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PICK EVERARD

THAMES YOUNG MARINERS

PRELIMININARY AIR QUALITY SCREENING ASSESSMENT

FEBRUARY 2023

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PRELIMINARY AIR QUALITY SCREENING ASSESSMENT

FEBRUARY 2023

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APPENDICES

1 INTRODUCTION

1.1 Background

1.1.1 Wardell Armstrong LLP has been commissioned by Pick Everard, to undertake a preliminary air quality screening assessment for the redevelopment of the Thames Young Mariners site at Riverside Drive, Richmond, Surrey.

1.1.2 The proposed development site is located to the east of Twickenham. The site is bordered by Ham Lands Local Nature Reserve (LNR) to the north, with Riverside Drive and existing residential dwellings to the east. There is open land to the south and the River Thames runs adjacent to the west of the site with an off cut of the river providing the body of water within the site itself.

1.1.3 The proposed development will comprise of the demolition of existing buildings and the construction of replacement buildings with associated residential accommodation, a changing block, replacement staff accommodation, outdoor activity equipment, associated hard and soft landscaping, and parking.

1.1.4 This report details the results of the preliminary air quality screening assessment undertaken to accompany the planning application for the proposed development. The report discusses the potential dust and fine particulate matter impacts associated with the construction phase, and the potential air quality impacts generated by the proposed development during its operation.

2 LEGISLATION AND POLICY CONTEXT

2.1 Relevant Air Quality Legislation and Guidance

2.1.1 The air quality assessment has been undertaken in accordance with the following legislation and guidance:

- The Environment Act 1995, as amended 2021;
- Department of Environment, Food and Rural Affairs, The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, July 2007;
- The Air Quality Standards Regulations 2010;
- Department for Environment, Food and Rural Affairs, Local Air Quality Management Technical Guidance LAQM.TG(22), August 2022;
- Ministry of Housing, Communities and Local Government, National Planning Policy Framework, July 2021; and
- Department for Communities and Local Government, Planning Practice Guidance: Air Quality, November 2019; and
- London Borough of Richmond Upon Thames, Supplementary Planning Document, Air Quality, June 2020.

2.1.2 Further details of these documents are included in **Appendix A**.

2.2 Assessment Criteria

2.2.1 The relevant air quality objectives and limit values for this assessment are included within Table 1.

Table 1: Air Quality Objectives and Limit Values Relevant to the Assessment*

Pollutant	Objective/Limit Value	Averaging Period	Obligation
Nitrogen Dioxide (NO_2)	200µg/m^3, not to be exceeded more than 18 times a year	1-hour mean	All local authorities
	40µg/m^3	Annual mean	All local authorities
Particulate Matter (PM_{10})	50µg/m^3, not to be exceeded more than 35 times a year	24-hour mean	England, Wales and Northern Ireland
	40µg/m^3	Annual mean	England, Wales and Northern Ireland
Particulate Matter ($PM_{2.5}$)	Limit Value of 20µg/m^3	Annual mean	England, Wales and Northern Ireland

Table 1: Air Quality Objectives and Limit Values Relevant to the Assessment*			
Pollutant	**Objective/Limit Value**	**Averaging Period**	**Obligation**
**In accordance with the Air Quality Standards Regulations 2010*			

2.2.2 Further details of where these objectives and limit values apply are detailed in **Appendix A**.

3 ASSESSMENT METHODOLOGY

3.1 Consultation and Scope of Assessment

3.1.1 The assessment methodology was provided to Carol Lee in the Air Quality & Contaminated Land Team, Regulatory Services Partnership, at London Borough of Richmond upon Thames Council (LBRTC), via email on 15th February 2023.

3.1.2 A summary of the consultation undertaken is provided in Table 2.

Table 2: Summary of Consultation

Assessment Stage	Proposed Method	Response
Construction phase assessment to consider dust and fine particulate matter (PM_{10})	Qualitative assessment in accordance with Institute of Air Quality Management (IAQM) guidance	No objection to method
Operational phase assessment to consider nitrogen dioxide (NO_2) and fine particulate matter	A qualitative screening assessment will be undertaken in accordance with Environmental Protection UK (EPUK)/IAQM guidance	No Objection method

3.1.3 Ms Lee confirmed via email on 21st February 2023, that the proposed methodology is acceptable. Carol Lee made several notes about the proposed development:

- The council may be concerned about dust emissions during the construction phase. This is addressed in section 5.1 of this report; and
- The council may be concerned about emissions, once the development is completed, from buildings and transport. This is addressed in section 5.2 of this report; and
- The site has a poor Public Transport Accessibility Level (PTAL)- however, notes that it is a positive feature that coach travel is regularly employed on the site. Carol Lee states that a robust travel plan which encourages walking/cycling/coach travel will be required. Carol Lee further states that it is accepted that some will need to travel by car, so a car free development for staff and other users would not be an option. However, Electric Vehicle Charging Ports (EVCP) for parking must comply with LP2021.

3.1.4 Ms Lee has stated further recommendations for the proposed development:

- Maximum renewables and insulation together with non- combustion – Air Source Heat Pumps (ASHP) - is recommended for heating/cooling of the development; and
- All aspects of the construction and operational phase of the development must be compliant with LP 2021 and LBRTC's Air Quality SPD 2020; and
- The development must comply with and sign up to latest Non-Road Mobile Machinery (NRMM) guidance.
- The use of plug-in power/electric generator will be required from the outset. No diesel generator will be permitted on site at any time; and
- A robust Construction Environmental Management Plan (CEMP) to include no engine idling on site at any time and no waiting in nearby residential roads at any time; and
- Cycle and car parking must comply with LP 2021; and
- An EVCP that complies with LP 2021, to include 20% active and 80% passive; and
- Robust service plan for all services and deliveries will be required.

3.2 Construction Phase Assessment

3.2.1 To assess the impacts associated with dust and fine particulate matter releases during the construction phase of the development, an assessment has been undertaken in accordance with guidance from the Institute of Air Quality Management (IAQM)[1]. Further details of the construction assessment methodology are provided in **Appendix B**.

3.2.2 The closest sensitive human receptors to where construction phase activities will take place are mostly residential and are detailed in Table 3. However, it should be noted that the assessment includes consideration of all sensitive receptors within 350m of the site boundary, in accordance with IAQM guidance.

[1] Institute of Air Quality Management, Guidance on the Assessment of Dust from Demolition and Construction, June 2016

Table 3: Existing Sensitive Receptors Considered in the Construction Phase Assessment		
Receptor	**Direction from the Site**	**Approximate Distance from the Site Boundary (m)**
Ham Lands Local Nature Reserve (LNR)	North	Immediately adjacent at closest point
Existing Nursery/Pre School	North-east	Approximately 125m at closest point
Existing residential dwellings off Riverside Drive	East	Approximately 16m at closest point
Existing residential dwellings off Strawberry Vale	West	Approximately 83m at closest point

3.2.3 As the Ham Lands LNR lies adjacent to the north of the proposed development site, ecological effects at this habitat site have also been considered within this assessment.

3.2.4 The criteria used to assess the construction impact of the proposed development, and the associated significance of effects, at existing sensitive receptors are included in **Appendix B**.

3.3 Operational Phase Assessment

3.3.1 A qualitative screening assessment has been undertaken of the impacts of NO_2 and fine particulate matter, as these are the pollutants considered most likely to exceed the objectives and limit values.

4 BASELINE SITUATION

4.1 London Borough of Richmond upon Thames Council Local Air Quality Management

4.1.1 The proposed development site is located within the administrative area of London Borough of Richmond upon Thames Council (LBRTC), which is responsible for the management of local air quality.

4.1.2 LBRTC currently has one borough wide declared Air Quality Management Area (AQMA), the Richmond AQMA declared for the exceedance of the NO_2 annual mean objective and both the short term and annual mean objective for particulate matter (PM_{10}). The proposed development is therefore located within this borough wide AQMA.

4.1.3 A review of the 2022 Annual Status Report (ASR) for LBRTC indicates that there are currently no air quality monitoring locations along roads in close proximity to the proposed development site.

4.1.4 The closest monitoring locations to the site (REF: 32,33,61, and 65) are located between 0.8km and 1.05km north of the site in a much more urbanised setting when compared to the proposed development site. These monitoring locations recorded NO_2 concentrations between 38 and 50µg/m^3 during 2019 (the last year for which reliable monitoring data is available pre the Covid-19 lockdowns). The NO_2 annual mean objective is 40µg/m^3.

4.1.5 Carol Lee in the Air Quality & Contaminated Land Team, Regulatory Services Partnership, at London Borough of Richmond upon Thames Council (LBRTC), recognises that the proposed development is at a distance from main roads with an elevated NO_2 concentration, stating "*This is good news from an air quality perspective".*

4.1.6 Monitoring location 29, located approximately 1.3km to the east of the proposed development site, is considered more representative of conditions at the proposed development site as it is located in a less urbanised area. During 2019, this monitoring location recorded an NO_2 concentration of 28µg/m^3.

4.2 Background Air Pollutant Concentrations

4.2.1 The air quality assessment needs to take into account background concentrations. As there are currently no representative background NO_2, PM_{10} or $PM_{2.5}$ monitoring locations in the vicinity of the proposed development site, background concentrations

have been obtained from the 2018-based Defra default concentration maps for the appropriate grid square[2].

4.2.2 The background pollutant concentrations used in this assessment are detailed in Table 4.

Table 4: Background Air Pollutant Concentrations Obtained from the 2018-Based Defra Default Concentration Maps

Proposed Development Site Coordinates	2023 Pollutant Concentrations (µg/m^3)		
	Nitrogen Dioxide (NO_2)	Fine Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
516397, 172304	16.15	14.93	10.20

4.2.3 The results show that the background concentrations are well below the relevant objectives and limit value.

[2] Accessed through the Defra Local Air Quality Management webpages (http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html)

5 IMPACT ASSESSMENT

5.1 Construction Phase Assessment

Step 2 – Impact Assessment

5.1.1 In accordance with the IAQM guidance, the main activities to be considered during the construction phase of the proposed development are demolition, earthworks, construction and trackout.

5.1.2 Demolition will involve the removal of some existing buildings within the proposed development site.

5.1.3 Earthworks covers the processes of soil-stripping, ground-levelling, excavation and landscaping. Construction activities will focus on the proposed buildings and car parking areas.

5.1.4 Trackout is defined as the transport of dust and dirt by vehicles travelling from a construction site on to the public road network. This may occur through the spillage of dusty materials onto road surfaces or through the transportation of dirt by vehicles that have travelled over muddy ground on the site. This dust and dirt can then be deposited and resuspended by other vehicles.

Step 2A

5.1.5 Step 2A of the assessment defines the potential dust emission magnitude from demolition, earthworks, construction and trackout in the absence of site-specific mitigation.

5.1.6 Examples of the criteria for the dust emission classes are detailed in **Appendix B**. The results of this step are detailed in Table 5.

Step 2B

5.1.7 Step 2B of the construction phase dust assessment defines the sensitivity of the area, taking into account the significance criteria detailed in **Appendix B**, for demolition, earthworks, construction and trackout. The sensitivity of the area to each activity is assessed for potential dust soiling, human health effects and ecological effects (where applicable).

5.1.8 For demolition, earthworks and construction, there are currently between 10 and 100 receptors (mainly residential) within 50m of where these activities may take place, which is assumed to be the site boundary for the purposes of this assessment.

5.1.9 For trackout, there are between 10 and 100 receptors (mainly residential) within 20m of where trackout may occur for a distance of up to 500m from the site entrance.

Step 2C

5.1.10 Step 2C of the construction phase dust assessment defines the risk of impacts from each activity, by combining the dust emission magnitude with the sensitivity of the surrounding area.

5.1.11 The risk of dust impacts from each activity, with no mitigation in place, has been assessed in accordance with the criteria detailed in **Appendix B**. The results of this step are detailed in Table 5.

Summary of Step 2

5.1.12 Table 5 details the results of Step 2 of the construction phase assessment for human receptors.

Table 5: Construction Phase Dust Assessment for Human Receptors

	Activity			
	Demolition	**Earthworks**	**Construction**	**Trackout**
Step 2A				
Dust Emission Magnitude	Medium[a]	Large[b]	Medium[c]	Medium[d]
Step 2B				
Sensitivity of Closest Human Receptors	High	High	High	High
Sensitivity of Closest Ecological Receptors	Low[e]	Low[e]	Low[e]	Low[e]
Sensitivity of Area to Dust Soiling Effects	Medium	Medium	Medium	High
Sensitivity of Area to Human Health Effects	Low[f]	Low[f]	Low[f]	Low[f]
Sensitivity of Area to Ecological Effects	Low	Low	Low	Low
Step 2C				
Dust Risk: Dust Soiling	Medium Risk	Medium Risk	Medium Risk	Medium Risk
Dust Risk: Human Health	Low Risk	Low Risk	Low Risk	Low Risk

Table 5: Construction Phase Dust Assessment for Human Receptors				
	Activity			
	Demolition	Earthworks	Construction	Trackout
Dust Risk: Ecological	Low Risk	Low Risk	Low Risk	Low Risk

a. Total building volume considered to be between 20,000 and 50,000m^3.
b. Total site area estimated to be greater than 10,000m^2
c. Total building volume estimated to be between 25,000 to 100,000m^3, with potentially dusty construction materials
d. Number of construction phase vehicles estimated to be between 10-50 movements per day
e Ham Lands is a Local Nature Reserve and so is classed as 'low' sensitivity in accordance with IAQM guidance
f. Background annual mean PM_{10} concentration is taken from the LAQM Defra default concentration maps, for the appropriate grid square for 2023

Step 3 – Mitigation

5.1.13 During the construction phase, the implementation of effective mitigation measures will substantially reduce the potential for nuisance dust and fine particulate matter to be generated.

5.1.14 Step 2C of the assessment has identified that the risk of dust soiling and human health effects is not negligible for all activities and therefore site-specific mitigation will need to be implemented to ensure dust effects from these activities will be not significant.

Recommendations for Site-Specific Mitigation

5.1.15 Specific mitigation relating to dust control may be in the form of construction best practices or could include a dust management plan. Recommendations for mitigation within the IAQM guidance include:

- Soft strip inside buildings before demolition;
- 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;
- Bag and remove any biological debris or damp down such material before demolition;
- Revegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable;
- Protect surfaces and exposed material from winds until disturbed areas are sealed and stable;

- Dampen down exposed stored materials, which are to be stored as far from sensitive receptors as 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;
- Avoid activities that generate large amounts of dust during windy conditions;
- 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;
- Avoid dry sweeping of large areas;
- 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;
- Ensure vehicles entering and leaving the site are covered to prevent escape of materials during transport;
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable);
- Minimise vehicle movements and limit vehicle speeds – the slower the vehicle speeds, the lower the dust generation;
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever the site size and layout permits; and
- Access gates to be located at least 10m from receptors, where possible.

5.1.16 All dust and air quality complaints should be recorded, and appropriate measures be taken to identify causes and reduce emissions in a timely manner. Exceptional incidents which cause dust emissions, and the action taken to resolve the situation, should be recorded in a logbook and made available to LBRTC on request.

5.1.17 It is recognised that the final design solutions will be developed with the input of the Contractor to maximise construction efficiencies, to use modern construction techniques and sustainable materials and to incorporate the particular skills and experience offered by the appointed contractor.

Step 4 – Residual Effects

5.1.18 Step 4 of the construction phase dust assessment has been undertaken to determine the significance of the dust effects arising from demolition, earthworks, construction

and trackout associated with the proposed development.

5.1.19 The implementation of effective mitigation measures during the construction phase, such as those detailed in Step 3, will substantially reduce the potential for nuisance dust and fine particulate matter to be generated and any residual impact should be **not significant**.

5.2 Operational Phase – Impact Assessment

Existing Sensitive Human Receptors

5.2.1 The proposals are for the redevelopment of the Thames Young Mariners site, which will involve the demolition of existing buildings and construction of replacement buildings with associated residential accommodation, changing block, replacement staff accommodation and outdoor activity equipment including high ropes, climbing wall, coasteering course, supporting pontoons with associated hard and soft landscaping and parking.

5.2.2 Background pollutant concentrations at the proposed development site (as detailed in Table 4) are predicted to be well below the relevant annual mean air quality objectives.

5.2.3 Guidance prepared by Environmental Protection UK (EPUK) and the IAQM[3] provides criteria for when a detailed air quality assessment may be required. The relevant criteria for a proposed development include:

- A change in Light Duty Vehicles (LDVs) of more than 500 AADT (or 100 AADT within/adjacent to an AQMA);
- A change in Heavy Duty Vehicles (HDVs) of more than 100 AADT (or 25 AADT within/adjacent to an AQMA);
- The realignment of existing roads near to receptors, with a change of more than 5m when the road is within an AQMA;
- The introduction of a new junction, or removal of an existing junction, leading to a significant change in vehicle acceleration/deceleration (e.g., through the introduction of traffic lights or a roundabout) near to receptors.

5.2.4 The proposed re-development will replace some of the existing buildings, therefore,

[3] Moorcroft and Barrowcliffe *et al*, Land-use Planning and Development Control: Planning for Air Quality, Version 1.2, January 2017

it is considered unlikely that there will be a significant increase in vehicle movements associated with the re-development, over the current use. The remaining criteria is unlikely to be significantly affected by the proposals.

5.2.5 Therefore, the impact of the development on air quality in the local area, is considered to be not significant. In accordance with the EPUK/IAQM guidance, detailed assessment works are not required.

Proposed Sensitive Human Receptors

5.2.6 We have reviewed the current land uses surrounding the proposed development site. As the proposed redevelopment does not involve any expansion of the current site, and the area around the site will remain the same, it is not considered that there will be any significant air quality, dust or odour issues for future development users, compared to the current use.

Assessment of Significance for Human Receptors

5.2.7 The significance of the overall effects of the proposed development has been assessed in accordance with the EPUK/IAQM guidance. This assessment is based on professional judgement and details of the assessors' experience is included in **Appendix C**.

5.2.8 In accordance with the EPUK/IAQM guidance, the air quality effect of the proposed development is considered to be **not significant**.

Mitigation Strategies

5.4.9 Based on professional judgement, in accordance with good planning practice and design principles, it is considered that mitigation measures could be employed. Indicative mitigation measures which could be implemented include:

- The submission of an Emissions Control Scheme;
- A travel plan to encourage alternative methods of travelling to the site;
- Support local walking and cycling initiatives; and
- Electric Vehicle (EV) Parking.

5.2.9 Following consultation with Carol Lee in the Air Quality & Contaminated Land Team, Regulatory Services Partnership, at London Borough of Richmond upon Thames Council (LBRTC), the following measures are further recommended:

- Maximum renewables and insulation together with non- combustion – Air Source Heat Pumps (ASHP) - is recommended for heating/cooling of the development; and
- All aspects of the construction and operational phase of the development must be compliant with LP 2021 and LBRTC's Air Quality SPD 2020; and
- The development must comply with and sign up to latest Non-Road Mobile Machinery (NRMM) guidance.
- The use of plug-in power/electric generator will be required from the outset. No diesel generator will be permitted on site at any time; and
- A robust Construction Environmental Management Plan (CEMP) to include no engine idling on site at any time and no waiting in nearby residential roads at any time; and
- Cycle and car parking must comply with LP 2021; and
- An EVCP that complies with LP 2021, to include 20% active and 80% passive; and
- Robust service plan for all services and deliveries will be required.

5.2.10 Further information supplied by Pick Everard in response to the recommendations raised above, indicate:

- The scheme is targeting net zero carbon in operation and shall utilise electric air source heat pumps for heating and hot water.
- Thermal performance targets imposed on the building envelope far exceed the minimum criteria imposed by the recently updated Building Regulations.
- Proposed cycle parking and electric vehicle charging is compliant with London Plan criteria.
- These measures noted above will reduce the impact of operating against current baseline expectations and make a dramatic improvement on the existing facility.

6 CONCLUSIONS

6.1 Construction Phase

6.1.1 The construction phase assessment has been undertaken to determine the risk and significance of dust and fine particulate matter effects from demolition, earthworks, construction and trackout associated with the proposed development, in accordance with guidance published by the IAQM.

6.1.2 With site specific mitigation measures in place, the significance of dust and fine particulate matter effects from demolition, earthworks, construction and trackout is considered to be **not significant**.

6.2 Operational Phase

Existing Sensitive Receptors

6.2.1 A qualitative air quality screening assessment has been undertaken to consider the potential impact of the proposed redevelopment of Thames Young Mariners on the local air quality.

6.2.2 In accordance with the Environmental Protection UK (EPUK) and IAQM document 'Land-Use Planning and Development Control: Planning for Air Quality' (January 2017), the impact can be described as 'not significant'.

Proposed Sensitive Receptors

6.2.3 Current land uses surrounding the proposed development site have been reviewed, and it is considered that there will be no other significant air quality, dust or odour issues associated with these land uses for future users of the proposed development. Air quality effects within the site are, therefore, considered to be **not significant**.

Recommendations for Mitigation

6.2.4 The impact of the proposed development is predicted to be not significant. However, based on professional judgement, it is considered that mitigation measures should, in any case, be employed where possible. Mitigation measures which could be implemented, are detailed in Section 5.

6.3 Summary

6.3.1 The air quality screening assessment indicates that the proposed redevelopment of Thames Young Mariners will not lead to an unacceptable risk from air pollution for existing sensitive receptors and will not lead to any breach of national objectives as

required by national policy. Therefore, there are no material reasons in relation to air quality why the proposed scheme should not proceed, subject to appropriate planning conditions.

APPENDICES

Appendix A: Air Quality Legislation and Guidance

National Air Quality Strategy

A.1 The Environment Act 1995 requires the UK government to prepare a national Air Quality Strategy. The first UK strategy was published in March 1997, setting out policies for the management of ambient air quality. This was subsequently updated in 2007[1].

A.2 The 2007 strategy establishes the framework for air quality management in England, Scotland, Wales and Northern Ireland. Air quality standards and objectives are set out for eight pollutants which may potentially occur at levels that give cause for concern. The strategy also provides details of the role that local authorities are required to take in working towards improvements in air quality, known as the Local Air Quality Management (LAQM) regime.

Air Quality Standards and Objectives

A.3 Air quality standards and objectives are set out in the strategy for the following pollutants: nitrogen dioxide (NO_2), sulphur dioxide (SO_2), carbon monoxide (CO), lead (Pb), fine particulate matter (PM_{10}), benzene (C_6H_6), 1, 3–butadiene (C_4H_6) and ozone (O_3).

A.4 Objectives for each pollutant, except O_3, were first given statutory status in the Air Quality Regulations 2000[2] and Air Quality (Amendment) Regulations 2002[3]. These objectives are defined in the strategy as:

"the maximum ambient concentration not to be exceeded, either without exception or with a permitted number of exceedances, within a specified timescale."

A.5 EU limit values, set out within the Ambient Air Quality Directive 2008/50/EC[4] (i.e. the CAFE Directive), were transposed into UK legislation as The Air Quality Standards Regulations 2010. These are mostly the same as the air quality objectives in terms of concentrations; however, there are differences in determining how compliance is achieved. Although the UK is no longer part of the EU, no changes have yet been made

[1] Department of Environment, Food and Rural Affairs, The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. July 2007
[2] The Air Quality Regulations 2000. SI No 928
[3] The Air Quality (Amendment) Regulations 2002
[4] Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe

to the objectives and limit values used in the management and assessment of air quality.

A.6 Whilst there is no specific objective for $PM_{2.5}$ in England and Wales, a limit value of 20µg/m^3 is referred to in the regulations, which has been adopted for use in this assessment (as recommended by the LAQM Helpdesk). An objective has been set for $PM_{2.5}$ in Scotland since early 2016. The Environment Act 2021 sets out a requirement to establish a target objective for $PM_{2.5}$, however it is not known what this objective will be or when it will come into force.

A.7 Examples of where these objectives and limit values apply are detailed in the Defra LAQM Technical Guidance document LAQM.TG(22)[5] and are included in Table A1.

Table A1: Examples of Where the Air Quality Objectives Should Apply

Averaging Period	Objectives Should Apply at:	Objectives Should Generally Not Apply at:
Annual mean	All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes, etc.	Building facades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term
24-hour mean and 8-hour mean	All locations where the annual mean objectives would apply, together with hotels. Gardens of residential properties[a]	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term
1-hour mean	All locations where the annual mean and 24 and 8-hour objectives apply. Kerbside sites (e.g. pavements of busy shopping streets). Those parts of car parks and railway stations etc. which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more. Any outdoor locations to which the public might reasonably be expected to spend one hour or longer	Kerbside sites where public would not be expected to have regular access

[5] Department for Environment, Food and Rural Affairs, Local Air Quality Management Technical Guidance LAQM.TG(22), August 2022

Table A1: Examples of Where the Air Quality Objectives Should Apply		
Averaging Period	**Objectives Should Apply at:**	**Objectives Should Generally Not Apply at:**
15-minute mean	All locations where members of the public might reasonably be exposed for a period of 15 minutes or longer	
[a] *Such locations should represent parts of the garden where relevant public exposure is likely, for example where there is seating or play areas. It is unlikely that relevant public exposure to pollutants would occur at the extremities of the garden boundary, or in front gardens, although local judgement should always be applied*		

Local Air Quality Management

A.8 LAQM legislation in the Environment Act 1995 requires local authorities to conduct the periodic review and assessments of air quality. These aim to identify all those areas where the objectives are being, or are likely to be, exceeded. Where exceedances are likely to occur, local authorities are required to declare an Air Quality Management Area (AQMA).

A.9 LAQM.TG(22) presents a streamlined approach for LAQM in England and Scotland; however, Northern Ireland is still considering changes to LAQM and therefore works according to the previous regimes.

A.10 The Welsh Government amended the LAQM regime in Wales in 2017 by issuing new statutory policy guidance in order to bring the system into line with the Well-being of Future Generations (Wales) Act 2015[6]. This aims to achieve compliance with the national air quality objectives in specific hotspots and to reduce exposure to pollution more widely, so as to achieve the greatest public health benefit.

A.11 Local authorities in England are required to produce Annual Status Reports (ASRs), and in Scotland and Wales, Annual Progress Reports (APRs). These replace all other reports which previously had to be submitted including Updating and Screening Assessments, Progress Reports and Detailed Assessments (which would be produced to assist with an AQMA declaration).

A.12 Local authorities now have the option of a fast-track AQMA declaration option. This allows more expert judgement to be used and removes the need for a Detailed Assessment where a local authority is confident of the outcome. Detailed Assessments should however still be used if there is any doubt.

[6] Well-being of Future Generations (Wales) Act 2015 (anaw 2)

A.13 As part of the UK Government's requirement to improve air quality, selected local authorities in England are also currently investigating the feasibility of setting up Clean Air Zones (CAZs). These are areas where targeted action and co-ordinated resources aim to improve air quality within an urban setting, in order to achieve compliance with the EU limit values within the shortest possible time.

A.14 The first CAZs were implemented in Bath in March 2021, and in Birmingham in June 2021. In addition, the London Ultra Low Emission Zone (ULEZ) was expanded to incorporate the North and South Circular roads in October 2021. The Bristol CAZ became live in November 2022. The Newcastle-upon-Tyne and Gateshead CAZ became live in January 2023. The Sheffield CAZ became live in February 2023. Charges apply to certain types of vehicles travelling within these areas, including buses, coaches, taxis, private hire vehicles and heavy-duty vehicles (HDVs). The Newcastle-upon-Tyne and Gateshead CAZ has a temporary exemption, until July 2023, for light goods vehicles. The Sheffield CAZ has a temporary exemption, until June 2023, for light goods vehicles used by individuals and businesses based in Sheffield of Rotherham, by application only. The Greater Manchester CAZ, due to be introduced from 30 May 2022, has been delayed and is currently under review.

National Planning Policy Framework

A.15 The National Planning Policy Framework (NPPF)[7], introduced in March 2012 and most recently updated in July 2021, requires 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 AQMAs and CAZs, 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 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 AQMAs and CAZs is consistent with the local air quality action plan."

[7] Ministry of Housing, Communities and Local Government, National Planning Policy Framework, July 2021

Planning Practice Guidance

A.16 The Planning Practice Guidance (PPG)[8], updated in November 2019, states that whether or not 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 generate air quality impacts in an area where air quality is known to be poor. They could also arise where the development is likely to adversely impact upon the implementation of air quality strategies and action plans and/or, in particular, lead to a breach of EU legislation (including that applicable to wildlife).

A.17 Where a proposed development is anticipated to give rise to concerns about air quality, an appropriate assessment needs to be carried out. Where the assessment concludes that the proposed development (including mitigation) will not lead to an unacceptable risk from air pollution, prevent sustained compliance with national objectives or fail to comply with the requirements of the Habitats Regulations, then the local authority should proceed to decision with appropriate planning conditions and/or obligations.

[8] Department for Communities and Local Government. Planning Practice Guidance: Air Quality, November 2019

Appendix B: Methodology for Construction Phase Assessment

Institute of Air Quality Management Guidance

B.1 The methodology for the construction phase dust assessment is set out in guidance from the Institute of Air Quality Management (IAQM)[9].

Step 1

B.2 Step 1 is to screen the requirement for a more detailed assessment. The guidance states that an assessment will normally be required where there are existing sensitive human receptors within 350m of the site boundary and/or within 100m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s).

B.3 With regards to ecological receptors, the guidance states that an assessment will normally be required where there are existing receptors within 50m of the site boundary and/or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s).

B.4 Where any of these criteria are met, it is necessary to proceed to Step 2.

Step 2

B.5 Step 2 determines the potential risk of dust arising in sufficient quantities to cause annoyance and/or health or ecological impacts. The risk is related to:

- The activities being undertaken (demolition, number of vehicles and plant etc);
- The duration of these activities;
- The size of the site;
- The meteorological conditions (wind speed, direction and rainfall);
- The proximity of receptors to the activity;
- The adequacy of the mitigation measures applied to reduce or eliminate dust; and
- The sensitivity of receptors to dust.

B.6 The risk of dust impacts is determined using four risk categories: negligible, low, medium and high risk. A site is allocated to a risk category based upon the following two factors (known as Step 2A and Step 2B).

[9] Institute of Air Quality Management, Guidance on the Assessment of Dust from Demolition and Construction, June 2016

B.7 **Step 2A** assesses the scale and nature of the works which determines the potential dust emission magnitude as small, medium or large. Examples of how the magnitude may be defined are included in Table B1.

Table B1: Determining the Dust Emission Magnitude of Construction Phase Activities

Activity	Dust Emission Class		
	Large	**Medium**	**Small**
Demolition	Total building volume >50,000m^3; Potentially dusty construction material (e.g. concrete); On-site crushing and screening; Demolition activities >20m above ground level	Total building volume 20,000-50,000m^3; Potentially dusty construction material; Demolition activities 10-20m above ground level	Total building volume <20,000m^3; Construction material with low potential for dust release (e.g. metal cladding or timber)
Earthworks	Total site area >10,000m^2; Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size); >10 heavy earth moving vehicles active at any one time; Formation of bunds >8m in height; Total material moved >100,000 tonnes	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	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 <20,000 tonnes; Earthworks during wetter months
Construction	Total building volume >100,000m^3; On-site concrete batching; Sandblasting	Total building volume 25,000-100,000m^3; Potentially dusty construction material (e.g. concrete); On-site batching	Total building volume <25,000m^3; Construction material with a low potential for dust release (e.g. metal cladding or timber)
Trackout	>50 HDV (>3.5t) outward movements[a] in any one day[b]; Potentially dusty surface material (e.g. high clay content); Unpaved road length >100m	10-50 HDV (>3,5t) outward movements[a] in any one day[b]; Moderately dusty surface material (e.g. high clay content); Unpaved road length 50-100m	<10 HDV (>3.5t) outward movements[a] in any one day[b]; Surface material with low potential for dust release; Unpaved road length <50m

a. A vehicle movement is a one way journey i.e. from A to B, and excludes the return journey
b. HDV movements during a construction project may vary over its lifetime, and the number of movements is the maximum not the average

B.8 **Step 2B** considers the sensitivity of the area to dust impacts which is defined as low, medium or high. The sensitivity categories for different types of receptors are described in Table B2.

Table B2: Sensitivity Categories for Dust Soiling, Human Health and Ecological Effects

Sensitivity Category	Dust Soiling Effects	Health effects of PM_{10}	Ecological Effects
High	Users can reasonably expect to enjoy a high level of amenity; Appearance, aesthetics or value of a property would be diminished; Examples include dwellings, museums and other culturally important collections, medium and long term car parks and car show rooms	Locations where members of the public are exposed over a period of time relevant to the air quality objective for PM_{10}; Examples include residential properties, hospitals, schools, and residential care homes	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; Examples include a Special Area of Conservation with dust sensitive features
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; People or property wouldn't reasonably be expected to be continuously present or regularly for extended periods of time; Examples include parks and places of work	Locations where people are exposed as workers and exposure is over a period of time relevant to the air quality objective for PM_{10}; Examples include office and shop workers but will generally not include workers occupationally exposed to PM_{10}	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; Examples include a Site of Special Scientific Interest with dust sensitive features
Low	Enjoyment of amenity would not reasonably be expected; Property would not be diminished in appearance, aesthetics or value; People or property would be expected to be present only for limited periods of time;	Locations where human exposure is transient; Examples include public footpaths, playing fields, parks and shopping streets	Locations with a local designation where the features may be affected by dust deposition; Examples include a Local Nature Reserve with dust sensitive features

Table B2: Sensitivity Categories for Dust Soiling, Human Health and Ecological Effects			
Sensitivity Category	**Dust Soiling Effects**	**Health effects of PM_{10}**	**Ecological Effects**
	Examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads		

B.9 Based on the sensitivity of individual receptors, the overall sensitivity of the area to dust soiling, human health and ecological effects is then determined using the criteria detailed in Tables B3 to B5, respectively.

B.10 **Table B3: Sensitivity of the Area to Dust Soiling Effects on People and Property[ab]**

Receptor Sensitivity	Number of Receptors	Distance from Source (m)[c]			
		<20m	<50m	<100m	<350m
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

a. The sensitivity to the area should be derived for each of the four activities
b. Estimate the total number of receptors within the stated distance. Only the highest level of sensitivity from the table needs to be considered
c. For trackout, distances should be measured from the side of the roads used by construction traffic. Without site specific mitigation, trackout may occur for up to 500m from large sites, 200m from medium sites and 50m from small sites, measured from the site exit. The impact declines with distance from the site and it is only necessary to consider trackout impacts up to 50m from the edge of the road

Table B4: Sensitivity of the Area to Human Health Impacts[ab]							
Receptor Sensitivity	**Annual Mean PM_{10} Concentration[c]**	**Number of Receptors[d]**	**Distance from Source (m)[e]**				
			<20m	**<50m**	**<100m**	**<200m**	**<350m**
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

Table B4: Sensitivity of the Area to Human Health Impacts[ab]							
Receptor Sensitivity	**Annual Mean PM_{10} Concentration[c]**	**Number of Receptors[d]**	**Distance from Source (m)[e]**				
			<20m	**<50m**	**<100m**	**<200m**	**<350m**
		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

a. *The sensitivity to the area should be derived for each of the four activities*
b. Estimate the total number of receptors within the stated distance. Only the highest level of sensitivity from the table needs to be considered
c. Most straightforwardly taken from the national background maps, but should also take account of local sources. The values are based on 32µg/m^3 being the annual mean concentration at which an exceedance of the 24-hour mean objective is likely in England, Wales and Northern Ireland. In Scotland, there is an annual mean objective of 18µg/m^3
d. In the case of high sensitivity receptors with high occupancy (such as schools or hospitals) approximate the number of people likely to be present. In the case of residential dwellings, just include the number of properties
e. For trackout, distances should be measured from the side of the roads used by construction traffic

Table B5: Sensitivity of the Area to Ecological Impacts[ab]		
Receptor Sensitivity	**Distance from the Source (m)[c]**	
	<20	**<50**
High	High	Medium
Medium	Medium	Low
Low	Low	Low

a. *The sensitivity to the area should be derived for each of the four activities*
b. Only the highest level of sensitivity from the table needs to be considered
c. For trackout, distances should be measured from the side of the roads used by construction traffic

B.11 These two factors are combined in **Step 2C** to determine the risk of dust impacts with no mitigation applied.

B.12 The risk of dust effects is determined for four types of construction phase activities, with each activity being considered separately. If a construction phase activity is not taking place on the site, then it does not need to be assessed. The four types of activities to be considered are:

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

B.13 The risk of dust being generated by demolition activities at the site is determined using the criteria in Table B6.

Table B6: Risk of Dust Impacts for 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

B.14 The risk of dust being generated by earthworks and construction at the site is determined using the criteria in Table B7.

Table B7: Risk of Dust Impacts for Earthworks and Construction			
Sensitivity of Area	**Dust Emission Magnitude**		
	Large	**Medium**	**Small**
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

B.15 The risk of dust being generated by trackout at the site is determined using the criteria in Table B8.

Table B8: Risk of Dust Impacts for 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

Step 3

B.16 Step 3 of the assessment determines the site-specific mitigation required for each of the activities, based on the risk determined in Step 2. Mitigation measures are detailed in guidance published by the Greater London Authority[10], recommended for use outside the capital by LAQM guidance, and the IAQM guidance document itself. Professional judgement should be used to determine the type and scale of mitigation measures required.

B.17 If the risk is classed as negligible, no mitigation measures beyond those required by legislation will be necessary.

Step 4

B.18 Step 4 assesses the residual effect, with mitigation measures in place, to determine whether or not these are significant.

[11] Greater London Authority, The Control of Dust and Emissions from Construction and Demolition: Best Practice Guidance, 2006

Professional Judgement

B.19 The IAQM guidance makes reference to the use of professional judgement when assessing the risks of dust and fine particulate matter from demolition and construction sites. Details of the experience of the personnel involved with the project are provided in **Appendix C**.

Appendix C: Professional Experience of Assessors

C.1 The assessment of air quality impacts, and the significance of the associated effects, takes into account the professional judgement of the assessor. Details of the experience of the personnel involved with the project are provided below:

Arlishia Scarpa **Environmental Scientist**
BSc (Hons), MSc **(Air Quality)**

Arlishia joined Wardell Armstrong in 2023 after completing a BSc in Ecology and Environment at the University of Liverpool and an MSc in Environmental Practice at the Manchester Metropolitan University. Arlishia has experience of carrying out air quality assessments for a variety of developments, including residential and commercial projects. She is involved in all aspects of the assessment, from carrying out air quality monitoring studies to analysing data and writing technical reports. Arlishia has experience in the use of ADMS Roads advanced dispersion model for undertaking detailed air quality modelling.

Paul Threlfall **Principal Environmental**
BSc (Hons), MSc **Scientist (Air Quality & Odour)**

Paul joined Wardell Armstrong in October 2017 as an Air Quality Scientist, after completing his MSc Water, Energy and the Environment at Liverpool John Moores University. The majority of his work is carried out in support of planning applications and, therefore, he has experience of undertaking air quality assessments for a wide range of projects including residential developments, commercial developments and mixed-use developments.

Paul has a broad range of skills and knowledge of air quality modelling and monitoring through his involvement in air quality projects, both as individual commissions and as part of Environmental Impact Assessments (EIAs). Paul also has extensive knowledge and experience of undertaking odour assessments, ranging from qualitative desk-based assessments to more detailed odour dispersion modelling assessments using AERMOD, as well as extensive experience of undertaking odour 'sniff test' observations.

Malcolm Walton **Technical Director**

BSc (Env Health) Dip (Acoustics & Noise Control)

MCIEH AMIOA

Malcolm holds a Bachelor of Science degree in Environmental Health and the Diploma in Acoustics and Noise Control. Malcolm is a Member of the Chartered Institute of Environmental Health and an Associate Member of the Institute of Acoustics.

Malcolm joined Wardell Armstrong in September 2001 following 12 years working as an Environmental Health Officer in several local authorities, responsible for the enforcement of environmental legislation and, in particular, air pollution and noise nuisance. Malcolm has experience in the technical co-ordination of environmental appraisal of large schemes to UK and international standards. Malcolm regularly carries out and co-ordinates noise and air quality assessment work associated with planning applications including EIA work and PPC permit application/compliance. He also regularly acts as expert witness in planning inquiries in respect of noise, air quality and odour.

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