Thomas Homes Ltd

Land at Abingdon Road, Clifton Hampden

Air Quality Assessment

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RSK GENERAL NOTES

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Title: Land at Abingdon Road, Clifton Hampden: Air Quality Assessment

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Abbreviations

AADT	Annual Average Daily Traffic
AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
AQS	Air Quality Standard
CHP	Combined Heat and Power
Defra	Department for Environment, Food and Rural Affairs
DMP	Dust Management Plan
EC	European Commission
EPUK	Environmental Protection UK
EU	European Union
HDV	Heavy Duty Vehicle
IAQM	Institute of Air Quality Management
LAQM	Local Air Quality Management
LAQM.TG(22)	Local Air Quality Management Technical Guidance (2022)
LDV	Light Duty Vehicle
NO_2	Nitrogen dioxide
NO_x	Oxides of nitrogen
NPPF	National Planning Policy Framework
$PM_{2.5}$	Particulate matter of size fraction approximating to <2.5mm diameter
PM_{10}	Particulate matter of size fraction approximating to <10mm diameter
RSK	RSK Environment Limited
SODC	Salford City Council
UK-AIR	UK Atmospheric Information Resource

Contents

1 INTRODUCTION

1.1 Background

RSK Environment Ltd (RSK) was commissioned to undertake an assessment of the potential air quality impacts associated with the proposed development on land at Abingdon Road, Clifton Hampden. The proposed development includes the construction of 17 residential homes and a doctors' surgery.

The proposed development is located within the administrative area of South Oxford District Council (SODC). The approximate grid reference of the centre of the site is 454560, 195603 (British National Grid). The proposed development site layout is shown in Figure 1.1.

The following report presents the findings of an assessment of existing/baseline air quality conditions and potential air quality impacts during the construction and operational phase of the proposed development. Mitigation measures have been recommended where appropriate.

Figure 1.1: Proposed Development Site Layout

2 LEGISLATION, PLANNING POLICY & GUIDANCE

2.1 Key Legislation

2.1.1 Air Quality Strategy

UK air quality policy is published under the umbrella of the Environment Act 1995, Part IV and specifically Section 80, the National Air Quality Strategy. The latest *Air Quality Strategy for England, Scotland, Wales and Northern Ireland – Working Together for Clean Air*, published in July 2007 sets air quality standards and objectives for ten key air pollutants to be achieved between 2003 and 2020.

The Clean Air Strategy 2019 supersedes the policies outlined in the 2007 strategy. This latest strategy aims to have a more joined-up approach, outlining actions the Government plans to take to reduce emissions from transport, homes, agriculture and industry. However, the air quality objectives remain as previously detailed within the 2007 strategy.

2.1.2 Air Quality Standards

The air quality standards (AQSs) in the United Kingdom are derived from EC directives and are adopted into English law via the Air Quality (England) Regulations 2000 and Air Quality (England) Amendment Regulations 2002. The Air Quality Limit Values Regulations 2003 and subsequent amendments implement the Air Quality Framework Directive into English Law. Directive 2008/50/EC was translated into UK law in 2010 via the Air Quality Standards Regulations 2010.

The relevant[1] standards for England and Wales to protect human health are summarised in Table 2.1.

Table 2.1: Air Quality Standards Relevant to the Proposed Development

Substance	Averaging period	Exceedances allowed per year	Ground level concentration limit ($\mu g/m^3$)
Nitrogen dioxide (NO_2)	1 calendar year	-	40
	1 hour	18	200
Fine particles (PM_{10})	1 calendar year	-	40
	24 hours	35	50
Fine particles ($PM_{2.5}$)	1 year	-	20

2.1.1 The Environment Act

These objectives are to be used in the review and assessment of air quality by local authorities under Section 82 of the Environment Act (1995). If exceedances are measured or predicted through the review and assessment process, the local authority

[1] Relevance, in this case, is defined by the scope of the assessment.

must declare an Air Quality Management Area (AQMA) under Section 83 of the act, and produce an Air Quality Action Plan (AQAP) to outline how air quality is to be improved.

On the 10th of November 2021, the new Environment Act (2021) passed royal assent, which amends the Environment Act (1995) to reinforce the local air quality management (LAQM) framework in order to encourage cooperation at the local level and broaden the range of organisations that play a role in improving local air quality.

2.2 Planning Policy

The land use planning process is a key means of improving air quality, particularly in the long term, through the strategic location and design of new developments. Any air quality concern that relates to land use and its development can, depending on the details of the proposed development, be a material consideration in the determination of planning applications.

2.2.1 National Planning Policy Framework

In July 2021, the revised National Planning Policy Framework (NPPF) was published, superseding the previous 2012 NPPF (revised in July 2018 and updated in February 2019) with immediate effect. The revised NPPF aims to "place greater emphasis on beauty, place-making, the environment, sustainable development and underlines the importance of local design codes."

Section 15 of the NPPF deals with Conserving and Enhancing the Natural Environment, and states that the intention is that the planning system should prevent '*development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability*' and goes on to state that '*new development* [should be] *appropriate for its location' and 'the effects (including cumulative effects) of pollution on health, the natural environment or general amenity, and the potential sensitivity of the area or proposed development to adverse effects from pollution, should be taken into account*.'

With specific regard to air quality, the NPPF states 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.'*

2.2.2 Local Planning Policy

South Oxfordshire Local Plan 2011 - 2035: (December 2020)

The South Oxfordshire Local Plan contains the following policy relating to air quality:

"Policy EP1: Air Quality

1. In order to protect public health from the impacts of poor air quality:

i) development must have regard to the measures laid out in the Council's Developer Guidance Document and the associated Air Quality Action Plan, as well as the national air quality guidance and any Local Transport Plans;

ii) where sensitive development is proposed in areas of existing poor air quality and/or where significant development is proposed, an Air Quality Assessment will be required;

iii) all development proposals should include measures to minimise air pollution at the design stage and incorporate best practice in the design, construction and operation of the development;

iv) where a development has a negative impact on air quality, including cumulative impact, developers should identify mitigation measures that will sufficiently minimise emissions from the development. Where mitigation is not sufficient the impacts should be offset through planning obligations; and

v) development will only be permitted where it does not exceed air pollution levels set by European and UK regulations.

2.3 Guidance

2.3.1 Guidance on the Assessment of Dust from Demolition and Construction

The Institute of Air Quality Management (IAQM) published a guidance document (Holman et al., 2014) on the assessment of construction phase impacts (herein the 'IAQM construction dust guidance'). The guidance was produced to provide advice to developers, consultants and environmental health officers on how to assess the impacts arising from construction activities. The emphasis of the methodology is on classifying sites according to the risk of impacts (in terms of dust nuisance, PM_{10} impacts on public exposure and impact upon sensitive ecological receptors) and to identify mitigation measure appropriate to the level of risk identified.

2.3.2 Local Air Quality Management Review and Assessment Technical Guidance

The Department for Environment, Food and Rural Affairs (Defra) has published technical guidance for use by local authorities in their air quality review and assessment work. This guidance, referred to in this document as the Local Air Quality Management Technical Guidance (Defra, 2022) ('LAQM.TG(22)'), has been used where appropriate in the assessment presented herein.

2.3.3 Land-Use Planning & Development Control: Planning for Air Quality

Environmental Protection UK's (EPUK) and the IAQM jointly published a revised version of the guidance note 'Land-Use Planning & Development Control: Planning for Air Quality' in 2017 (herein the 'EPUK-IAQM guidance') to facilitate consideration of air quality within local development control processes. It provides a framework for air quality considerations, promoting a consistent approach to the treatment of air quality issues within development control decisions.

The guidance includes methods for undertaken an air quality assessment and an approach for assessing the significance of effects. The guidance note is widely accepted as an appropriate reference method for this purpose.

2.3.4 South Oxfordshire District Council Air Quality Developer's Guidance

SODC have developed a guidance to developers on how to assess and mitigate the air quality impacts from development and transport-related emissions.

3 ASSESSMENT SCOPE

3.1 Overall Approach

The approach taken for assessing the potential air quality impacts of the proposed development may be summarised as follows:

- Consultation with the local authority;
- Baseline characterisation of local air quality;
- Qualitative impact assessment of the construction and operational phases of the development;
- Recommendation of mitigation measures, where appropriate, to ensure any adverse effects on air quality are minimised; and
- Identification of residual impacts from the proposed development.

3.2 Consultation

A method statement and request for comments was sent to the local authority but at time of writing no response has been received.

3.3 Baseline Characterisation

Existing or baseline air quality refers to the concentrations of relevant substances that are already present in ambient air. These substances are emitted by various sources, including road traffic, industrial, domestic, agricultural and natural sources.

A desk-based study has been undertaken including a review of monitoring data available from SODC and estimated background data from the LAQM Support website maintained by Defra. Background concentrations have been mapped by Defra at a grid resolution of 1x1km for the whole of the UK. Consideration has also been given to potential sources of air pollution and any AQMAs in the vicinity of the application site.

3.4 Construction Phase Assessment

3.4.1 Construction Dust and Particulate Matter

Construction works for the proposed development have the potential to lead to the release of fugitive dust and particulate matter. An assessment of the likely significant effects of construction phase dust and particulate matter at sensitive receptors has therefore been undertaken following the IAQM's construction dust guidance.

Three aspects of dust impacts were considered:

- Annoyance to dust soiling;
- The risk of health effects due to an increase in exposure to PM_{10}; and
- Harm to ecological receptors.

In order to assess the potential impacts of construction, activities are divided into four types:

- Demolition;
- Earthworks;
- Construction; and
- Trackout[2].

The risk of dust and PM_{10} arising to cause disamenity and/or health or ecological impacts was based on an assessment of likely emissions magnitude and the sensitivity of the surrounding environment. The risk category may be different for each of the four 'construction' activities. The Magic Map application available online by Defra was used to identify statutory ecological receptors near the proposed development site area.

Appendix A sets out the construction dust assessment methodology in detail as per IAQM construction dust guidance. Once the level of risk has been determined, then site specific mitigation proportionate to the level of risk can be identified (as detailed in Appendix B).

3.4.2 Emissions to Air from Construction Traffic and Plant

Exhaust emissions from construction phase vehicles and plant may have an impact on local air quality adjacent to the routes used by these vehicles to access the proposed development site and in the vicinity of the proposed development site itself. Detailed information on the number of vehicles and plant associated with the construction phase is not available at this stage. Therefore, a qualitative impact assessment has been undertaken based on professional judgement and considering the following factors:

- The likely duration of the construction phase;
- The potential number and type of construction traffic and plant that could be required; and
- The number and proximity of sensitive receptors to the proposed development site and along the likely construction vehicle routes.

3.5 Operational Phase Impact Assessment

3.5.1 Emissions to Air from Operational Phase Traffic

The EPUK-IAQM 2017 guidance provides indicative criteria for when an air quality assessment is required, if none of the criteria are exceeded, it is considered unlikely that there will be any significant impacts on air quality during the operational phase. A simple screening level assessment against these criteria has been undertaken in Section 5 of this report.

It is understood that no significant combustion sources such as combined heat and power (CHP) plant or biomass boilers are proposed as part of the scheme. Therefore, this report has not considered emissions related to energy generation any further.

[2] Trackout is defined as the transport of dust and dirt from the construction / demolition sites onto public road network, where it may be deposited and then re-suspended by vehicles using the network.

3.5.2 Exposure of Future Occupants to Air Pollution

The potential exposure of future users of the proposed development has been considered by reviewing the baseline conditions (Section 4) and the locations of sensitive receptors within the proposed development, as well as considering the EPUK-IAQM guidance.

4 BASELINE AIR QUALITY CHARACTERISATION

4.1 Emission Sources and Key Air Pollutants

The site is located in an area where the main source of air pollution is likely to be road traffic exhaust emissions. The A415 runs between the two areas of land comprising this site, and there are current residential areas to the south and east, including minor roads.

The principal pollutants relevant to this assessment are considered to be NO_x, NO_2, PM_{10} and $PM_{2.5}$ which are generally regarded as the most significant air pollutants released by vehicular combustion processes, or subsequently generated by vehicle emissions in the atmosphere through chemical reactions. These pollutants are generally considered to have the greatest potential to result in human health and ecological impacts.

No significant stationary combustion sources such as combined heat and power (CHP) plants or biomass boilers are proposed within the development or known to exist nearby. Therefore, road traffic emissions are likely to have the greatest effect on ambient air quality.

4.2 Presence of AQMAs

The development site lies within the jurisdiction of SODC. SODC currently has three Air Quality Management Areas (AQMAs) declared for exceedances of the annual mean NO_2 AQS. The proposed development is not located within or close to any of these AQMAs.

4.3 Baseline Monitoring Data

A review of SODCs Annual Status Report for 2021 indicated that in 2020 there were three automatic monitoring stations and a network of 76 diffusion tubes operated by SODC. There are no automatic monitoring locations close to the site, but three diffusion tubes were within 1km. Table 4.1 below presents the data for these diffusion tubes for 2016-2020.

The data from these tubes shows that there were no exceedances of the annual mean NO_2 standard at these locations between 2016 and 2020. It is reasonable to expect concentrations at the site will be comparable, or more likely lower, than the concentrations measured at these locations. This is because the proposed site will be situated further from the road edge than these monitoring locations.

Table 4.1: Annual Mean NO_2 Concentrations at the Diffusion Tube Locations within 1km of the Proposed Development Site

Site ID	Site Name	Site Type	Approx. Distance from Site (km)	Annual Mean NO_2 Concentration ($\mu g/m^3$)				
				2017	2018	2019	2020	2021
S100	Bus stop, Abingdon Road, Clifton Hampden	Roadside	0.0	-	-	-	21.1	14.9
S6	Magnolia Cottage, Near Post Office, Clifton Hampden	Roadside	0.1	28.1	32.5	24.3	22.2	15.8
S101	52 Oxford Road, Clifton Hampden	Roadside	0.2	-	-	-	19.9	13.7
Air Quality Standard				**40**				

4.4 LAQM Estimated Background Data

In addition to the local monitoring data, estimated background air quality data available from the LAQM Support website may also be used to establish likely background air quality conditions at the proposed development site.

This website provides estimated annual average background concentrations of NO_2, PM_{10} and $PM_{2.5}$ on a $1km^2$ grid basis. Table 4.2 identifies estimated annual average background concentrations for the grid square containing the proposed development site for 2022, 2023 and 2024. No exceedances of the NO_2, PM_{10} or $PM_{2.5}$ annual mean AQSs are predicted. As background concentrations are predicted to fall with time, background concentrations in future years would not be expected to exceed their respective annual mean standards.

It must however be noted that the Defra website states that *'The projections in the 2018 background maps are based on assumptions which were current before the Covid-19 outbreak in the UK. In consequence these maps do not reflect short or longer term impacts on emissions in 2020 and beyond resulting from behavioural change during national or local lockdowns'.*

Table 4.2: Estimated Background Annual Average NO_2, PM_{10} and $PM_{2.5}$ Concentrations at the Proposed Development Site

Assessment Year	Estimated Annual Average Pollutant Concentrations Derived from the LAQM Support Website (µg/m^3)		
	NO_2	PM_{10}	$PM_{2.5}$
2022	10.1	13.3	8.7
2023	9.9	13.2	8.6
2024	9.6	13.0	8.5
Air Quality Standard	**40**	**40**	**25**

Note: Presented concentrations for 1 km2 grid centred on 454500, 195500; approximate centre of development site is 454560, 195603 .

5 ASSESSMENT OF IMPACTS

5.1 Construction Phase

5.1.1 Construction Dust and Particulate Matter

Fugitive dust emissions arising from construction activities are likely to be variable in nature and will depend upon the type and extent of the activity, soil type and moisture, road surface conditions and weather conditions. Periods of dry weather combined with higher than average wind speeds have the potential to generate more dust.

The construction activities anticipated as part of the proposed development that are often the most significant potential sources of fugitive dust emissions are:

- Earthworks comprising of levelling, construction of foundations, haulage, tipping, stockpiling, landscaping and tree removal;
- Construction of proposed development and hard landscaped areas; and,
- Trackout, involving the movement of vehicles over surfaces where muddy materials have been transferred off-site (for example, on to public highways).

Fugitive dust arising from construction is mainly of a particle size greater than the PM_{10} fraction (which can potentially impact upon human health). However, it is noted that construction activities may contribute to local PM_{10} concentrations. Appropriate dust control measures can be highly effective for controlling emissions from potentially dust generating activities identified above, and adverse effects can be greatly reduced or eliminated.

5.1.1.1 Potential Dust Emission Magnitude

With reference to the IAQM construction dust guidance criteria outlined in Appendix A, the estimation of dust emissions magnitudes for earthworks, construction and trackout activities are summarised in Table 5.1, no demolition activities are proposed and so this dust risk has been screened out. Information has been provided by the client. Where information is not yet known, a conservative approach has been adopted and professional judgement has been used based on the scale of the proposed development and experience of working on similar schemes.

Table 5.1: Summary of Dust Emission Magnitudes (Before Mitigation)

Activity	IAQM Criteria	Dust Emission Magnitude
Earthworks	- The total area of the site is >10,000m^2. - Soil type at site is silt and clay - The number of earth moving vehicles active at any one time will be <5. - The total material moved during the earthworks will be <20,000 tonnes. - The stockpile height will be <4. - Earthworks could take place all year round.	**Medium**
Construction	- It is estimated that the total volume of buildings to be built is between <25,000m^3. - Construction materials are likely to be typical building materials. - On-site concrete batching or sandblasting will not occur.	**Small**
Trackout	- The number of HDV outward movements in any one day will be <10 - The length of unpaved road on site will be <50m.	**Small**

5.1.1.2 Sensitivity of the Area

As per the IAQM construction dust guidance, the sensitivity of the area takes into account a number of factors, including:

- The sensitivity of individual receptors in the area;
- The proximity and number of those receptors;
- In the case of PM_{10}, the local background concentration; and
- Site specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

Consideration is given to human and ecological receptors surrounding the construction boundary and the routes along which trackout may be expected to occur.

Table 5.2 presents the determined sensitivity of the area. Demolition, earthworks and construction activities are relevant up to 350m from the proposed development site boundary. The trackout dust emission magnitude was classified as small, and the IAQM construction dust guidance suggests that trackout should be considered 50m from the edge of the road up to 50m from the site access (based on small dust rating). It is assumed trackout could occur east or west on Abingdon Road.

Following the IAQM construction dust guidance, no ecological receptors have been identified within 50m of the proposed site or anticipated trackout route. Therefore, impacts on ecological receptors not been considered further.

Table 5.2: Sensitivity of the Area

Potential Impact		Sensitivity of the Surrounding Area	
		Earthworks & Construction	Trackout
Dust soiling	Receptor sensitivity	High	High
	Number of receptors	10-100	1-10
	Distance from the source	<20m	<20m
	Sensitivity of the area	**High**	**Medium**
Human health	Receptor sensitivity	High	High
	Annual mean PM_{10} concentration	<24ug/m^3 (see Table 4.3)	<24ug/m^3 (see Table 4.3)
	Number of receptors	10-100	1-10
	Distance from the source	<20m	<20m
	Sensitivity of the area	**Low**	**Low**
Ecological	N/A		

5.1.1.3 Risk of Impacts

The dust emission magnitude summary in Table 5.1 has been combined with the sensitivity of the area in Table 5.2 to determine the risk of impacts of construction activities before mitigation, as summarised in Table 5.3. Mitigation measures to reduce construction phase impacts have been defined based on these dust risks as detailed in Section 6 and Appendix B.

Table 5.3: Summary of the Dust Risk from Construction Activities

Potential Impact	Dust Risk Impact		
	Earthworks	Construction	Trackout
Dust soiling	Medium Risk	Low Risk	Negligible Risk
Human health	Low Risk	Negligible Risk	Negligible Risk

5.1.2 Emissions to Air from Construction Traffic and Plant

The operation of vehicles and equipment powered by internal combustion engines results in the emission of exhaust gases containing pollutants including NO_x, PM_{10}, $PM_{2.5}$, volatile organic compounds, and carbon monoxide. The quantities emitted depend on factors such as engine type, service history, pattern of usage and fuel composition.

Construction traffic will likely comprise of haulage vehicles and vehicles used for workers' trips to and from the application site. The greatest impact on air quality due to emission from construction phase vehicles will be in areas adjacent to the application site access and nearby road network.

It has been estimated that the number of daily HDVs entering and leaving the site will be <10 in any one day. The likely route used to access the site would be from Abingdon Road.

The EPUK-IAQM 2017 guidance provides indicative criteria to determine when air quality impacts are likely to be significant. For HDVs, within an AQMA, an increase of 25 trips per day is the indicative criterion. Given the information above, it is considered that this would not be exceeded.

Due to the size and nature of the works proposed, as well as the baseline monitoring data and estimated background concentrations (as shown in Table 4.2), it is not anticipated that emissions from construction vehicles would have a significant effect on local air quality. Furthermore, the construction phase will be limited to a relatively short period and any effects on air quality will be temporary, i.e. the duration of the construction period only.

The operation of site equipment and machinery/plant during the construction phase will result in emissions to the atmosphere of exhaust gases, but with suitable controls and site management such emissions are unlikely to be significant (as per guidance within LAQM.TG(22)).

5.2 Operational Phase

5.2.1 Emissions to Air from Operational Phase Traffic

Table 5.4 presents a comparison of the relevant EPUK-IAQM screening criteria for the proposed development.

Based on predictive traffic data provided by the transport consultants, the proposed development is expected to cause an increase of 265 AADT for Light Duty Vehicles (LDVs), 95 of these from the residential houses and 170 from the doctors' surgery. It is further worth noting that the proposed surgery is replacing an existing surgery in the centre of the village, as such not all of the trips to the surgery are necessarily 'new' trips. When this is taken into account the net increase for the doctors' surgery is 106 making the overall net AADT increase 201.

Therefore the predicted traffic generation would not exceed the LDV criterion of 500 AADT (outside an AQMA). As none of the other EPUK-IAQM criteria are exceeded, it is considered unlikely that the additional traffic emissions, as a result of the development, will cause a significant change compared to the existing background.

Based on above, it is considered unlikely that the development will have a significant impact on local and ambient air quality, and further assessment of the operational phase traffic is not considered to be required.

Table 5.4: Air Quality Screening Criteria from EPUK-IAQM Guidance and Comparison with the Proposed Development

EPUK-IAQM Screening Criteria	Comparison of proposed development to screening criteria
A change of Light Duty Vehicles (LDVs) of: – More than 100 Annual Average Daily Traffic (AADT) within an AQMA – More than 500 Annual Average Daily Traffic (AADT) outside an AQMA	**Criterion not exceeded:** The proposed development is expected to cause an increase of 265 (201 net) AADT for LDVs.
A change of Heavy Duty Vehicles (HDVs) of: – More than 25 AADT within an AQMA – More than 100 AADT outside an AQMA	**Criterion not exceeded:** No significant change to HDV flows is expected.
Road realignment, where the change is 5m or more and the road is within an AQMA.	**Criterion not exceeded:** Not proposed.
Introduction of a new junction or the removal of an existing junction near to relevant receptors. This applies to junctions that cause traffic to significantly change vehicle accelerate/ decelerate, e.g. traffic lights, or roundabouts.	**Criterion not exceeded:** Entranceways with traffic lights or roundabouts are not proposed.
Introduction or change of a bus station, where bus flows will change by: - more than 25 AADT within or adjacent to an AQMA - more than 100A ADT elsewhere.	**Criterion not exceeded:** It is not anticipated that the development would introduce any additional bus routes.
Have an underground car park with extraction system, where the ventilation extract for the car park will be within 20m of a relevant receptor. Coupled with the car park having more than 100 movements per day (total in and out).	**Criterion not exceeded:** It is understood that underground car parking is not proposed.
Have one or more substantial combustion processes, where there is a risk of impacts at relevant receptors.	**Criterion not exceeded:** It is understood that substantial combustion processes are not proposed.

5.2.2 Exposure of Future Occupants to Air Pollution

The potential exposure of future users of the proposed development to poor air quality has been considered by undertaking a qualitative review of the baseline conditions (Section 4) and the locations of sensitive receptors within the proposed development.

The nearest air quality monitoring locations to the site are diffusion tubes: S100, S6 and S101 all located within approximately 200m from the application site. All tubes are located

roadside and all monitored an annual mean NO_2 concentration well below the AQS. It is considered likely that annual mean NO_2 concentrations at the development site will be comparable to or lower than the monitored data, as the proposed dwellings are set back from the nearby roads.

LAQM.TG(22) indicates that the annual mean NO_2 concentrations tend to be greater than 60µg/m^3 for an exceedance of the hourly mean NO_2 AQS to be likely. Monitored NO_2 concentrations within 1km of the site have not exceeded this during 2017-2021.

Based on the monitoring data available and the estimated background concentrations of NO_2, PM_{10} and $PM_{2.5}$, no exceedances of any of the relevant AQSs are anticipated at the site. Therefore, the impact of existing ambient air quality on any receptors to be introduced at the site is likely to be insignificant.

6 MITIGATION MEASURES & RESIDUAL IMPACTS

6.1 Construction Phase

The dust emitting activities outlined in Section 5.1 can be effectively controlled by appropriate dust control measures and any adverse effects can be greatly reduced or eliminated.

Prior to commencement of construction activities, it is anticipated that an agreement on the scope of a dust management plan (DMP), this may be as part of a Construction Environmental Management Plan (CEMP), for the construction phase will be reached with the local authority to ensure that the potential for adverse environmental effects on local receptors is minimised. The DMP should include *inter alia*, measures for controlling dust and general pollution from site construction operations, and include details of any monitoring scheme, if appropriate. Controls should be applied throughout the construction period to ensure that emissions are mitigated.

The dust risk categories identified have been used to define appropriate, site-specific mitigation methods. More detailed, site-specific mitigation measures are contained in Appendix B.

The traffic effects of the proposed development during the construction phase will be limited to a relatively short period and will be along traffic routes employed by haulage/construction vehicles and workers. Any effects on air quality will be temporary i.e. during the construction period only, and can be suitably controlled by the employment of mitigation measures appropriate to the development project.

With implementation of the mitigation measures detailed above, the effect of dust and particulate matter generated by construction phase activities is considered to be negligible.

6.2 Operational Phase

No significant operational phase impacts on local air quality are anticipated, and ambient air quality is not expected to have significant adverse effects on future site users. Therefore, the impact of the operational phase of the proposed development on local air quality is considered to be negligible.

Nonetheless, measures to minimise impacts should be put in place wherever practicable.

SODCs ‘Air Quality Developer’s Guidance’ requires electric vehicle charge points to a minimum of 1 per household to encourage adoption of low emission vehicles.

Furthermore, best practice measures such as those listed in SODCs 'Air Quality Developer's Guidance' should be considered to reduce the effects of the development on local air quality where feasible. Mitigation measures may include but are not limited to:

- A Travel Plan, promoting public transport, walking and cycling, including providing information for public transport and cycle and walking routes, cycle training and awareness schemes, and bike/e-bike hiring schemes
- Use of energy and heat efficiency measures, technologies and techniques.

7 CONCLUSIONS

An air quality assessment has been prepared for the proposed development on Land at Abingdon Road, Clifton Hampden. The proposed development consists of 17 dwellings and a doctors' surgery.

An assessment of construction phase impacts has been undertaken following the IAQM construction dust guidance. The potential risk of construction phase impacts from dust soiling was predicted to range from negligible to medium risk depending on the type of works, and on human health was predicted to be negligible to low risk. Mitigation measures are recommended to reduce the risk of dust and particulate matter being generated and re-suspended. With implementation of the appropriate measures, no significant impacts are anticipated during the construction phase.

A qualitative assessment of the operational impacts has been undertaken based on the screening criteria outlined in the EPUK-IAQM guidance. None of the EPUK-IAQM criteria are exceeded, therefore, it is considered unlikely that the development will cause a significant impact on air quality.

Best practice mitigation measures to minimise road transport and building emissions are recommended.

A review of baseline conditions, including local monitoring data, and consideration of the location of the sensitive receptors within the application site, found that the future residents of the proposed development are unlikely to be exposed to poor ambient air quality.

Based on the results of the assessment, it is judged that with appropriate construction phase mitigation, the proposed development complies with relevant national and local planning policies and that there are no air quality constraints.

8 REFERENCES

Air Quality (England) Regulations 2000, 928. London, Her Majesty's Stationery Office.

Air Quality (England) (Amendment) Regulations 2002, 3043. London, Her Majesty's Stationery Office.

Air Quality Limit Values Regulations 2001, 2315. London, Her Majesty's Stationery Office.

Council Directive (EC) 2008/50 of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe entered into force on 11 June 2008. Official Journal of the European Union, L152/1.

Department of Communities and Local Government, 2021. National Planning Policy Framework, London: Crown.

Department of Environment, Food and Rural Affairs, 2007. The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volume 1). London, Her Majesty's Stationary Office.

Department of Environment, Food and Rural Affairs, 2007. The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volume 2). London, Her Majesty's Stationary Office.

Department of Environment, Food and Rural Affairs, 2022. Part IV of the Environment Act 1995: Local Air Quality Management: Technical Guidance LAQM.TG(22).

Department of Environment, Food and Rural Affairs, 2020. MAGIC Map [online] Available at: http://magic.defra.gov.uk/

Department of Environment, Food and Rural Affairs, 2018. UK-AIR Atmospheric Information Resource [online] Available at: http://uk-air.defra.gov.uk.

Environment Act 1995. London, Her Majesty's Stationery Office.

Environment Act 2021. London, Her Majesty's Stationery Office.

Greater Manchester Combined Authority, 2022. 2021 Air Quality Annual Status Report, June 2022.

Her Majesty's Stationery Office, 2010. Environmental Protection: The Air Quality Standards Regulations 2010, [online] Available at: http://www.legislation.gov.uk/uksi/2010/1001/pdfs/uksi_20101001_en.pdf.

Institute of Air Quality Management, 2014, v1.1. Guidance on the assessment of dust from demolition and construction.

Moorcroft et al. 2017, v1.2. Land-Use Planning & Development Control: Planning for Air Quality. Environmental Protection UK and Institute of Air Quality Management, London.

Salford City Council, 2020. Publication Salford Local Plan: Development Management Policies and Designations, January 2020.

APPENDIX A - CONSTRUCTION DUST ASSESSMENT METHODOLOGY

This appendix contains the construction dust assessment methodology used in the assessment.

To assess the potential impacts, construction activities are divided into demolition, earthworks, construction and trackout. The descriptors included in this section are based upon the IAQM construction dust guidance. The assessment follows the steps recommended in the guidance.

Step 1: Screen the requirement for assessment

The first step is to screen out the requirement for a construction dust assessment, this is usually a somewhat conservative level of screening. An assessment is usually required where there is:

- a 'human receptor' within:
  - 350m of the boundary of the site; or
  - 50m of the route used by construction vehicles on the public highway, up to 500m from the site entrance(s).
- an 'ecological receptor':
  - 50m of the boundary of the site; or
  - 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s).

Step 2A: Defining the Potential Dust Emission Magnitude

Demolition

The dust emission magnitude category for demolition is varied for each site in terms of timing, building type, duration and scale. Examples of the potential dust emission classes are provided in the guidance as follows:

- **Large**: Total building volume >50,000m^3, potentially dusty construction material, on-site crushing and screening, demolition activities >20m above ground level;
- **Medium**: Total building volume 20,000m^3 – 50,000m^3, potentially dusty construction material, demolition activities 10m – 20m above ground level; and
- **Small**: Total building volume <20,000m^3, construction material with low potential for dust release, demolition activities <10m above ground, demolition during wetter months.

Earthworks

The dust emission magnitude category for earthworks is varied for each site in terms of timing, geology, topography and duration. Examples of the potential dust emission classes are provided in the guidance as follows:

- **Large**: Total site area >10,000m^2, potentially dusty soil type (e.g. clay), >10 heavy earth moving vehicles active at any one time, formation of bunds >8m in height, total material moved >100,000 tonnes;
- **Medium**: Total site area 2,500 – 10,000m^2, moderately dusty soil type (e.g. silt), 5 – 10 heavy earth moving vehicles active at any one time, formation of bunds 4 – 8m in height, total material moved 20,000 – 100,000 tonnes; and
- **Small**: Total site area < 2,500m^2, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <4m in height, total material moved <10,000 tonnes, earthworks during wetter months.

Construction

The dust emission magnitude category for construction is varied for each site in terms of timing, building type, duration, and scale. Examples of the potential dust emissions classes are provided in the guidance as follows:

- **Large**: Total building volume >100,000m^3, on site concrete batching;
- **Medium**: Total building volume 25,000 – 100,000m^3, potentially dusty construction material (e.g. concrete), on site concrete batching; and
- **Small**: Total building volume <25,000m^3, construction material with low potential for dust release (e.g. metal cladding or timber).

Trackout

Factors which determine the dust emission magnitude class of trackout activities are vehicle size, vehicle speed, vehicle number, geology and duration. Examples of the potential dust emissions classes are provided in the guidance as follows:

- **Large**: >50 HDV (>3.5t) trips in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100m;
- **Medium**: 10 – 50 HDV (>3.5t) trips in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 – 100m; and
- **Small**: <10 HDV (>3.5t) trips in any one day, surface material with low potential for dust release, unpaved road length <50m.

Step 2B: Defining the Sensitivity of the Area

The sensitivity of the area is defined for dust soiling, human health and ecosystems. The sensitivity of the area takes into account the following factors:

- The specific sensitivities of receptors in the area;
- The proximity and number of those receptors;
- In the case of PM_{10}, the local background concentration; and
- Site-specific factors, such as whether here are natural shelters such as trees, to reduce the risk of wind-blown dust.

Table A1 has been used to define the sensitivity of different types of receptors to dust soiling, health effects and ecological effects.

Table A1: Sensitivity of the Area Surrounding the Site

Sensitivity of Area	Dust Soiling	Human Receptors	Ecological Receptors
High	• Users can reasonably expect enjoyment of a high level of amenity. • The appearance, aesthetics or value of their property would be diminished by soiling. • The people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. • Examples include dwellings, museums and other culturally important collections, medium and long term car parks and car showrooms.	• Locations where members of the public are exposed over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day) • Examples include residential properties, hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.	• Locations with an international or national designation *and* the designated features may be affected by dust soiling. • Locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List For Great Britain**.** • Examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.
Medium	• Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home. • The appearance, aesthetics or value of their property could be diminished by soiling. • The people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. • Examples include parks and places of work.	• Locations where the people exposed are workers and exposure is over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). • Examples include office and shop workers, but will generally not include workers occupationally exposed to PM_{10}, as protection is covered by Health and Safety at Work legislation.	• Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown. • Locations with a national designation where the features may be affected by dust deposition. • Example is a Site of Special Scientific Interest (SSSI) with dust sensitive features.

Sensitivity of Area	Dust Soiling	Human Receptors	Ecological Receptors
Low	• The enjoyment of amenity would not reasonably be expected. • Property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling. • There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. • Examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads.	• Locations where human exposure is transient. • Indicative examples include public footpaths, playing fields, parks and shopping streets.	• Locations with a local designation where the features may be affected by dust deposition. • Example is a local Nature Reserve with dust sensitive features.

Based on the sensitivities assigned of the different types of receptors surrounding the site and numbers of receptors within certain distances of the site, a sensitivity classification for the area can be defined for each. Tables A2 to A4 indicate the method used to determine the sensitivity of the area for dust soiling, human health and ecological impacts, respectively.

For trackout, as per the IAQM construction dust guidance, it is only considered necessary to consider trackout impacts up to 50m from the edge of the road.

Table A2: Sensitivity of the area to dust soiling effects on people and property

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

Table A3: Sensitivity of the area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Conc.	Number of Receptors	Distances from the Source (m)				
			<20	<50	<100	<200	<350
High	>32µg/m^3	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32 µg/m^3	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µg/m^3	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24µg/m^3	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32µg/m^3	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32 µg/m^3	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28 µg/m^3	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24 µg/m^3	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

Table A4: Sensitivity of the area to Ecological Impacts

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

<u>Step 2C</u>: Defining the Risk of Impacts

The final step is to use both the dust emission magnitude classification with the sensitivity of the area, to determine a potential risk of impacts for each construction activity, before the application of mitigation. Tables A5 to A7 indicate the method used to assign the level of risk for each construction activity.

Table A5: Risk of Dust Impacts from Demolition

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

Table A6: Risk of Dust Impacts from Earthworks/Construction

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

Table A7: Risk of Dust Impacts from Trackout

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

APPENDIX B - SITE-SPECIFIC CONSTRUCTION PHASE RECOMMENDED MITIGATION MEASURES

Mitigation measures are divided into 'general measures', applicable to all sites and measures specific to demolition, earthworks, construction and trackout. Depending on the level of risk assigned to each site, different mitigation is recommended. The method of assigning mitigation measures as detailed in the IAQM guidance has been used.

For those mitigation measures that are general, the highest risk category assigned to the construction activity has been applied. In this case, the 'medium risk' site mitigation measures have been applied, as determined by the dust risk assessment in Section 5. There are two categories of mitigation measure – 'highly recommended' and 'desirable', which are indicated according to the dust risk level identified in Table 5.3. Desirable measures are presented in *italics*.

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- Display the name and contact details of people accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
- Display the head or regional office contact information.

Dust Management

- Develop and implement a 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. The desirable measures should be included as appropriate for the site.

Site Management

- 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.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site or the action taken to resolve the situation in the log book.

Monitoring

- *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 if asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of site boundary, with cleaning to be provided if necessary.*

- Carry out regular site inspections to monitor compliance with any dust management plan, record inspection results, and make an inspection log available to the local authority when asked.
- 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.
- If required, agree dust deposition, dust flux, or real-time PM_{10} continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.

Preparing and maintaining the site

- Plan site layout so that machinery and dust causing activities are located away from receptors as far as possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Fully enclose site specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- 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.
- Cover, seed or fence stockpiles to prevent wind whipping.

Operating Vehicles/Machinery

- Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable.
- Ensure all earthworks and construction vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
- *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).*
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- *Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).*

Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages and clean up as soon as reasonably practicable after the event using wet clean methods.

Waste Management

- Avoid bonfires or burning of waste materials.

Measures Specific to Demolition

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

Measures Specific to Earthworks

- *Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.*
- *Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.*
- *Only remove the cover in small areas during work and not all at once.*

Measures Specific to Construction

- *Avoid scabbling (roughening of concrete surfaces) if possible.*
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- *Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.*
- *For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.*

Measures Specific to Trackout

- *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.*
- *Avoid dry sweeping of large areas.*
- *Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.*
- *Record all inspections of haul routes and any subsequent action in a site log book.*
- *Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).*