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Oxford.
Oxford Biomedica (UK) Ltd.

AIR QUALITY
AIR QUALITY ASSESSMENT

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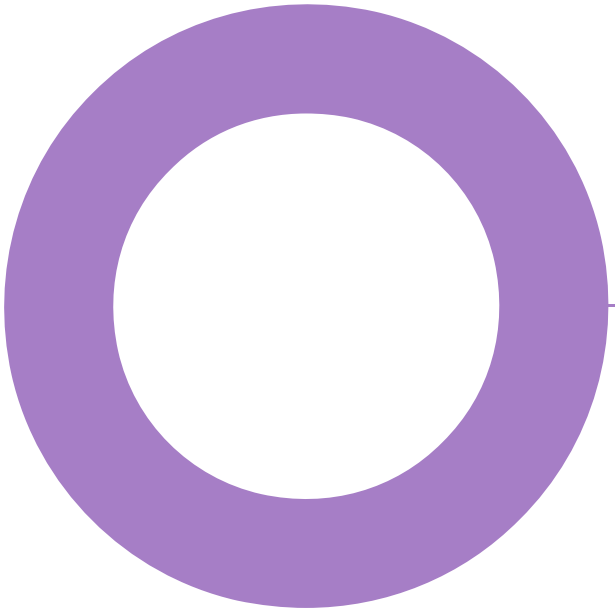

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Executive Summary.

Hoare Lea have been commissioned by T-Squared P4 Ltd on behalf of Oxford Biomedica (UK) Ltd to undertake an air quality assessment to support the planning application for the demolition and extension of WIC House located at land off Transport Way, Oxford (the 'Application Site').

The proposals comprise the demolition of the existing WIC House and the construction of a two-storey building at the rear of the existing WIC House to provide additional laboratory and office space.

The Application Site is located within Oxford Air Quality Management Area (AQMA) declared by Oxford City Council (OCC) for exceedances of the annual mean objective for nitrogen dioxide (NO_2). In 2019, the most recent year for which monitoring data is available, annual mean NO_2 concentrations at the passive diffusion tube location closest to the Application Site was below the Air Quality Objective (AQO).

The impacts of the construction work on dust and ambient PM_{10} concentrations have been assessed and the risk of dust causing a loss of local amenity and increased exposure to PM_{10} concentrations has been used to identify appropriate mitigation measures. Provided these are implemented and included within a dust management plan, for example through a planning condition, the residual impacts are considered to be not significant.

It has been confirmed by HVJ Transport Ltd, the appointed Transport Consultants for the project, that the visitor and staff parking layouts are to be reconfigured, but the Proposed Development will comprise the same number of car parking spaces (56) as the current use. As such, there will be no increased trip generation as a result of the Proposed Development and thus no potential air quality impacts associated with road traffic emissions.

The proposed laboratory will utilise fume cupboards and Microbiological Safety Cabinets, both of which will be designed to ensure that air quality impacts will be negligible.

Heating and hot water at the Proposed Development will be provided via air source heat pumps. As such, there will be no associated combustion emissions and no potential impacts on local air quality.

Based on the assessment results, the Application Site is considered suitable for the Proposed Development without the inclusion of mitigation and air quality should not be considered as a constraint to the planning consent. Furthermore, it is considered that the development proposals comply with national, regional and local policy for air quality.

1. Introduction.

Hoare Lea have been commissioned by T-Squared P4 Ltd on behalf of Oxford Biomedica (UK) Ltd to undertake an Air Quality Assessment to support the planning application for the proposed laboratory and office space extension at the existing WIC House located at land off Transport Way, Oxford (hereafter referred to as the 'Application Site').

1.1 Proposed Development.

The proposals comprise the demolition of the existing WIC House and the construction of a two-storey building at the rear of the existing WIC House to provide additional laboratory and office space. There are currently 56 car parking spaces for WIC House which will be retained with the Proposed Development in place.

It has been confirmed by the project Engineer that heating and hot water for the Proposed Development will be provided via air source heat pumps (ASHP).

1.2 Application Site Description and Location.

The Application Site is located within the administrative area of Oxford City Council (OCC) and is located within National Grid Reference (NGR): X 455500, Y 203500 in the south eastern extent of Oxford.

A visual representation of the location of the Application Site boundary is shown in Figure 1.

Figure 1: Application Site Boundary. Contains OS Data © Crown Copyright and Database rights 2020.

1.3 Scope of Assessment.

An email detailing the initial proposed methodology for the Air Quality Assessment was provided to OCC on the 30th November 2020 and a response was received via email from Pedro Abreu, Air Quality Officer at OCC on the 4th December 2020 who agreed the scope of assessment. A copy of the correspondence with OCC has been included in Appendix 1.

A summary of the scope of the assessment includes:

- Determination of baseline scenario, using Defra background data and OCC monitoring data;
- Assessment of potential air quality impacts during the construction phase;
- A screening assessment of potential air quality impacts as a result of road traffic emissions associated with the Proposed Development during the operational phase;
- A screening assessment of potential air quality impacts associated with the proposed energy plant; and
- Identification of mitigation measures, if required.

2. Legislation, Policy and Guidance Documents.

2.1 Air Quality Strategy and Local Air Quality Management.

The Environment Act 1995 (Part IV)[1] requires the Secretary of State to publish an air quality strategy and local authorities to review and assess the quality of air within their boundaries. The latter has become known as Local Air Quality Management (LAQM).

The Air Quality Strategy[2] provides the policy framework for local air quality management and assessment in the UK. It sets out air quality standards and objectives for key air pollutants. These standards and objectives are designed to protect human health and the environment. The Strategy also sets out how the different sectors of industry, transport and local government, can contribute to achieving these air quality objectives.

Local authorities are required to identify whether the objectives have been, or will be, achieved at relevant locations, by the applicable date. If the objectives are not achieved, the authority must declare an Air Quality Management Area (AQMA) and should prepare an action plan within 12 months. An action plan must identify appropriate measures and policies that can be introduced in order to work towards achieving the objective(s).

The air quality objectives set out the extent to which the Government expects the standards to be achieved by a certain date. They take account of economic efficiency, practicability, technical feasibility and timescale. The objectives for use by local authorities are prescribed within the Air Quality (England) Regulations 2000[3], as amended[4].

The air quality objectives (AQOs) for NO_2 and fine particulate matter (PM_{10} and $PM_{2.5}$) are set out in Table 1. The objectives for NO_2 and PM_{10} were to have been achieved by 2005 and 2004 respectively and continue to apply in all future years thereafter. It should be noted that local authorities in England have a flexible role in working towards reducing emissions and concentrations of $PM_{2.5}$.

Table 1: Air Quality Objectives for NO_2, PM_{10} and $PM_{2.5}$

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
Fine Particles (PM_{10})	24-hour Mean	50 µg/m^3 Not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m^3
Fine Particles ($PM_{2.5}$) †	Annual Mean	25 µg/m^3
†measured gravimetrically.		

The objectives apply at locations where members of the public are likely to be regularly present and exposed over the averaging period of the objective. Examples of where the annual mean objectives should apply are provided in LAQM.TG(16), and include building facades of residential properties, schools, hospitals. The annual mean objectives are not relevant for the building facades of offices or other places of work where members of the public do not have regular access, kerbsides or gardens.

The 24-hour objective for PM_{10} is considered to apply at the same locations as the annual mean objective, as well as in gardens of residential properties and at hotels.

The 1-hour objective for NO_2 also applies wherever members of the public might regularly spend 1-hour or more, including offices, outdoor eating locations, pavements of busy shopping streets, carparks and bus stations which are not fully enclosed. The 1-hour objective does not apply at kerbside sites where the public do not have regular access.

2.2 EU Limit Values.

The European Union has also set limit values for NO_2, PM_{10} and $PM_{2.5}$; these are legally binding and have been implemented into English legislation by The Air Quality Standards Regulations 2010[5], as amended[6].

The limit values for NO_2, PM_{10} and $PM_{2.5}$ are the same as the English objectives (Table 1), but applied from 2010 for NO_2, 2005 for PM_{10} and 2015 for $PM_{2.5}$. The limit values apply at all locations (apart from where the public does not have access, where health and safety at work provisions apply and on the road carriageway).

2.3 Statutory Nuisance Legislation.

Part III of the Environmental Protection Act (EPA) 1990 (as amended) contains the main legislation on Statutory Nuisance and allows local authorities and individuals to take action to prevent a statutory nuisance. Section 79 of the EPA defines, amongst other things, smoke, fumes, dust and smells emitted from industrial, trade or business premises so as to be prejudicial to health or a nuisance, as a potential Statutory Nuisance.

Fractions of dust greater than 10µm (i.e. greater than PM_{10}) in diameter typically relate to nuisance effects as opposed to potential health effects and therefore are not covered within the UK AQS. In legislation there are currently no numerical limits in terms of what level of dust deposition constitutes a nuisance.

2.4 Clean Air Strategy.

The Clean Air Strategy (CAS)[7], published in 2019, sets out the Government's proposals aimed at delivering cleaner air in England, and also indicates how devolved administrations intend to make emissions reductions. It sets out the comprehensive action that is required from across all parts of government and society to deliver clean air to help meet EU limit values for the five most damaging air pollutants: NO_x (including NO_2), $PM_{2.5}$, NH_3, sulphur dioxide (SO_2), non-methane volatile organic compounds (NMVHC).

The immediate challenge is to reduce NO_x emissions due to non-compliance with the limit value for annual mean NO_2 (as given in Table 1). Targets for action include road traffic to reduce ambient NO_2 concentrations, and domestic coal and wood burning to improve ambient $PM_{2.5}$ concentrations.

2.5 UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations.

The UK Plan for Tackling Roadside NO_2 Concentrations[8] was published in 2017. This sets out roles and responsibilities and measures for bringing NO_2 levels within the mandatory limit values in the shortest possible time. Under the UK Plan, local authorities with roadside concentrations of NO_2 forecast by the Defra as exceeding legal limits are identified; OCC has not been identified as one of these local authorities.

2.6 Planning Policy.

2.6.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF) 2019[9] sets out planning policy for England. It includes advice on when air quality should be a material consideration in development control decisions. Relevant sections are set out below:

> Paragraph 54: "Local planning authorities should consider whether otherwise unacceptable development could be made acceptable through the use of conditions or planning obligations. Planning obligations should only be used where it is not possible to address unacceptable impacts through a planning condition."
>
> Paragraph 102: "…c) opportunities to promote walking, cycling and public transport use are identified and pursued; d) the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account - including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains… ."
>
> Paragraph 103: "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."

Paragraph 170: "Planning policies and decisions should contribute to and enhance the natural and local environment by: preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality."

Paragraph 180: "Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development."

Paragraph 181: "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."

Paragraph 183: "The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities."

Paragraph 54: "Local planning authorities should consider whether otherwise unacceptable development could be made acceptable through the use of conditions or planning obligations. Planning obligations should only be used where it is not possible to address unacceptable impacts through a planning condition."

The NPPF is supported by Planning Practice Guidance (PPG)[10]. The PPG for air quality states that:

Paragraph 001 (Reference ID: 32-001-20191101): "Defra carries out an annual national assessment of air quality using modelling and monitoring to determine compliance relevant Limit Values. It is important that the potential impact of new development on air quality is taken into account in planning where the national assessment indicates that relevant limits have been exceeded or are near the limit or where the need for emissions reductions has been identified."

Paragraph 002 (Reference ID: 32-002-20191101): Plans may need to consider ways in which the development could be made appropriate in locations where air quality is or is likely to be a concern, and not give rise to unacceptable risks from pollution. This could, for example entail identifying measures for offsetting the impact on air quality arising from new development including supporting measures in an air quality action plan or low emissions strategy where applicable".

Paragraph 005 (Reference ID: 32-005-20191101): "Whether air quality is relevant to a planning decision will depend on the proposed development and its location. Concerns could arise if the development is likely to have an adverse effect on air quality in areas where it is already known to be poor, particularly if it could affect the implementation of air quality strategies and action plans and / or breach legal obligations (including those relating to the conversation of habitats and species). Air quality may also be a material consideration if the proposed development would be particularly sensitive to poor air quality in its vicinity.

The PPG also sets out the information that may be required in an air quality assessment, stating that:

Paragraph 007 (Reference ID: 32-007-20191101): "Assessments need to be proportional to the nature and scale of development proposed and the potential impacts (taking into account existing air quality conditions), and because of this are likely to be locationally specific. The scope and content of supporting information is best discussed and agreed between the local planning authority and applicant before it is commissioned".

It also provides guidance on options for mitigating air quality impacts, and makes clear that:

Paragraph 008 (Reference ID: 32-008-20191101): "Mitigation options will need to be locationally specific, will depend on the proposed development and need to be proportionate to the likely impact."

2.7 Local Policy.

2.7.1 Oxford City Council Local Plan

The Oxford Local Plan 2016-2036[11] was adopted on 8th June 2020. The Local Plan contains detailed polices which planning applications are judged against. The following policies relating to air quality is contained within the Local Plan:

> Policy RE6: *Air Quality*
>
> *"Planning permission will only be granted where the impact of new development on air quality is mitigated and where exposure to poor air quality is minimised or reduced.*
>
> *The exposure of both current and new occupants to air pollution during the development's operational and construction phases, and the overall negative impact that proposals may cause to the city's air quality, will be considered in determining planning applications. Where additional negative air quality impacts from a new development are identified, mitigation measures will be required to ameliorate these impacts.*
>
> *Sensitive uses including residential development, schools and nurseries should be located away from areas of poor air quality, with site layout designed to reduce impact and with any residual impact mitigated through air quality measures.*
>
> *Planning applications for major proposals (10 or more dwellings or 1000 square metres) which would carry a risk of exposing individuals to unacceptable levels of air pollution must be accompanied by an Air Quality Assessment (AQA).*
>
> *Where the Air Quality Assessment indicates that a development would cause harm to air quality, planning permission will not be granted unless specific measures are proposed and secured to mitigate those impacts.*
>
> *Planning applications for proposals that involve significant demolition, construction or earthworks will also be required to submit a dust assessment as part of the AQA, to assess the potential impacts and health risks of dust emissions from those activities. Any appropriate site-specific dust mitigation measures will be secured as part of the Construction Management Plan (CMP).*
>
> *Further guidance on meeting the requirements of the policy is set out in the Oxford City Council's Air Quality Planning Application Guidance Note and the up to date IAQM guidelines which applicants are expected to follow."*

2.8 Local Air Quality Management in Oxford.

The City of Oxford was declared an AQMA in 2010 for exceedances of the annual mean NO_2 objective. Consequently, an Air Quality Action Plan[12] (AQAP) was published in 2013. The AQAP highlights measures to improve air quality in order to meet the air quality objectives within the Oxford. These measures are:

- Support for development of sustainable transport measures
- Support the uptake of low and zero emission vehicles
- Reducing freight emissions
- Planning for sustainable transport
- Managing the councils transport emissions
- Developing partnerships and public education

Furthermore, in January 2019, OCC and Oxfordshire County Council published updated proposals for a Zero Emission Zone (ZEZ) in Oxford city centre from 2020[13]. This ZEZ aims to expediate the reduction in air pollution to achieve zero transport emissions in Oxford by 2035. The ZEZ will ban all non-zero emission vehicles from parking and loading on public highways in the inner-city centre during daytime hours. A larger Low Emission Zone (LEZ) will also exist that will require local buses to must meet Euro 6 standards.

2.9 Assessment Guidance.

The primary guidance documents consulted in undertaking this assessment are detailed below.

2.9.1 Defra Local Air Quality Management Technical Guidance

Defra Local Air Quality Management Technical Guidance (LAQM.TG(16))[14] was published for use by local authorities in their LAQM review and assessment work. The document provides key guidance in aspects of air quality assessment, including screening, use of monitoring data, and use of background data that are applicable to all air quality assessments.

2.9.2 EPUK-IAQM 'Air Quality Guidance for Planning'

Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) have together published guidance[15] to help ensure that air quality is properly accounted for in the development control process. It clarifies when an air quality assessment should be undertaken, what it should contain, and how impacts should be described and assessed including guidelines for assessing the significance of impacts.

2.9.3 IAQM 'Construction and Demolition Dust Guidance'

Guidance on the assessment of dust from demolition and construction has been published by the IAQM[16]. The guidance provides a methodology to determine the dust emission magnitude and provides a series of matrices to determine the risk magnitude of potential dust sources associated with construction activities. This allows for the identification of appropriate mitigation measures that are defined within further IAQM guidance.

2.9.4 Oxford City Council Planning Application Guidance for Air Quality

The OCC Air Quality Guidance[17] has been produced to help ensure that the air quality is adequately considered in the preparation of development proposals and planning applications for the city of Oxford. The guidance covers:

- Adoption of best practice good design principles to reduce emissions and the need for further mitigation in more advanced phases of the development
- Principles to be considered during the construction phase
- Principles to be considered during the operational phase
- The type of developments that require an air quality assessment
- The main considerations and structure of an air quality assessment
- How to assess the significance of the outcomes of an air quality assessment
- Mitigation, redesign and offset options

The proposals comprise the demolition of the existing WIC House and the construction of a new two-storey building and therefore an Air Quality Assessment is required by OCC.

3. Methodology of Assessment.

3.1 Consultation.

The approach to the assessment, as described in section 1.3, was provided to OCC for review and was agreed with the EHO on the 4th December 2020.

3.2 Existing Air Quality in the Study Area.

A baseline air quality review was undertaken to determine the existing air quality in the vicinity of the Application Site. This desk-top study has been undertaken using the following sources:

- Air quality data for OCC, including a review of the OCC air quality reports and local monitoring data;
- The UK Pollutant Release and Transfer Register[18];
- Background pollution maps from Defra's Local Air Quality Management (LAQM) website[19];
- Aerial photography from Google Maps.

3.3 Construction Phase Impacts.

3.3.1 Construction Dust Assessment

The methodology of assessing construction dust impact detailed within the IAQM guidance[16] divides activities on a proposed construction site to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout

For all four activities, the risk of dust emissions was assessed with respect to:

- Potential loss of amenity due to dust soiling; and
- The risk of health effects due to a significant increase in exposure to PM_{10}.

The first stage of the assessment involves screening to determine whether there are any sensitive receptors within the threshold distances defined by the IAQM guidance. A detailed assessment of the impact of dust from construction sites will be required where:

- A 'human receptor' is located within 350 m of the boundary of the Site or within 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the Site entrance;
- An 'ecological receptor' is located within 50 m of the boundary of the Site or within 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the Site entrance.

The magnitude of dust emission for each activity is determined on the basis of the guidance, indicative thresholds, information available relating to the project and expert judgement. The risk of dust effects arising is based upon the relationship between the dust emission magnitude and the sensitivity of the area. The risk of impact is then used to determine the mitigation requirements.

Descriptors for magnitude of impact and impact significance used in this assessment of construction phase dust are reproduced in Appendix 2.

3.3.2 Construction Traffic

3.3.2.1 Construction Traffic Emissions Screening

The screening assessment has been undertaken with reference to the following EPUK and IAQM guidance indicative criteria:

- A change of LDV flows of more than 100 AADT (within an AQMA); and/or
- A change of HDV flows of more than 25 AADT (within an AQMA).

3.3.2.2 NRMM Emissions Screening

Non-Road Mobile Machinery (NRMM) refers to mobile machines, transportable industrial equipment or vehicles which are fitted with an internal combustion engine and not intended for transporting goods or passengers on roads. NRMM emissions have been screened following LAQM.TG(16).

3.4 Operational Phase Impacts.

3.4.1 Road Traffic Impacts

The screening assessment has been undertaken with reference to the following documents:

- Defra's LAQM.TG(16); and
- EPUK and IAQM guidance indicative criteria, i.e.:
  - a change of LDV flows of more than 100 AADT (within an AQMA); and/or
  - a change of HDV flows of more than 25 AADT (within an AQMA).

Where these criteria are exceeded, a detailed assessment is required, although the guidance advises that "the criteria provided are precautionary and should be treated as indicative", and "it may be appropriate to amend them on the basis of professional judgement".

Where impacts can be screened out there is no need to progress to a more detailed assessment.

3.4.2 Screening of Energy Plant Impacts

It is understood that the energy strategy at the Proposed Development will comprise air source heat pumps (ASHP). As there will be no combustion emissions associated with the scheme, an assessment of the potential impacts on local air quality is not required.

3.4.3 Site Suitability

A qualitative assessment has been undertaken to consider the site suitability which refers to the exposure of future occupants of the Application Site to existing air quality. As the Proposed Development is for office use only, the annual mean objectives do not apply however the 1-hour mean for NO_2 does apply.

The site suitability will be assessed qualitatively using OCC monitoring data from passive diffusion tube monitoring locations within the vicinity of the Application Site, together with data from background pollution maps from Defra's LAQM website[19].

3.5 Assessment of Significance.

3.5.1 Construction Dust

The IAQM guidance[16] on the assessment of dust from demolition and construction states that the primary aim of the risk assessment is to identify site specific mitigation that, once implemented, should ensure that there will be no significant effect. Therefore, the assessment has been used to determine an appropriate level of mitigation for the construction phase.

The determination of which mitigation measures are recommended include elements of professional judgement and the professional experience of the consultants preparing this report is set out in Appendix 3.

3.5.2 Operational Impacts

The EPUK and IAQM guidance[15] has been used to assess the potential for significant impacts as a result of vehicle emissions from traffic associated with the Proposed Development. The focus of the guidance is to assess traffic emission impacts and advises on how to describe the air quality impacts and their significance.

3.5.3 Significance of Effect – Site Suitability Assessment

To determine the significance of predicted air quality impacts based upon a site suitability assessment, the EPUK and IAQM guidance[15] states:

"Where the air quality is such that an air quality objective at the building façade is not met, the effect on residents or occupants will be judged as significant, unless provision is made to reduce their exposure by some means."

4. Baseline Environment.

This section sets out the available information on air quality in the vicinity of the Application Site.

4.1 Site Setting.

The Application Site is located within OCC's area of administration within NGR: X 455500, Y 203500 in the southern extents of Oxford. To the north, east, south and west of the Application Site are commercial/industrial uses.

4.2 Local Air Quality Management Review and Assessment.

As required by the Environment Act (1995), OCC has undertaken Review and Assessment of air quality within their area of administration. This process has indicated that the annual mean concentrations of nitrogen dioxide (NO_2) are above the air quality objective (AQO) in the city. As such, one AQMA was declared in 2010, covering the city of Oxford.

According to the OCC 2019 Annual Status Report (ASR)[20], over a period of 10 years between 2009 and 2019, there has been a 29% reduction in concentrations of NO_2, 21% reduction in PM_{10} concentrations and 18% reduction in $PM_{2.5}$. However, the ASR also states that the rate of improvement has slowed in recent years and, in some areas of the city, has plateaued.

4.3 Local Air Quality Monitoring.

The UK Automatic Urban and Rural Network (AURN) is a countrywide network of air quality monitoring stations operated on behalf of Defra. Monitoring data for AURN sites is available from the UK Air Information Resource website (UK-AIR).

There are two AURN sites in Oxford with the closest, CM3, located approximately 4.9km to the north west. CM3 is classified as an urban background location which is considered to be representative of the Applications Site and monitors NO_2 and particulate matter (PM_{10} and $PM_{2.5}$). Recent monitoring results for CM3 are shown in Table 2 and the location is illustrated in Figure 2.

Additionally, OCC operate one further automatic monitoring station, Oxford High Street (Roadside) (CM2) located approximately 4.8km to the north west of the Application Site. Due to the site characteristics of CM2 i.e. within a city centre, this automatic monitoring site is not considered to be representative of the Application Site and therefore has not been considered further in this assessment.

Table 2: Automatic Monitoring Data

Monitoring site	Objective	2015	2016	2017	2018	2019
NO_2						
CM3, Oxford St Ebbes (AURN)	Annual mean (µg/m^3)	14	16	14	15	16
	Number of hours with concentrations >200 µg/m^3	0	0	0	0	0
PM_{10}						
CM3, Oxford St Ebbes (AURN)	Annual mean (µg/m^3)	13	15	13	12	14
	Number of days with concentrations > 50 µg/m^3	6	0	2	1	5
$PM_{2.5}$						
CM3, Oxford St Ebbes (AURN)	Annual mean (µg/m^3)	10	13	11	10	9

As shown in Table 1, the relevant pollutant concentrations were not exceeded at CM3 in the last five years.

OCC also utilise passive diffusion tubes to monitor NO_2 concentrations. A review of most recent monitoring data available indicates that there are three passive diffusion tube monitoring locations within 2km of the Application Site. Recent monitoring results are shown in Table 3 and the locations are illustrated in Figure 2.

Table 3: Passive Diffusion Tube Monitoring Data

Site ID	Site Type	Site Name	Distance (km) from closet site boundary (approx.)	Annual Mean NO_2 Concentration (µg/m^3)				
				2015	2016	2017	2018	2019
DT 6	Roadside	Templar Square	1.4	N/A	25	21	20	N/A
DT 7	Roadside	Oxford Road/ between Towns Road	1.4	N/A	36	31	28	32
DT 8	Roadside	Oxford Road (Cowley) LP13	1.5	N/A	34	29	27	31

As shown in Table 3, NO_2 concentrations at the passive diffusion tube locations within 2km of the Application Site have been below the AQO of 40 µg/m^3 in the last five years with the closest passive diffusion tube with 2019 data available (DT7) being below the AQO.

Furthermore, the 1-hour mean objective for NO_2 is 200 µg/m^3 and should not be exceeded more than 18 times within a year. An annual mean concentration of 60 µg/m^3 or above is often used to indicate a possible exceedance of the hourly mean NO_2 objective. Concentrations at all monitoring locations have not exceeded 60 µg/m^3 during the five-year monitoring period, indicating likely compliance with the 1-hour mean NO_2 AQO at the Application Site.

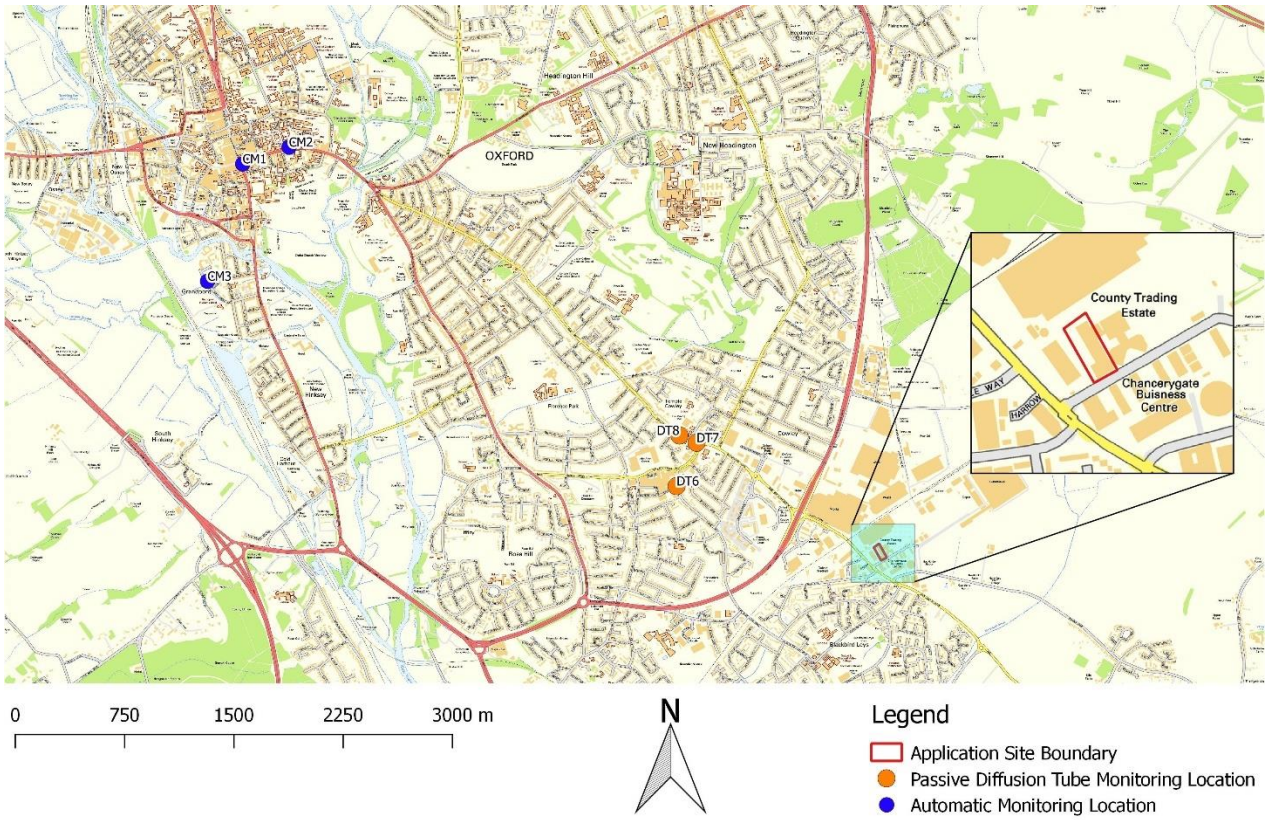

Figure 2: Passive Diffusion Tube and Automatic Monitoring Locations with the vicinity of the Application Site. Contains OS Data © Crown Copyright and Database rights 2020.

4.4 Industrial Pollution.

A desk-based review of potential industrial sources using the UK Pollutant Release and Transfer Register did not identify any significant industrial or waste management sources of air pollution that would be likely to affect air quality at the Application Site.

4.5 Defra Predicted Concentrations.

The background concentrations have been obtained from the national maps published by Defra[19]. These estimated concentrations are produced on a 1 km by 1 km grid basis for the whole of the UK. The Application Site is located within NGR: X 455500, Y 203500. The opening year for the Proposed Development in currently unknown therefore background concentrations for 2019 the most recent year with available monitoring data and for 2022, the earliest possible opening year for the Proposed Development and the predicted concentrations for these grid squares for NO_2, PM_{10} and $PM_{2.5}$ are provided in Table 4.

Table 4: Predicted Background Concentrations

Year	Predicted Background Concentration (µg/m^3)		
	NO_2	PM_{10}	$PM_{2.5}$
2019	15.1	15.7	10.7
2022	13.4	15.1	10.2

As shown in Table 4, background concentrations are below the relevant AQOs for all pollutants.

4.6 Summary of Baseline Data.

The baseline air quality review shows that the Application Site are located within the Oxford AQMA which has been declared by OCC for exceedances of annual mean NO_2 concentrations.

Recent monitoring data from the closest automatic monitoring site, approximately 4.9km north west of the Application Site shows that NO_2, PM_{10} and $PM_{2.5}$ concentrations were below the AQO at this location in the last five years. Furthermore, NO_2 concentrations at the passive diffusion tube locations within 2 km were below the annual mean AQO in the last five years.

Predicted Defra background concentrations of all pollutants at the Application Site were below the relevant AQOs.

5. Construction Phase Assessment.

The potential for air quality impacts during the construction of the Proposed Development are assessed in this section.

The risk of dust impacts is based on the potential dust emissions magnitude and the sensitivity of the area. These two factors are then combined to determine the risk of dust impacts with no mitigation applied. In the absence of any site-specific information, a higher risk category has been applied to represent a worst-case scenario.

5.1 Construction Phase Dust Assessment.

5.1.1 Assessment Screening

There are 'human receptors' within 350m of the Application Site but no designated habitat sites within 50m of the Application Site boundary or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the Application Site entrance.

Therefore, an assessment of construction dust on ecological receptors can be screened out from this assessment but an assessment of construction dust at human receptors is required.

5.1.2 Potential Dust Emission Magnitude

The potential magnitude of dust emissions from demolition, earthworks construction and trackout have been assessed, as identified in Table 5.

Table 5: Predicted Magnitude of Dust Emissions

Activity	Magnitude	Justification
Demolition	Small	The total volume of the existing building is less than 20,000 m^3. The construction material at the existing WIC House, is a combination of brick (potentially dusty), steel and cladding (low potential for dust release) and demolition activities are unlikely to take place greater than 10 m above ground.
Earthworks	Medium	The total site area of the building is less than 10,000 m^2 and is dominated by existing concrete. If earthworks are required as part of the Proposed Development, the total material moved is unlikely to exceed 100,000 tonnes and the soil type of the area is dominated by a lime-rich loam, a moderate to low dust-producing soil type.
Construction	Medium	The total building of the Proposed Development is anticipated to be around 25,000 m^3. Building material used will likely be a mix of masonry material such as concrete and brick which have a high potential to generate dust, as well as materials with a lower dust potential including metals and classing.
Trackout	Small	Initial information on the number of outward HDV trips to be generated during the construction phase per day was not available at the time of writing this report. Due to the nature and size of the Application Site, it is unlikely that there will be more than 10 HDV outward movements in any one day. Furthermore, as the Application Site is located within an existing car park, the site access road is paved and therefore there is a low potential for dust release.

5.1.3 Sensitivity of the Study Area

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 there are natural shelters, such as trees or other vegetation, to reduce the risk of wind-blown dust.

The sensitivity of the area and the factors considered are detailed in Table 6 and the distance band criteria from the Application Site is illustrated in Figure 3.

Table 6: Sensitivity of the Area

Sensitivity Type	Factors	Sensitivity of Area	
		On-Site Activity	Trackout
Dust Soiling	For construction activities, there are no residential receptors within 100 m of the Application Site, however, there are more than 100 residential properties south of Watlington Road and Sandy Lane that are within 350 m of the Application Site. A small percentage of the display lines from the nearby Mini Cooper plant are located within 100 m of the Site boundary. Within 20 m of the Application Site boundary, there are car parks, retail and office use space. For trackout, within 50 m of the Site boundary, there are less than 10 retail and office use spaces (places of work).	Medium	Low
Human Health	As shown in Table 2, annual mean PM_{10} concentrations at the closest automatic monitoring location were 14.0 $\mu g/m^3$ in 2019, the most recent year with available monitoring data. For construction activities, there are no residential (high-sensitivity) receptors within 20 m of the Application Site boundary. For trackout, less than 10 retail and office use spaces (places of work) with one noted outdoor breakout space, are within 50 m of the Site boundary.	Low	Low

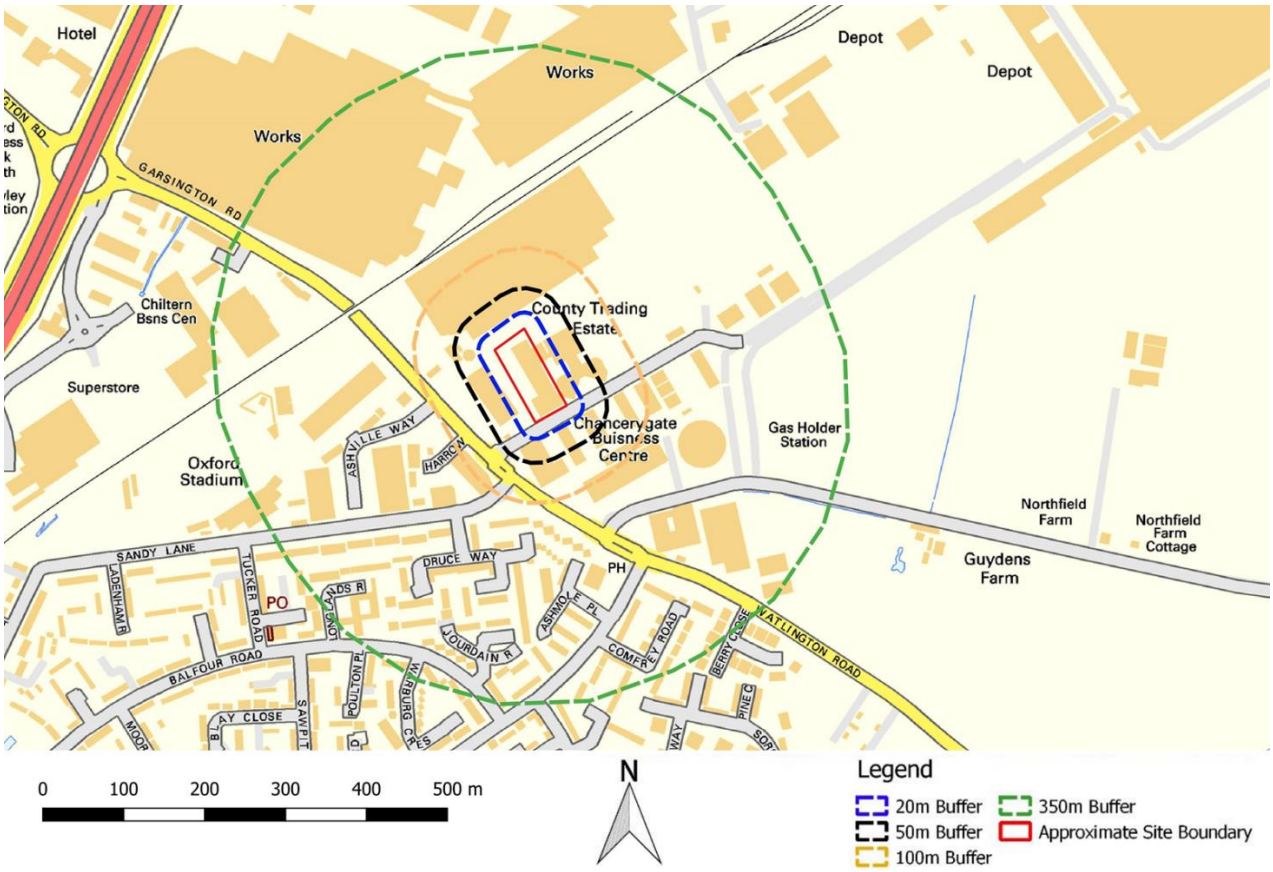

Figure 3: Demolition and Construction Dust Band Criteria from Application Site Boundary. Contains OS Data © Crown Copyright and Database rights 2020.

5.1.4 Risk of Dust Impacts

The outcomes of the assessments of potential magnitude of dust emissions and the sensitivity of the area are combined to determine the risk of impact. This risk is then used to inform the selection of appropriate mitigation. Table 7 details the risk of dust impacts for demolition, earthworks, construction and trackout activities.

Table 7: Summary of Potential Unmitigated Dust Risks

Potential Impact	Sensitivity	Demolition	Earthworks	Construction	Trackout
		Magnitude			
		Small	Medium	Medium	Small
Dust Soiling Impacts	Medium	Low Risk	Medium Risk	Medium Risk	Negligible
Human Health Impacts	Low	Negligible	Low Risk	Low Risk	Negligible

5.2 Construction Phase – Vehicular Pollutants.

Information on traffic movements anticipated during construction works was unavailable for the completion of the Air Quality Assessment. However, the development quantum is not anticipated to result in a significant increase in movements above the EPUK and IAQM criterion. The duration of movements will be short-term in nature and are not considered further within the context of this assessment. Therefore, in accordance with the criterion presented within EPUK and IAQM guidance, additional road vehicle trips during the construction phase of the Proposed Development "can be considered to have insignificant effects" on air quality.

5.3 Construction Phase – Non-Road Mobile Machinery.

Pollutants emitted by NRMM that may have the most significant potential effects on local air quality are NO_x and fine particulate matter (PM_{10} and $PM_{2.5}$). Typically, NRMM is associated with construction sites and, therefore there is a potential for NRMM emissions to adversely affect local air quality as a result of the Proposed Development.

However, LAQM.TG(16) guidance states that, with the application of suitable control measures and site management, exhaust emissions from on-site NRMM are "unlikely to make a significant impact on local air quality. In the vast majority of cases they will not need to be quantitatively assessed".

6. Operational Phase Assessment.

This section presents the potential air quality impacts associated with the operational phase of the Proposed Development.

6.1 Road Traffic Impact Assessment.

It has been confirmed by HVJ Transport Ltd, the appointed Transport Consultants for the project, in paragraph 5.4 of the submitted Transport Statement that the visitor and staff parking layouts are to be reconfigured, but the Proposed Development will comprise the same number of car parking spaces (56) as the current use. As such, there will be no increased trip generation as a result of the Proposed Development and thus no potential air quality impacts associated with road traffic emissions.

Therefore a detailed assessment of the potential air quality impacts associated with road traffic emissions is not required. This was agreed with the Air Quality Officer at OCC.

6.2 Combustion Plant Screening Assessment.

At this stage, it is understood from T-Squared P4 Ltd, the appointed Mechanical Engineers for the project, that heating and hot water for the Proposed Development will be provided via air source heat pumps (ASHP). There is no combustion activity associated with ASHP and thus no potential impacts on local air quality. Therefore an assessment of combustion plant emissions is not required.

6.3 Laboratory Fume Cupboard Emissions.

The Proposed Development will comprise a laboratory and it is understood from T-Squared P4 Ltd that the laboratory will be as a 'dry' research facility i.e. no chemistry will take place in the building. At this stage, it is understood that there is potential for a small number of fume cupboards as part of the laboratory and these will be designed in line with the design guidelines detailed in the BS EN:141745 with sufficient velocity at the extracts to aid dilution. It is therefore considered that air quality impacts will be unlikely and thus negligible and do not require further assessment.

In addition, it has been confirmed that there will be Microbial Safety Cabinet (MSC) usage within the laboratory. The exhaust ventilation for the MSC's will be at high level and will be high velocity with HEPA filtration via safe-change provision to H14 level. Further detail is currently unavailable however due to the high-grade filter system, air quality impacts are considered to be unlikely and thus negligible and have not been assessed further, as agreed with the Air Quality Officer at OCC.

6.4 Site Suitability.

This section presents a review of OCC monitoring data in the vicinity of the of the Application Site, for the purpose of identifying the suitability of the Application Site for the proposed end-use and identifies any requirements for potential mitigation to be embedded into the design of the Proposed Development.

As presented in Section 2, the 1-hour mean air quality objective applies to the Proposed Development due to its end us as a place of work i.e. office and laboratory. As such, this Section considers the potential for NO_2 concentrations at locations of relevant exposure to exceed the 1-hour mean NO_2 objective of 200µg/m^3.

6.4.1 NO_2 Concentrations

A review of OCC annual mean NO_2 monitoring data within 2km of the Application Site has been completed as part of the baseline review, with recent monitoring results presented in Table 3.

There are currently three passive diffusion tube monitoring locations within 2km of the Application Site, all of which are considered to be roadside monitoring locations. In 2019, the most recent year for which monitoring data is available for passive diffusion tube locations DT7 and DT8, annual mean NO_2 concentrations were below the AQO of 40µg/m^3. An annual mean concentration of 60 µg/m^3 or above is used to indicate possible exceedances of the 1-hour mean NO_2 objective; therefore, based on the monitoring data it is unlikely that the objective would be exceeded at the Proposed Development.

Based on the available monitoring data, the Application Site is considered suitable for the proposed end-use without the implementation of mitigation measures to protect future users from elevated NO_2 concentrations.

6.4.2 Significance of Air Quality Impacts

To determine the significance of predicted air quality impacts based upon a site-suitability assessment, such as that undertaken as part of this assessment, the EPUK and IAQM guidance[15] states:

> "Where the air quality is such that an air quality objective at the building façade is not met, the effect on residents or occupants will be judged as significant, unless provision is made to reduce their exposure by some means."

With regards to the Proposed Development, the unmitigated impact significance associated with the Proposed Development has been predicted in accordance with the stated assessment methodology. The following factors have been considered when providing justification:

– The Proposed Development will not introduce any new receptor into an area of exceedance of the 1-hour mean NO_2 AQO based upon a review of NO_2 monitoring data within the development locale.

As no exceedances of the relevant air quality objectives are predicted, mitigation measures are not required for the operational phase of the Proposed Development. As such, the overall effect is considered to be 'not significant'.

7. Mitigation.

7.1 Construction Phase.

To mitigate the potential impacts during the construction phase it is recommended that mitigation measures as detailed in the IAQM guidance are implemented. These mitigation measures have been carefully selected for the Proposed Development and are based upon the dust risk categories outlined in Section 5.1.4 of this report.

It is recommended that OCC approve a Dust Management Plan (DMP) prior to works commencing on site, and that this is implemented using an appropriately worded planning condition. Table 8 below details the measures that should be incorporated in the DMP.

Table 8: Mitigation Measures

Issue	Mitigation Measure
Communications	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site
	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
	Display the head or regional office contact information
Dust Management Plan	Develop and implement a Dust Management Plan (DMP), which may include measures to control emissions, approved by the Local Authority. The DMP may include monitoring of dust deposition, dust flux, real-time PM_{10} continuous monitoring and/or visual inspections.
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, and the action taken to resolve the situation in the logbook
Monitoring	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
	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
Preparing and maintaining the site	Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is 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 or 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 cover as described below
	Ensure all vehicles switch off engines when stationary – no idling vehicles

Issue	Mitigation Measure
Operating vehicle/machinery and sustainable travel	Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable
	Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials
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 conveyors and covered skips
	Minimize 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 spillages as soon as reasonably practicable after the event using wet cleaning methods
Waste management	Avoid bonfires and burning of waste materials
Demolition	Ensure effective water suppression is used during demolition operations. Handheld 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.
Earthworks	Re-vegetate earthworks and exposed area/soil stockpiles to stabilise surfaces as soon as practicable.
	Use Hessian, mulches or trackifiers 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.
Construction	Avoid scabbling, 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 powder material ensure bags are sealed after use and stored appropriately to prevent dust
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 in continuous use
	Avoid dry sweeping of large areas

Issue	Mitigation Measure
	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 logbook

Potential dust effects during the construction phase are considered to be temporary in nature. The impacts are determined to be temporary as they will only potentially occur throughout the construction phase and short-term because these will only arise at particular times when certain activities and meteorological conditions for creating the level of magnitude predicted combine.

However, with the application of the above dust control and mitigation measures, it is considered that impacts at all receptors will be not significant in accordance with the IAQM guidance.

7.1.1 Construction Phase Road Traffic Emissions

Potential air quality impacts associated with construction phase road traffic emissions, principally HDV movements, have been screened out for further assessment with associated impacts on air quality predicted to result in an 'insignificant' effect. Therefore, mitigation measures are not considered to be required.

7.1.2 Construction Phase NRMM Emissions

In accordance with Part 4 of the IAQM Control of Dust and Emissions guidance, all NRMM would need to adhere to the emissions standards for NO_2 and PM_{10} set out for NRMM. It is therefore considered the likely effects of construction plant on local air quality would be insignificant.

7.2 Operational Phase.

7.2.1 Road Traffic Emissions

There will be no additional trip generation from the Proposed Development compared to its existing use. As such, mitigation measures are not required for road traffic emissions.

7.2.2 Combustion Plant Emissions

Potential air quality impacts associated with the operational energy plant have been screened out from further assessment as there are no combustion emissions associated with ASHPs. As such, no mitigation measures are required.

7.2.3 Laboratory Fume Cupboard Emissions

The extract ventilation system for any fume cupboards and the proposed MSC units will be designed to ensure that air quality impacts are negligible and as such, further mitigation measures are not required.

7.2.4 Baseline Site Suitability Review

A review of OCC's monitoring data in consideration of the Application Site, and mapped concentrations by Defra in the locale of the Application Site, indicates no likely exceedance of the 1-hour mean NO_2 AQO.

As no exceedances of any considered AQO are predicted, this follows the 1st hierarchy principle of the IAQM guidance to 'prevent and avoid' exposure[21]. Therefore, no embedded mitigation into the Proposed Development design (in the form of mechanical ventilation, NO_x filtration for example) is required.

8. Summary and Conclusions.

This report details the potential air quality impacts associated with the construction and operation of the proposed demolition and construction of WIC House, located at land off Transport Way, Oxford.

The findings of the assessment are as follows:

- A qualitative assessment of the potential dust impacts during the construction of the Proposed Development has been undertaken. Through good practice and implementation of appropriate mitigation measures, it is expected that the release of dust would be effectively controlled and mitigated, with resulting impacts considered to be not significant. All dust impacts are considered to be temporary and short-term in nature;
- The Proposed Development will not lead to an increase in trip generation from the Application Site compared to the existing use. As such, there are no air quality impacts associated with road traffic emissions.;
- Heating and hot water for the Proposed Development will be provided via ASHPs. There is no combustion activity associated with this technology and as such, no potential air quality impacts;
- The Proposed Development will likely comprise both fume cupboards and MSC units however these will be designed to ensure impacts on air quality are negligible. and
- A site suitability review has been undertaken to assess the suitability of the Application Site for the proposed use as an office/laboratory. No exceedances of the 1-hour mean NO_2 objective have been predicted and therefore no mitigation is required.

Based on the information above, it is considered that air quality should not be viewed as a constraint to planning and the Proposed Development conforms to the principles of National Planning Policy Framework and the OCC Local Plan.

9. Glossary of Terms.

AADT	Annual Average Daily Traffic
ASHP	Air source heat pump
AQMA	Air Quality Management Area
AQO	Air Quality Objective
Defra	Department for Environment, Food and Rural Affairs
DMP	Dust Management Plan
EPUK	Environmental Protection UK
HDV	Heavy Duty Vehicles (>3.5 tonnes gross vehicle weight)
HGV	Heavy Goods Vehicle
IAQM	Institute of Air Quality Management
LAQM	Local Air Quality Management
LDV	Light Duty Vehicles ($\leq$3.5 tonnes gross vehicle weight)
µg/m^3	Micrograms per cubic metre
MSC	Microbiological Safety Cabinet
NO_2	Nitrogen dioxide
NO_x	Nitrogen oxides (taken to be NO_2 + NO)
NPPF	National Planning Policy Framework
NRMM	Non-Road Mobile Machinery
Objectives	A nationally defined set of health-based concentrations for nine pollutants, seven of which are incorporated in Regulations, setting out the extent to which the standards should be achieved by a defined date. There are also vegetation-based objectives for sulphur dioxide and nitrogen oxides
OCC	Oxford City Council
PM_{10}	Particulate matter with an aerodynamic diameter less than 10 micrometres
$PM_{2.5}$	Particulate matter with an aerodynamic diameter less than 2.5 micrometres
PPG	Planning Practice Guidance
SPG	Supplementary Planning Guidance
Standards	A nationally defined set of concentrations for nine pollutants below which health effects do not occur or are minimal
Trackout	The transport of dust and dirt from the construction / demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. This arises when heavy duty vehicles (HDVs) leave the construction / demolition site with dusty materials, which may then spill onto the road, and/or when HDVs transfer dust and dirt onto the road having travelled over muddy ground on site

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Appendix 1 – Consultation with Oxford City Council.

OXFORD CITY COUNCIL
MEMORANDUM

FROM	TO
Pedro Abreu **Air Quality Officer** **Environmental Sustainability**	**Charlotte Smith** **Senior Air Quality Consultant** **Hoare Lea**

4th December 2020

Hoare Lea has been commissioned to undertake an air quality appraisal for the proposed part demolition of the existing WIC House, located at land off Transport Way, Oxford, and the construction of a two-storey building to provide additional laboratory and office space. This appraisal will be submitted with the planning application.

The current document is divided in 2 parts.

Part A: is meant to inform on the list of general considerations that Oxford City Council requires to be assessed for air quality, for any new major development in the city.

Part B: is meant to provide some specific comments or advice regarding specific air quality concerns for any of the sites above, after careful investigation of their location and surrounding area.

Part A:

Oxford City Council has declared the entire city as an Air Quality Management Area (AQMA) in 2010 for exceedances of the annual mean nitrogen dioxide objectives. As such, Oxford City Council currently requires that an air quality assessment is to be always submitted with the full planning application for all major developments in the city.

1- The air quality assessment should consider always both the development's construction and operational phases.

2- The air quality assessment should propose any mitigation measures that may be required. As a minimum, the Principles of Good Practice set out in Section 5.10 of IAQM Guidance UK's Land-Use Planning & Development Control: Planning For Air Quality (January 2017) should be applied.

Operation Phase

a) Introduction of new receptors on an AQMA

The Air Quality qualitative assessment should be able to establish the level of exposure of existing and new receptors to NO_2 by assessing the existing baseline, taking into consideration exposure to annual mean NO_2 objectives and also NO_2 hourly mean exceedances. The study should be able to assess the current level of exposure of existing receptors to NO_2 (before the beginning of works – without construction) the characterization of air quality in the area – this characterization should be ideally made preferably using the latest available data from the automatic monitoring and diffusion tubes (ASR reports), and any other type of available resource (ex: DEFRA's baseline modelled maps, regional background plus grid source, etc).

b) Potential Emissions from expected traffic increase

The study should also be able to predict the impact of increases of NO_2 emissions due to traffic increases (if those are to be expected and the levels are above the IAQM AADT thresholds) through the conduction of an air quality modelling exercise proposed, which should take into consideration:

- Local meteorology (the met data to be used to feed the model needs to be representative of the site/area that is being modelled

- Geography (any particular canyons and elevated roads, receptors, buildings)

- Traffic design (right area needs to be modelled, the right roads, junctions, and the forward traffic projections need to match with the ones of the traffic impact assessment

- Verification (against automatic/non-automatic monitoring undertaken in the area) and the uncertainty of the model

c) Potential Emissions from On-site centralised combustion systems

It is important that the assessment also includes details of the combustion systems that are going to be putted in place.

Special attention needs to be made to Point number 7 of table 6.2 of the guidance Land-Use Planning & Development Control: Planning For Air Quality (January 2017) developed by IAQM. – the assessment should quantify the NOx mass emission rate from the proposed plant, based on manufacturers' specifications and operational conditions, and prove that those don't represent any harm to closest receptors.

The principles of good practice of the same guidance present the minimum standards for NOx emissions for each combustion system. The assessment needs to prove that the boiler/CHP, or any other system emit the NOx minimum standards at reference conditions presented on the guidance. OCC will need to know that all these criteria are met with reference to the energy assessment that proves it.

Construction Phase

a) Dust Impacts

A qualitative assessment of the potential local air quality impacts associated during construction phase activities needs to be included in the AQA.

EPUK IAQM guidance on the assessment of dust from demolition and construction Version 1.1 (February 2014) should be followed, for the assessment of the significance and risk of the impacts caused from dust deposition/dust generating activities on site.

From such assessment, site specific mitigation measures (recommended on the guidance) according to the type of sensitivity of the intervened areas to the works that will be conducted and to the proximity of sensitive receptors should be clearly identified, and those will be required by condition to be included in the site's CEMP.

The Dust assessment study should consider:

- the establishment of baseline conditions of the existing dust climate around the site of the proposed operations;
- the identification of site activities that could lead to dust emission without mitigation;
- the identification of site parameters which may increase potential impacts from dust;
- Recommendations for mitigation measures, including modification of site design; and
- the inclusion of proposals to monitor and report dust emissions to ensure compliance with appropriate environmental standards and to enable an effective response to complaints."

Other considerations:

- The location of residential areas, schools and other dust-sensitive land uses should be identified in relation to the site, as well as proposed or likely sources of dust emission from within the site.
- The assessment should explain how topography may affect the emission and dispersal of site dust, particularly the influence of areas of woodland, downwind or adjacent to the site boundary, and of valley or hill formations in altering local wind patterns.
- The assessment should explain how climate is likely to influence patterns of dispersal by analysing data from the UK Meteorological Office or other recognised agencies on wind conditions, local rainfall and ground moisture conditions.

b) HGV Emissions during construction phase

The potential air quality impacts of HGV/LDV vehicles during construction phase will need to be assessed, if the development will cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors. (HDV =goods vehicles + buses >3.5t gross vehicle weight). The potential impacts of those emissions will have to be taken into account on the AQA, in particular, if the nature of the construction work requires a change of HDV flows of:

- more than 25 AADT within or adjacent to an AQMA
- more than 100 AADT elsewhere.

Part B:

Hoare Lea propose to undertake the air quality assessment using the following methodology:

- A baseline assessment will be undertaken using data from Oxford City Councils most recent Annual Status Report (June 2020). Agreed
- DEFRA's background pollution maps will be used to establish background concentrations in the area. Agreed
- There are currently 58 car parking spaces at WIC House and these will remain with the Proposed Development in place. As such, there will be no increase in trip generation from the existing use and the impacts of road traffic impacts will be screened out using the EPUK and IAQM document 'Land-Use Planning & Development Control: Planning for Air Quality' January 2017. Agreed – please in the AQA, make reference to the specific paragraphs on the transport assessment that will be submitted with the application, and that provide evidence that this is effectively the case
- The proposed energy strategy is currently unknown however if there is significant on-site combustion proposed, an assessment of the impact will be undertaken using dispersion modelling software. Agreed – similar to the above, adequate links should be made in the AQA with the relevant information presented in the energy assessment that will be submitted with the application with regards to the combustion sources that are being proposed
- As part of the Proposed Development there will be Microbiological Safety Cabinet (MSC) usage. The exhaust ventilation for the MSC's will be at high level and will be high velocity. They will also be HEPA filtered via safe-change provision to H14 level for which the engineers for the project have stated, this will be cleaner than the supply air going in. Further detail at this stage is not available however due to the high-grade filter system, air quality impacts are considered to be negligible and will not be assessed further. Agreed
- At this stage, the number of fume cupboards is unknown however this is unlikely to be extensive as the proposed laboratory will not be a chemistry lab. Any fume cupboards will be designed in line BS EN14175 with sufficient velocity from the extracts. As such, any impacts to air quality will be considered negligible and will not be assessed further. Agreed – but it would be useful to know the location of these cupboards
- The assessment will consider impacts during the construction phase of the development, using the IAQM 'Guidance on the Assessment of Dust from Demolition and Construction' 2014.Agreed – the site specific dust mitigation measures which will be identified in the dust assessment will need to be included in the site's CEMP. This will be secured by condition.
- The assessment will be undertaken in lie with the EPUK/IAQM document 'Land-Use Planning & Development Control: Planning for Air Quality' January 2017.Agreed

Relevant note:

- The EFT allows for the calculation of emission factors arising from road traffic for all years between 2015 and 2030. For the predictions of future year emissions, the toolkit takes into account factors such as anticipated advances in vehicle technology and changes in vehicle fleet composition, such that vehicle emissions are assumed to reduce over time. However, there is currently some uncertainty over how representative the future predictions are. To address this uncertainty, it should be assumed that there will be no improvement in emission factors with time from the model verification year of 2019.

Appendix 2 – IAQM Construction Phase Methodology.

The following tables have been taken from the IAQM guidance document 'Guidance on the Assessment of Dust from Demolition and Construction'[16] and have been utilised to determine the sensitivity of the area and consider the risk of fugitive emissions as a result of construction activities.

Table A2-1 and Table A2-2 illustrate how the sensitivity of the area may be determined for dust soiling and human health, respectively. It should be noted that the highest level of sensitivity from each table should be considered, as recommended by the IAQM.

Table A2-1: Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from 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 A2-2: Sensitivity of the Area to Human Health Effects

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance 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 – 32µg/m^3	>100	High	High	Medium	Low	Low
		10 – 100	High	Medium	Low	Low	Low
		1 – 10	High	Medium	Low	Low	Low
	24 – 28µg/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 – 32µg/m^3	>10	Medium	Low	Low	Low	Low
		1 – 10	Low	Low	Low	Low	Low
	24 – 28µg/m^3	>10	Low	Low	Low	Low	Low
		1 – 10	Low	Low	Low	Low	Low
	<24µg/m^3	>10	Low	Low	Low	Low	Low
		1 – 10	Low	Low	Low	Low	Low
Low	-	1	Low	Low	Low	Low	Low

Table A2-3 and Table A2-4 illustrate how the dust emission magnitude should be combined with the sensitivity of the area to determine the risk of impacts with no mitigation measures applied.

Table A2-3: Risk of Dust Impacts – 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 A2-4: Risk of Dust Impacts – Trackout

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

Appendix 3 – Professional Experience.

Chris Rush (Hoare Lea), BSc (Hons), MSc, PG Dip Acoustics, CEnv, MIOA, MIEMA, MIEnvSc, MIAQM

Chris is a Senior Associate Air Quality Consultant with Hoare Lea. He is a Chartered Environmentalist, a Member of the Institute of Acoustics, a Full Member of the Institute of Environmental Management and Assessment, a Member of the Institution of Environmental Sciences and a Full Member of the Institute of Air Quality Management (IAQM).

He has a diverse portfolio of experience and has worked on a range of projects from initial site feasibility, through planning and development to construction and operation. Chris's expertise covers planning, noise and air quality, specifically in relation to residential developments, industrial fixed installations such as waste management centres and transportation environmental impact on developments including air traffic. Chris is involved in the testing and assessment of the impact of indoor air quality and how building design contributes to this. He also is a member of Chartered Institute of Building Services Engineers (CIBSE) Air Quality Working Group and a committee member of the IAQM.

Kathryn Woolley (Hoare Lea), BSc (Hons), AMIEnvSc, MIAQM

Kathryn is a Principal Air Quality Consultant with Hoare Lea. She's is an associate Member of the Institution of Environmental Sciences and a Full Member of the Institute of Air Quality Management.

She has a diverse portfolio of experience and has worked on a range of projects from initial site feasibility, through planning and development to construction and operation. Kathryn's expertise covers planning, and air quality, specifically in relation to residential developments, industrial fixed installations such as district heating networks. Kathryn has completed over 30 EIA in the past 6 years throughout the UK and abroad including; St Johns Masterplan in Manchester (residential led), Leicester City Football club training facility north of Leister (sports use), 1-5 Grosvenor Place, Westminster (mixed use residential, retail and hotel site), and Chestnut Avenue in Eastleigh (residential and community use).

Charlotte Smith (Hoare Lea), BSc (Hons), AMIEnvSc, AMIAQM

Charlotte is a Senior Air Quality Consultant at Hoare Lea. She is an Associate Member of the Institution of Environmental Sciences and an Associate Member of the Institute of Air Quality Management. She has worked on a range of projects across a number of industries including residential, educational, commercial and industrial for site feasibility studies, planning applications and Environmental Impact Assessments. She also has experience in qualitative odour studies and has been successfully tested for odour acuity. She also has experience in air quality monitoring at sites ranging from residential and educational facilities to large road network schemes. Charlotte's interests lie in the effects that pollution has on human health and wellbeing.

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