32	28	30	27
Wycliffe Baptist Church	472071, 173157	Roadside	-	49	40	37	39
44 Crown Street	471717, 172856	Roadside	36	37	35	34	29
Red Cow	471685, 172853	Roadside	38	38	35	38	31
Reading AURN	473441, 173198	Urban Background	22	34	29	26	22

TABLE 4.1: SUMMARY OF ANNUAL MEAN NO_2 MONITORING

Notes:

Exceedances of the NO2 annual mean AQS objective of 40 µg/m³ are shown in bold.

NO_2 annual means in excess of 60 µg/m³, indicating a potential exceedance of the NO2 hourly mean AQS objective are shown in bold and underlined.

Site ID	Easting, Northing	Site Type	Annual Mean Concentration (µg/m³)				
			2015	2016	2017	2018	2019
RD4	473703, 173409	Roadside	-	19	18	17	17
Reading AURN	473441, 173198	Urban Background	12	13	12	13	13

TABLE 4.2: SUMMARY OF ANNUAL MEAN PM_{10} MONITORING

Site ID	Easting, Northing	Site Type	Annual Mean Concentration (µg/m³)				
			2015	2016	2017	2018	2019
Reading AURN	473441, 173198	Urban Background	7	9	10	7	8

TABLE 4.3: SUMMARY OF ANNUAL MEAN $PM_{2.5}$ MONITORING

Monitoring data between 2015 and 2019, presented in TABLE 4.1, show that the long-term roadside and urban background sites remained within the AQS objective of 40 µgm^{-3} for mean annual NO_2. The diffusion tube monitoring results show an overall downward trend since 2016.

Of the nearby monitoring locations, the diffusion tube monitoring station on Crown Street, near the A327 junction, is perhaps closest in nature to the development site. At 4.5m from the kerbside, it is situated slightly further from the kerbside in comparison to the proposed development. The closest façade of the proposed development is situated c. 3.5m from the kerb and approximately 1.8m from the kerb is designated parking space and therefore the roadside is situated c. 5.3m from the closest façade of the proposed development. The monitoring station is well within the nitrogen dioxide annual mean objective.

The Wycliffe Baptist Church monitoring location is within 10% of the annual mean objective, however, the monitoring location is within 50m of the Queens Road junction, where traffic is likely to be queuing to join Queens road. This monitoring location is therefore likely to experience increased levels of congestion, and therefore increased levels of nitrogen dioxide levels, in comparison to the proposed development site.

The urban background monitoring location shows a downward NO_2 trend from 2015 to 2019.

The measured diffusion tube monitoring concentrations show that the NO_2 concentrations at the proposed development are likely to be below the annual mean AQS objective of 40 ug/m^3.

The Local Authority guidance TG16[17] states that when the annual mean NO_2 concentration at diffusion tube locations is less than 60 µgm^{-3}, the short term (one-hour) objective for NO_2 is unlikely to be exceeded. The data in TABLE 4.1 demonstrate that the one-hour objective is not likely to have been breached between 2015 and 2019.

Monitoring data presented in TABLE 4.2 shows that PM_{10} annual mean and 24-hour mean background concentrations have been within the AQO in all reported years.

Monitoring data presented in TABLE 4.3 shows that $PM_{2.5}$ annual mean background concentrations have been within the AQO in all reported years.

4.3 Background Concentrations

Estimated background concentrations at the proposed development have been determined for the baseline year of 2019, the construction year of 2023 and the earliest proposed operational year of 2023 using Defra's background maps[18]. Concentrations of NO_2, PM_{10} and $PM_{2.5}$ have been extracted for the grid square centred on 471500, 173500, which overlays the site. The background concentrations are set out in TABLE 4.4. The background concentrations are all below the objectives in 2019 and predict a downward trend through to 2023.

[17] Defra. 2018. Local Air Quality Management. Technical Guidance TG16

[18] Department for Environment, Food and Rural Affairs. (Defra). 2018. Background mapping for local authorities. [online] https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018. Accessed 17 January 2022

Site ID	2019	2023
NO_2	34.4	31.5
PM_{10}	18.8	17.5
$PM_{2.5}$	13.5	12.4

TABLE 4.4: PREDICTED ANNUAL MEAN BACKGROUND POLLUTANT CONCENTRATIONS (µg/m³)
Notes:
The PM2.5 objective, which is currently met, is not in Regulations and there is no requirement for local authorities to meet it.

4.4 Summary

The site is located in urban surroundings comprising a mixture of commercial and residential units. Annual mean NO_2 concentrations measured at the automatic and diffusion tube monitoring locations nearby to the site show that annual mean NO_2 concentrations are within the AQS objective in all reported years. The NO_2 concentrations appear to have a downward trend over the reported years.

PM_{10} annual mean and 24-hour mean background concentrations have been within the AQS objective in all reported years.

$PM_{2.5}$ annual mean background concentrations have been within the AQS objective in all reported years.

Annual mean NO_2 concentrations recorded at the passive roadside diffusion tube monitoring locations are below 60 µg/m^3, which indicates the hourly mean NO_2 objective is unlikely to be exceeded. Mean hourly NO_2 concentrations recorded at the continuous roadside and urban background monitors did not exceed the 200 µg/m^3 objective in all reported years.

Modelled Defra background annual mean pollutant concentrations at the 1km x 1km grid square overlaying the site, predict that NO_2, PM_{10} and $PM_{2.5}$ pollutants currently meet the AQS objective and show a downward trend throughout future years.

The Air Quality Consultants (AQC) report Nitrogen Dioxide and Nitrogen Oxides Trends in the UK 2005 to 2018[19] indicates that there is evidence from real-world testing that the introduction of the latest vehicle emissions standards (Euro 6 for light duty vehicles (LDVs) and Euro VI for heavy duty vehicles) has resulted in emissions reductions. Over the next few years, Euro 6/VI vehicles will dominate the fleet and will lead to lower NOx emissions.

Overall, the baseline data indicates that annual NO_2, PM_{10} and $PM_{2.5}$ objectives are currently being met at the development site and are expected to continue to do so.

[19] AQC, 2019. Nitrogen Dioxide and Nitrogen Oxides Trends in the UK 2005 to 2018.

5 CONSTRUCTION PHASE IMPACT ASSESSMENT

5.1 Dust and Emissions Screening

An assessment of construction dust and emissions is required as there are human receptors within 50 m of the site and 50 m from the site exit. As there are human and ecological receptors within 50 m of the site, human health impacts, dust soiling and ecological impacts are considered in this assessment.

5.2 Dust Emission Magnitude

Quantities and magnitude classifications used below correspond to those in IAQM guidance and is based on the information currently available.

Demolition

The existing hall to the rear of 75-77 London Street with potentially dusty construction material, including concrete and brick, will be demolished. The total building volume is small at approximately 8,600m^3. Demolition will take place over approximately three months. The site is considered to have a 'Medium' dust emission magnitude for demolition.

Earthworks

Earthwork activities will include excavating material over a 2000m^2 site area. The soil type is part of the Lambeth group formed of Clay, Silt and Sand [20] with a high potential for dust release. The peak number of heavy earth-moving vehicles on site at one time is estimated between 5 to 10. Earthworks activities will take place for less than six months. The site is considered to have a 'Small' dust emission magnitude for earthworks.

Construction

The construction activities involves the ground floor rear extension to the existing building and the construction of two blocks of flats using brick and block. The total building volume to be constructed is small at 670m^3 for the extension and 2,500m^3 for the two blocks of flats. Construction is expected to take approximately one year. The site is considered to have a 'Small' dust emission magnitude for construction.

Trackout

The number of heavy-duty vehicle (HDV) outward movements is likely to be between approximately 5 per day. Waste material and spoil from the site will be removed using grab lorries. Site vehicles will remain on paved roads and will access the site from East Street. The site is considered to have a 'Small' dust emission magnitude for trackout.

[20] British Geological Survey. 2017. Geology of Britain Viewer. Natural Environment Research Council. http://mapapps.bgs.ac.uk/geologyofbritain/home.html. Accessed 06/01/2022.

Activity	Dust Emission Magnitude
Demolition	Medium
Earthworks	Small
Construction	Small
Trackout	Small

TABLE 5.1: DUST EMISSION MAGNITUDE

5.3 Sensitivity of the Area

There are between 10 and 100 receptors with a high sensitivity to dust soiling and health effects within 20 m of the site boundary. Nearby receptors include residential properties which have a high sensitivity to dust soiling and health effects.

The sensitivity of the area to dust soiling effects is defined as 'High' for all activities, due to the number and proximity of sensitive receptors. This is summarised in TABLE 5.2.

The sensitivity of the area to human health impacts is defined as 'Low' for all activities, due to the number and proximity of sensitive receptors and a predicted background annual mean PM_{10} concentration of less than 24 µg/m^3 in the vicinity of the site.

Sensitivity of the Area	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	High
Human Health	Low	Low	Low	Low

TABLE 5.2: SENSITIVITY OF THE AREA

5.4 Dust Risk

The likely risk of dust effects, based on the contents of TABLE 5.1 and TABLE 5.2, at nearby sensitive receptors without mitigation in place is summarised in TABLE 5.3. There is a 'Low' risk from most activities causing dust soiling effects and health effects. There is a 'Medium' risk from demolition activities causing dust soiling effects.

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

TABLE 5.3: SUMMARY DUST RISK CATEGORY

5.5 Mitigation

The dust risk assessment determines that the site is a “Medium Risk Site” in respect of demolition. The IAQM guidance provides a 51-point list of potential mitigation measures and suggests where these measures are highly recommended, desirable or not required based upon the risk of the site. The measures relevant to this site, based on the dust risk category, are presented in

Appendix B: Mitigation Measures.

The IAQM guidance details that the dust risk assessment should inform an air quality and dust management plan, to confirm the dust and air quality emission control measures to be implemented, that non-road mobile machinery standards will be met and monitoring methods and complaint response procedures. The air quality and dust management plan may form part of a construction environmental management plan.

5.6 Residual Effects

With appropriate mitigation in place, any dust impacts will be negligible.

6 OPERATIONAL PHASE IMPACT ASSESSMENT

6.1 Traffic

It is unlikely that the proposed development will introduce more than 100 AADT flows or more than 50 AADT HDV flows. Additionally, there are no proposed changes to the road layout. Therefore, a detailed assessment of road traffic impacts associated with the proposed development is not required and traffic associated with the proposed development is expected to have a negligible impact on local air quality when considered in accordance with IAQM Guidance.

6.2 Energy Plant

The development is proposing ground source heat pumps which will eliminate the gas supply to the building. Therefore, no assessment of energy plant is required and there will be no air quality impact from energy plant at the proposed development.

7 CONCLUSIONS

The proposed development will introduce new residential receptors to the area. Baseline conditions indicate that NO_2 and PM_{10} objectives are currently being met and will continue to be met in the earliest proposed operational year of 2023. Therefore, the proposed development will not introduce new receptors into an area where objectives are breached and the site is appropriate for the proposed use.

The traffic associated with the proposed development is predicted to have a negligible impact on local air quality.

The energy plant associated with the proposed development will use an electrical supply only and therefore there will be no air quality impact from energy plant at the proposed development.

The construction works have the potential to create dust. During the construction phase it will therefore be necessary to adopt mitigation measures to minimise dust emissions. With the implementation of mitigation measures, the dust impacts from the construction phase will be negligible in accordance with IAQM guidance.

Appendix A: Figures

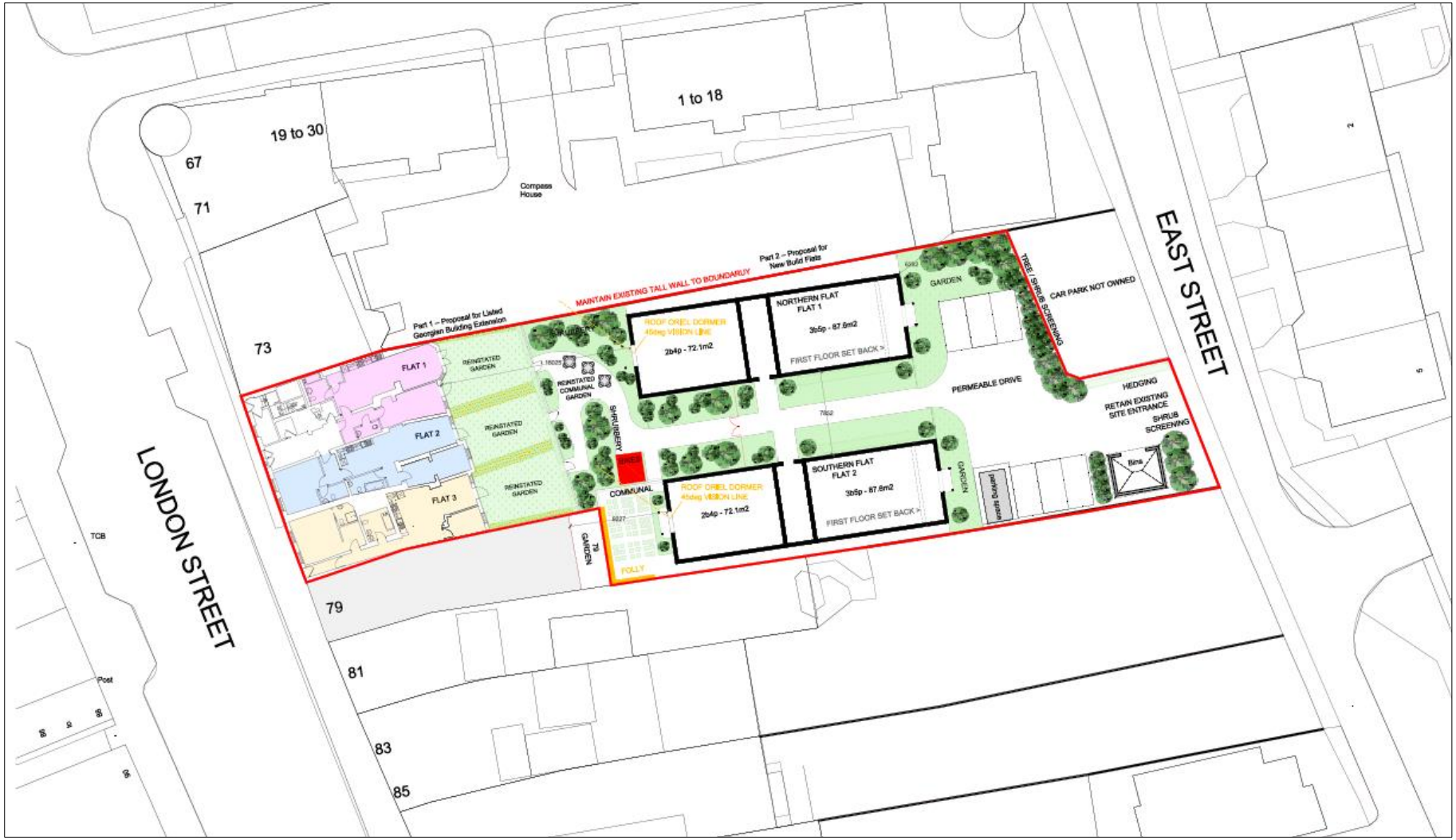

FIGURE A1: PROPOSED SITE LAYOUT

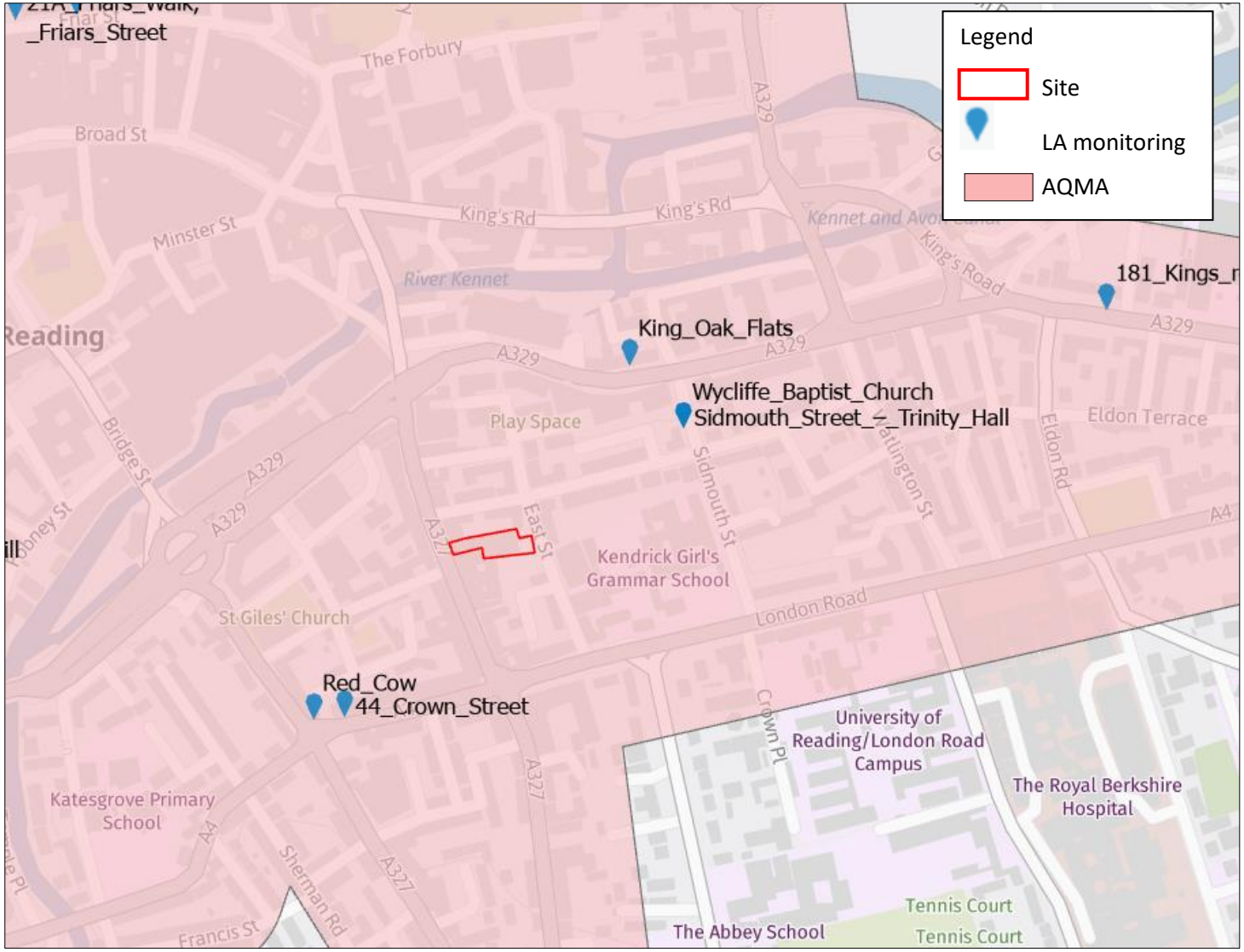

FIGURE A2: SITE LOCATION AND LA MONITORING LOCATIONS

Appendix B: Mitigation Measures

Mitigation Measures	Low Risk	Medium Risk	High Risk
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
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, realtime PM10 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 offsite, and the action taken to resolve the situation in the log book.	H	H	H
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 PM10 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.	N	H	H

Preparing and maintaining the site		H	H
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
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	H	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
Measures specific to 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
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
Measures specific to 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
Measures specific to 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
47. Record all inspections of haul routes and any subsequent action in a site log book.	D	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

TABLE B3: IAQM MITIGATION MEASURES