

ENVIRONMENT

Liberty Care Developments Ltd
Yew Tree Care Home
Northern Moor
Air Quality Assessment

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EXECUTIVE SUMMARY

BWB Consulting Limited was appointed by Liberty Care Developments Ltd to undertake an air quality assessment for a proposed residential care home at land to the north of Yew Tree Lane, Northern Moor.

The proposed development Site is located within the administrative area of Manchester City Council. The Site is not located within an Air Quality Management Area; however a section of the Greater Manchester Combined Authority Air Quality Management Area is located approximately 150m north east of the Site.

A qualitative construction phase dust assessment was undertaken in accordance with Institute of Air Quality Management guidance and measures were recommended for inclusion in a Dust Management Plan to minimise emissions during construction activities. With the implementation of these mitigation measures the impact of construction phase dust emissions was considered to be 'not significant' in accordance with Institute of Air Quality Management guidance.

The proposed development trip generation was screened using the Institute of Air Quality Management and Environmental Protection UK two stage screening process, to determine whether a detailed road traffic emissions impact assessment was required. The change in predicted trip generation from the existing use trip generation did not exceed the relevant screening criteria and therefore detailed air dispersion modelling of development-generated road traffic was not undertaken.

Consideration was given to the suitability of the Site for the proposed residential use with regard to air quality through a review of local air quality monitoring and emission sources. Local monitored pollutant concentrations in the vicinity of the Site were identified to be below the relevant air quality objectives. Additionally, the Site is not located in the vicinity of any major emission sources considered to give rise to elevated pollutant concentrations within the Site. The Site was therefore considered suitable for the proposed residential use with regard to air quality.

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1. INTRODUCTION

- 1.1 BWB Consulting Limited (BWB) was instructed by Liberty Care Developments Ltd (the Client) to undertake an air quality assessment for a proposed residential care home at Yewtree Lane, Northern Moor, Greater Manchester ('the Site').
- 1.2 The assessment considers construction phase dust impacts and operational phase road traffic emissions. A qualitative construction phase dust assessment was undertaken in accordance with relevant guidance. An operational phase road traffic emissions screening assessment was undertaken to consider the requirement for a detailed assessment of additional vehicles generated by the proposed development. Furthermore, a qualitative site suitability assessment, utilising local monitoring and background data, was undertaken to consider the suitability of the site for the proposed residential end use.
- 1.3 This report is necessarily technical in nature so to assist the reader a glossary of air quality terminology can be found in **Appendix A**.

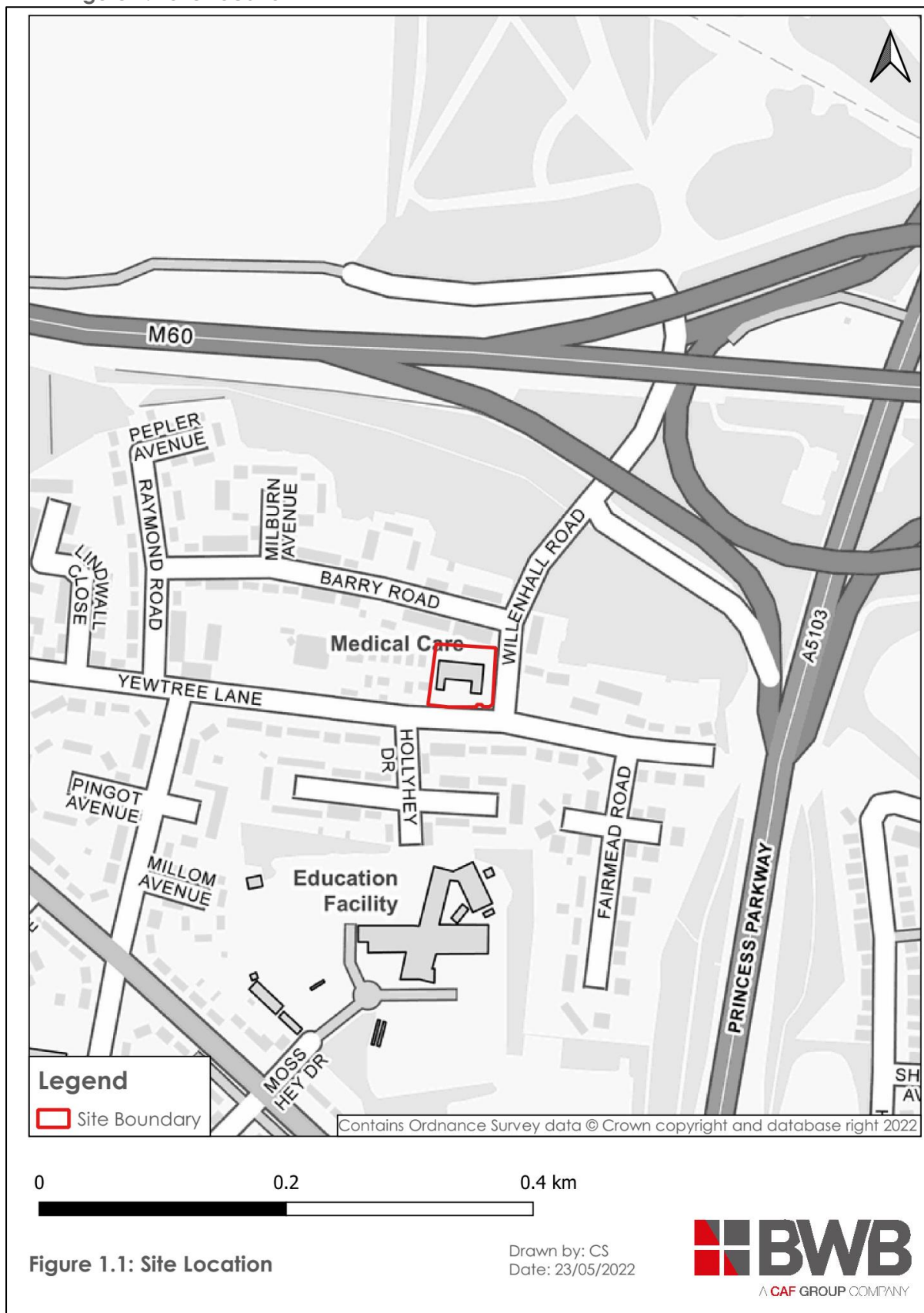
Site Setting

- 1.4 The Site is located at land to the north of Yewtree Lane, Northern Moor and is located within the administrative area of Manchester City Council (MCC). The Site currently comprises an existing care home which is due to be demolished as part of the proposals.
- 1.5 To the north of the Site are existing residential properties, with a small, wooded area beyond. The M60 motorway is also located to north, approximately 200m from the Site. To the east of the Site is Willenhall Road and existing residential properties, with the A5103 Princess Parkway located approximately 220m beyond. To the south of the Site is Yewtree Lane and existing residential properties and to the west, are existing residential properties along Cherry Blossom Close.
- 1.6 **Figure 1.1** details the location of the proposed development.
- 1.7 Principal air pollution sources in the vicinity of the Site are likely to comprise road traffic emissions. The Site is not located within an Air Quality Management Area (AQMA); however the Site is located approximately 150m south west of a section of the Greater Manchester Combined Authority (GMCA) AQMA which was declared for potential exceedances of the annual mean objective for nitrogen dioxide (NO₂).

Proposed Development

- 1.8 The proposed development comprises a full planning application for the demolition of existing buildings and structures and the construction of a new care home facility including access, landscaping and associated infrastructure. The proposed development masterplan is detailed in **Appendix B**.

Figure 1.1 Site Location



2. LEGISLATION, PLANNING POLICY & GUIDANCE

National Legislation and Planning Policy

2.1 The following national legislation and planning policy is relevant to air quality and was considered in the undertaking of the assessment. A summary of the relevant national legislation and planning policy is provided in **Appendix C**:

- European Parliament, EU 2008 ambient Air Quality Directive (2008)¹;
- HMSO, Air Quality (England) Regulations (2000)²;
- HMSO, Environment Act (1995)³;
- HMSO, Environment Act (2021)⁴;
- Department for Environment, Air Quality Strategy (1997)⁵;
- Department for the Environment, Food and Rural Affairs, Air Quality Strategy (2007)⁶;
- Ministry of Housing, Communities and Local Government, National Planning Policy Framework (NPPF) (2021)⁷; and
- Ministry for Housing, Communities and Local Government, Planning Practice Guidance (PPG) for air quality (2019)⁸.

Regional and Local Planning Policy

2.2 The following local and regional planning policy was considered in the undertaking of the assessment and a summary is provided in **Appendix C**:

- Manchester City Council, Manchester's Local Development Framework: Core Strategy Development Plan Document (2012)⁹.

Air Quality Assessment Guidance

2.3 The following guidance was utilised in the air quality assessment:

- Defra, Local Air Quality Management Technical Guidance (LAQM.TG(16)) (2021)¹⁰;
- Institute of Air Quality Management, Guidance on the assessment of dust from demolition and construction (2014)¹¹;
- Institute of Air Quality Management and Environmental Protection UK, Land-Use Planning and Development Control: Planning for Air Quality (2017)¹²; and

¹ European Parliament (2008) Council Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe

² HMSO (2000) Statutory Instrument 2000 No. 928, The Air Quality (England) Regulations 2000 (as amended), London: HMSO

³ HMSO (1995) The Environment Act 1995, London: TSO

⁴ HMSO (2021) The Environment Act 2021, London: TSO

⁵ Department of the Environment (DoE) (1997) The UK National Air Quality Strategy, London: HMSO

⁶ Department of the Environment, Food and Rural Affairs (Defra) (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, London: HMSO

⁷ Ministry of Housing, Communities & Local Government (2021) National Planning Policy Framework, HMSO London

⁸ Ministry for Housing, Communities and Local Government (2019) Planning Practice Guidance Air Quality

⁹ Manchester City Council, (2012) Manchester's Local Development Framework: Core Strategy Development Plan Document

¹⁰ Defra (2021) Local Air Quality Management Technical Guidance LAQM.TG(16)

¹¹ Institute of Air Quality Management (2014) Guidance on the assessment of dust from demolition and construction, Institute of Air Quality Management, London

¹² Institute of Air Quality Management and Environmental Protection UK (2017) Land-Use Planning and Development Control: Planning for Air Quality

- Manchester City Council, Air Quality & Planning Technical Guidance (2022)¹³.

¹³ Manchester City Council, (2022) Air Quality & Planning Technical Guidance

3. METHODOLOGY

Consultation with Manchester City Council

- 3.1 Consultation was undertaken with the Environmental Protection department at MCC via email on the 4th May 2022 and a response was received from the Environmental Protection Officer on the 11th May 2022, agreeing to the proposed methodology.
- 3.2 The methodology utilised in the air quality assessment is summarised below:
- Construction Phase - A construction phase dust assessment was undertaken and relevant measures to mitigate construction phase dust emissions were recommended. The assessment was undertaken in accordance with guidance provided by the Institute of Air Quality Management (IAQM)¹¹.
 - Operational Phase – An operational phase road traffic emissions screening assessment was undertaken in accordance with IAQM and Environmental Protection UK (EPUK) guidance¹². Consideration was also given to the MCC Air Quality & Planning Technical Guidance¹³. Qualitative consideration was also given to the suitability of the Site for the proposed use.
- 3.3 Full details of the methodology used in the assessment, as proposed to MCC, are provided below.

Construction Phase Dust Assessment

- 3.4 An assessment of the potential impacts arising from the construction of the proposed development was undertaken in accordance with IAQM Guidance¹¹. The full assessment methodology is not reproduced within this report but a summary of the assessment steps are provided below:
- Step 1 – screen the requirement for a more detailed assessment. No assessment is required if there are no receptors within a certain distance of the works.
 - Step 2 – assess the risk of dust impacts separately for each of the four activities considered (demolition, earthworks, construction and trackout).
 - Step 2A – determine the potential dust emission magnitude for each of the four activities;
 - Step 2B – determine the sensitivity of the area;
 - Step 2C – determine the risk of dust impacts by combining the findings of steps 2A and 2B.
 - Step 3 – determine the site-specific mitigation for each of the four activities; and
 - Step 4 – examine the residual effects and determine significance.

Operational Phase Road Traffic Emissions – Screening Assessment

- 3.5 Guidance published by the IAQM and EPUK in 2017¹² provides a two-stage approach to determine the level of assessment required in the consideration of the impact of development-generated road traffic emissions on local air quality.

Stage 1

3.6 The Stage 1 criteria requires that the assessment progress to Stage 2 if any of the following apply:

- The development comprises:
 - 10 or more residential units or a site area of more than 0.5ha; or
 - More than 1,000m² of floor space for all other uses or a site area greater than 1ha;
- Coupled with any of the following:
 - The development has more than 10 parking spaces; or
 - The development will have a centralised energy facility or other centralised combustion process.

Note: Consideration should be given to the potential impacts of neighbouring sources on the site, even if an assessment of impacts of the development on the surrounding area is screened out.

Stage 2

3.7 The IAQM and EPUK guidance¹² provides the following indicative criteria to determine whether a detailed road traffic emissions assessment is required for a proposed development.

3.8 The Stage 2 criteria relevant to the Proposed Development are:

- A change in Light Duty Vehicles (LDV) of more than 100 vehicles as a 24 hour Annual Average Daily Traffic (AADT) flow within an AQMA; and
- A change in HDV flow of more than 25 vehicles as a 24 hour AADT flow within an AQMA.

Site Suitability Assessment

3.9 Monitored concentrations undertaken by MCC were compared to the relevant air quality objectives⁵. The current relevant air quality standards and objectives are detailed in **Table 3.1**.

Table 3.1: Air Quality Standards and Objectives (England)

Pollutant	Averaging Period	Air Quality Objective (µg.m ⁻³)	Date to Achieve by
NO ₂	Annual Mean	40	31 December 2005
	1-hour mean not to be exceeded more than 18 times per year	200	31 December 2005
PM ₁₀	Annual Mean	40	31 December 2004
	24-hour mean not to be exceeded more than 35 times per year	50	31 December 2004

Pollutant	Averaging Period	Air Quality Objective ($\mu\text{g.m}^{-3}$)	Date to Achieve by
PM _{2.5}	Annual mean target (15% cut in annual mean (urban background exposure)	25	2010 - 2020

4. BASELINE CONDITIONS

Local Air Quality Management

- 4.1 The Site is not located within an AQMA however a section of the GMCA AQMA is located approximately 150m north east of the Site, along the M60 slip road. The GMCA AQMA was declared for the potential exceedances of the annual mean NO₂ air quality objective.

Local Air Quality Monitoring

Nitrogen Dioxide

- 4.2 MCC monitors annual mean NO₂ concentrations within its administrative area using a network of automatic and passive diffusion tubes.
- 4.3 At the time of assessment 2020 monitoring data was available and was therefore included in the review of monitoring data. However, due to the influence of the COVID-19 pandemic lockdown restrictions, 2020 monitoring data is not considered representative of normal conditions. The IAQM released a position statement¹⁴ in August 2021 with regard to 2020 and 2021 monitoring datasets which recommends that until the influence of the COVID-19 pandemic is fully understood, 2019 monitoring data should be treated as the last year of typical monitoring data.
- 4.4 Bias adjusted NO₂ monitoring results, for the locations in the vicinity of the proposed development Site, are detailed in **Table 4.1**. Exceedances of the annual mean objective are highlighted in **bold**.

Table 4.1: MCC NO₂ Monitoring Data Between 2016 – 2020

ID	Grid Reference		Site Monitoring Type	Monitored Annual Average Concentration (µg.m ⁻³)				
				2016	2017	2018	2019	2020
MA37NO	382829	391493	Roadside	46.3	42.6	39.3	38.7	26.9
MA93NO	382419	390010	Roadside	-	-	-	42.9	29.4
MA94NO	382072	388388	Roadside	-	-	-	32.1	25.2
MA8ANO	381398	387501	Urban Background	32.4	29.2	26.6	28.0	18.2
- Data not available								

- 4.5 Annual mean NO₂ concentrations at all monitoring locations in the study area were below the annual mean NO₂ air quality objective of 40µg.m⁻³ in recent years, with the exception of location MA93NO where annual mean NO₂ concentrations were above

¹⁴ IAQM (2021) Position Statement: Use of 2020 and 2021 Monitoring Datasets

the air quality objective in 2019, which is the most recent year of representative monitoring data.

- 4.6 Both passive diffusion tube monitoring locations MA37NO and MA93NO are located adjacent to A-roads where high volumes of traffic are experienced and therefore higher concentrations of NO₂ are expected. Furthermore, MA93NO is located adjacent to a major junction where queueing traffic occurs.
- 4.7 Apart from monitoring location MA8ANO, all monitoring locations detailed in **Table 4.1** are located within the Manchester AQMA. Monitored concentrations detailed in **Table 4.1** fluctuated over the past five years, but an overall downward trend was identified in the last four years of available and representative monitoring data (2016-2019).

Particulate Matter (PM₁₀)

- 4.8 MCC currently undertakes monitoring of PM₁₀ and PM_{2.5} within its administrative area. The closest PM₁₀ monitoring location to the Site is the Stockport Cheadle A34 automatic monitoring station, located approximately 3.6km south east of the Site. Monitoring results for 2016 - 2020 indicate that PM₁₀ concentrations are below the current annual mean air quality objective of 4 µg.m⁻³. There are no automatic monitoring stations within the vicinity of the Site that monitor PM_{2.5}. The closest is located 8km north of the Site at Manchester Piccadilly. Annual mean PM_{2.5} concentrations at this automatic monitoring station were below the air quality objective of 25µg.m⁻³ in the last five years of available monitoring data

Background Pollutant Concentrations

- 4.9 Background pollutant concentrations were obtained from the latest Defra background concentration maps¹⁵, which are provided for the UK as a 1km x 1km grid network. The latest maps are based on 2018 monitoring and meteorological data. Background concentrations of NO₂, PM₁₀ and PM_{2.5} were obtained for the Site for the current assessment year of 2022 and are detailed in **Table 4.2**.

Table 4.2: Background Pollutant Concentrations used in the Assessment

Pollutant	Grid Square	Concentration (µg.m ⁻³)
		2022
NO ₂	382500, 390500	19.4
PM ₁₀		12.9
PM _{2.5}		8.5

¹⁵ Defra (2022) 2018-Based Background Pollutant Concentrations <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018>

- 4.10 Background pollutant concentrations at the Site are below the relevant air quality objectives for NO₂, PM₁₀ and PM_{2.5}.

5. CONSTRUCTION PHASE DUST ASSESSMENT

- 5.1 The construction phase of the proposed development will involve a number of activities which have the potential to impact on local air quality. These include emissions of dust generated through demolition, excavation, construction, earthworks and trackout activities, exhaust pollutant emissions from construction traffic on the local highways network, and exhaust emissions from non-road mobile machinery (NRMM) within the construction Site itself.
- 5.2 The location of sensitive receptors in relation to construction activities will affect the potential for such construction activities to cause dust soiling, nuisance and local air quality impacts. Meteorological conditions and the use of control measures will also contribute to the effects experienced.

Step 1: Screen the Need for a Detailed Assessment

- 5.3 Step 1 of the IAQM guidance¹¹ involves a screening assessment to consider whether a more detailed construction phase dust assessment is required.
- 5.4 In accordance with the guidance, a detailed assessment is required if:
- Human receptors are located within 350m of the boundary of the Site or 50m of routes used by construction vehicles on the public highways, up to 500m from the Site entrances; or
 - Ecological receptors are located within 50m of the boundary of the Site or 50m of routes used by construction vehicles on the public highways, up to 500m from the Site entrances.
- 5.5 From a review of the Multi Agency Geographic Information for the Countryside (MAGIC) website¹⁶, no ecological designations were identified within the above screening distance and therefore the impact on ecological designations was not considered further. However human receptors are located within the above screening distances, with the closest of these receptors located off Yewtree Lane. A construction phase assessment was therefore undertaken.

Step 2: Assess the Risk of Dust Impacts

Step 2A: Define the Potential Dust Emission Magnitude

- 5.6 The dust emission magnitudes for the construction activities were defined using the criteria detailed in the IAQM guidance¹¹ as detailed in **Table 5.1**.

¹⁶ Defra, Multi Agency Geographic Information for the Countryside (MAGIC) [<http://magic.defra.gov.uk/>]

Table 5.1: Dust Emission Magnitude Criteria and Definition

Activity	IAQM Dust Emission Magnitude	IAQM Dust Emission Magnitude Criteria
Demolition	Large	Total building volume >50,000m ³ , potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >20m above ground level.
	Medium	Total building volume 20,000m ³ – 50,000m ³ , potentially dusty construction material, demolition activities 10 - 20m above ground level.
	Small	Total building volume <20,000m ³ , construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <10m above ground, demolition during wetter months.
Earthworks	Large	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 >8 m in height, total material moved >100,000 tonnes.
	Medium	Total site area 2,500m ² – 10,000m ² , moderately dusty soil type (e.g. silt), 5 - 10 heavy earth moving vehicles active at any one time, formation of bunds 4m - 8m in height, total material moved 20,000 tonnes – 100,000 tonnes.
	Small	Total site area <2,500m ² , soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <4m in height, total material moved <20,000 tonnes, earthworks during wetter months.
Construction	Large	Total building volume >100,000m ³ , on site concrete batching, sandblasting.
	Medium	Total building volume 25,000m ³ – 100,000m ³ , potentially dusty construction material (e.g. concrete), on site concrete batching.
	Small	Total building volume <25,000m ³ , construction material with low potential for dust release (e.g. metal cladding or timber).
Trackout	Large	>50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100m.
	Medium	10 - 50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50m – 100m.
	Small	<10 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50m.

5.7 The following dust emissions magnitudes were defined for the proposed development:

- Demolition – the proposed development will require the demolition of the existing building at the Site. The total building volume to be demolished is less than 20,000m³ and the maximum height of the building to be demolished is 10m above ground level. Therefore, the dust emissions magnitude for demolition was defined as '**Small**'.
- Earthworks – the total Site area is 2,700m². The underlying soil type at the Site was identified as 'sandy' and 'loamy'¹⁷ which when dry has the potential to be moderately dusty. The dust emission magnitude for earthworks was therefore defined as '**Medium**'.
- Construction – the proposed building volume is anticipated to be less than 25,000m³. The dust emission magnitude for construction was therefore defined as '**Small**'.
- Trackout – due to the size and scale of the site and proposed development, less than 10 HDV movements are anticipated per day during the construction period. The dust emission magnitude for track out was therefore defined as '**Small**'.

5.8 A summary of the defined dust emissions magnitudes for the development are provided in **Table 5.2**.

¹⁷ Cranfield Soil and Agrifood Institute (2022) Soilscapes [online] (Available at: <http://www.landis.org.uk/soilscapes/>)

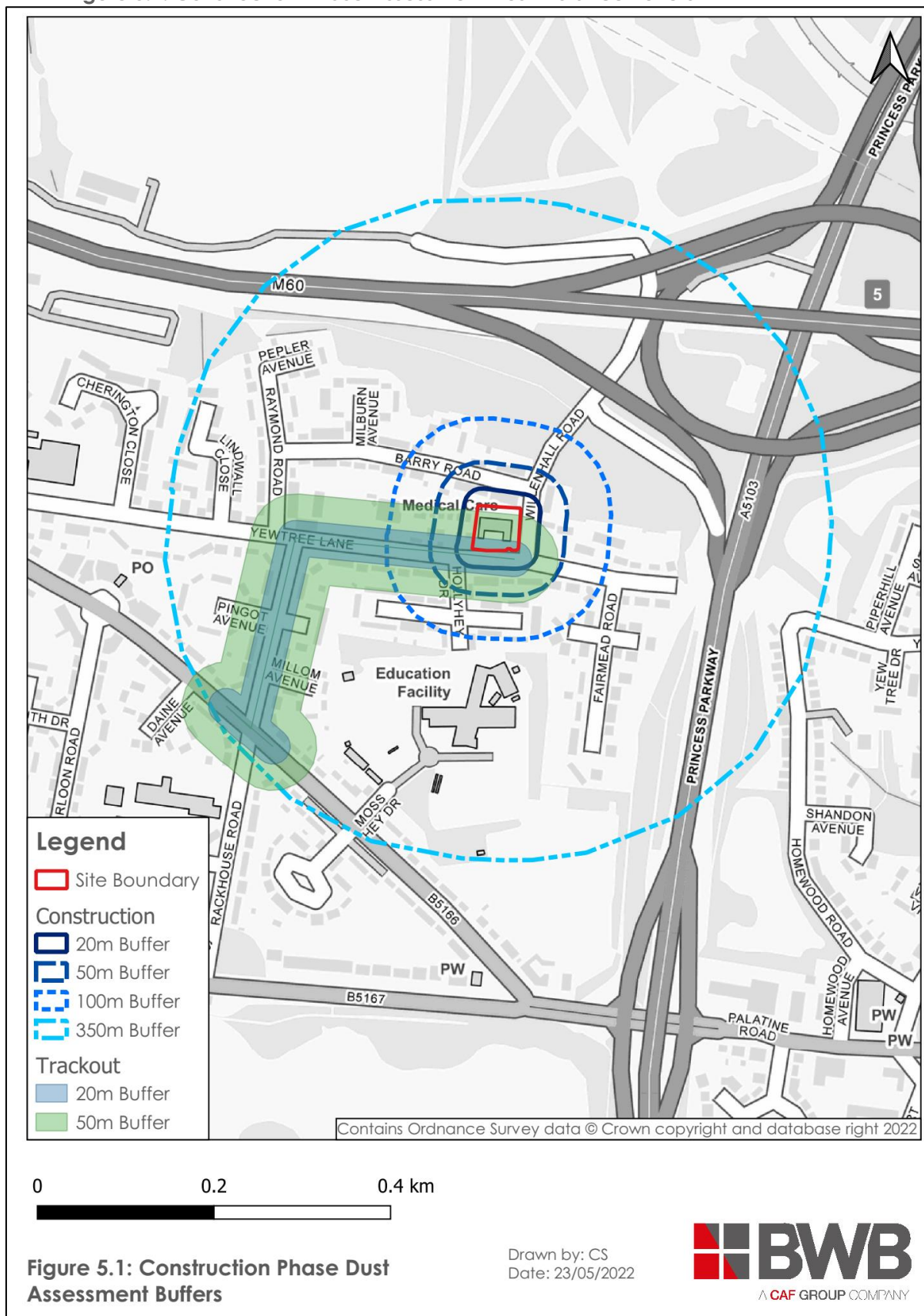
Table 5.2: Summary of Project Defined Dust Emissions Magnitudes

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

Step 2B: Define the Sensitivity of the Area

- 5.9 The assessment requires the determination of the sensitivity of the area for the purposes of dust soiling, human health and ecological impacts. The sensitivity of the study area takes into account the specific receptors in the vicinity of the Site, the proximity and number of those receptors, the local background concentration of PM₁₀ and site-specific factors. **Figure 5.1** was utilised to determine the number of receptors located within the distance bands provided in the IAQM guidance¹¹ for determining receptor sensitivity. It should be noted that for small sites, trackout may occur for distances up to 50m from the site entrance and this was considered in the construction phase dust assessment.

Figure 5.1: Construction Phase Assessment Dust Distance Buffers



5.10 The sensitivity of the area is defined below, in accordance with IAQM criteria¹¹ and summarised in **Table 5.3**.

- Dust Soiling – for demolition, earthworks and construction there are between 1 and 10 residential receptors located within 20m of the Site boundary. These receptors are considered to be highly sensitive and therefore for these activities, the sensitivity of the area was defined as '**Medium**'. For trackout, there are between 10 and 100 residential receptors located within 20m of the roads likely to be used by construction traffic, up to 500m from the site access, and as such the sensitivity of the area to dust soiling is defined as '**High**'.
- Human Health – for demolition, earthworks and construction there are between 1 and 10 residential receptors located within 20m of the Site boundary. For trackout, there are between 10 and 100 residential receptors located within 20m of the roads likely to be used by construction traffic up to 500m from the site access. The background PM₁₀ concentration is below 24µg.m⁻³ as detailed in **Table 4.4**. Therefore, the sensitivity for human health in the area for all activities was defined as '**Low**'.

Table 5.3: Determination of the Sensitivity of the Area

Potential Impact	Sensitivity			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium	Medium	Medium	High
Human Health	Low	Low	Low	Low

Step 2C: Define the Risk of Impacts

5.11 The dust emission magnitude determined in Step 2A is then combined with the sensitivity of the area determined in Step 2B to define the risk of dust impacts with no mitigation applied. The results of this assessment are detailed in **Table 5.4**.

Table 5.4: Summary Dust Risk Table to Define Site Specific Risk

Activity	Step 2A: Dust Emission Magnitude	Step 2B: Sensitivity of the Area	Step 2C: Risk of Dust Impacts
Dust Soiling Effects on People and Property			
Demolition	Small	Medium	Low Risk
Earthworks	Medium	Medium	Medium Risk
Construction	Small	Medium	Low Risk
Trackout	Small	High	Low Risk
Human Health Impacts			
Demolition	Small	Low	Negligible

Activity	Step 2A: Dust Emission Magnitude	Step 2B: Sensitivity of the Area	Step 2C: Risk of Dust Impacts
Earthworks	Medium	Low	Low Risk
Construction	Small	Low	Negligible
Trackout	Small	Low	Negligible

Step 3: Site-Specific Mitigation

- 5.12 The risk of dust impacts, defined in Step 2C of the assessment, is used to determine the mitigation measures required to minimise the emission of dust during construction phase activities. The IAQM guidance¹¹ provides details of highly recommended and desirable mitigation measures which are commensurate with the risk of dust impacts defined in Step 2C for demolition, construction, earthworks and trackout activities. Where the mitigation measures are general in nature, the highest risk category was applied in accordance with the guidance¹¹. The highest risk category identified was '**Medium Risk**' and the recommended mitigation taken from the IAQM guidance¹¹ is detailed in **Table 5.5** and **Table 5.6**.

Table 5.5: Mitigation Measures for a Medium Risk Site

Category	Mitigation Measures for a Medium Risk Site	
	Highly Recommended	Desirable
Communication	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	None
	Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environmental manager/engineer or the site manager.	
	Display the head or regional office contact information.	
	Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority.	
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.	None
	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 log book.	

Category	Mitigation Measures for a Medium Risk Site	
	Highly Recommended	Desirable
Monitoring	Carry out regular site inspections to monitor compliance with the DMP, record inspections results, and make an inspection log available to the local authority when asked.	Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of the site boundary, with cleaning to be provided as necessary.
	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 the site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	None
	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 extended period.	
	Avoid site runoff of water or mud.	
	Keep site fencing, barriers and scaffolding clean using wet methods.	
	Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.	
	Cover, seed or fence stockpiles to prevent wind whipping.	
Operating vehicle/ machinery and sustainable travel	Ensure all vehicles switch off engines when stationary – no idling vehicles.	Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
	Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.	Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).
	Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	

Category	Mitigation Measures for a Medium Risk Site	
	Highly Recommended	Desirable
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.	None
	Ensure an adequate water supply on site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.	
	Use enclosed chutes and conveyors and covered skips.	
	Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	
	Ensure equipment is readily available on site to clean and 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.	None

Table 5.6: Mitigation Measures Specific to Demolition, Earthworks, Construction and Trackout

Category	Mitigation Measures	
	Highly Recommended	Desirable
Demolition (Low Risk Site)	Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.	Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
	Avoid explosive blasting, using appropriate manual or mechanical alternatives.	
	Bag and remove any biological debris or damp down such material before demolition.	
Earthworks (Medium Risk Site)	None	Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.

Category	Mitigation Measures	
	Highly Recommended	Desirable
		Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
		Only remove the cover in small areas during work and not all at once.
Construction (Low Risk Site)	None	Avoid scabbling (roughening of concrete surfaces) if possible.
		Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
Trackout (Negligible)	None	None

Step 4: Determine Significant Effects

- 5.13 In accordance with IAQM guidance¹¹, with the implementation of the mitigation measures detailed in Step 3, the residual impacts from the construction phase are considered to be 'not significant'.

6. OPERATIONAL PHASE ROAD TRAFFIC EMISSIONS SCREENING ASSESSMENT

Impact Assessment

- 6.1 The trip generation for the proposed development was screened using IAQM and EPUK Stage 1 and Stage 2 criteria¹² to determine whether a detailed air quality assessment was required.

Stage 1

- 6.2 The proposed development comprises more than 10 residential units and proposes more than 10 parking spaces; it was therefore necessary to proceed to Stage 2.

Stage 2

- 6.3 The existing trip generation for the Site and the trip generation for the proposed development was provided by Cameron Rose Associates, the Transport Consultants for the project. The existing and proposed trip generation for the Site along with the net change is detailed in **Table 6.1**.

Table 6.1: Existing and Proposed Trip Generation

	Predicted Trip Generation as 24-hour Annual Average Daily Traffic (AADT) Flows	
	LDV	HDV
Existing	68	4
Proposed	94	4
Net Change	+26	0

- 6.4 The proposed development is not located within an AQMA and therefore the IAQM and EPUK screening criteria of an increase of more than 500 AADT and/or 100 LDV applies to consider whether a detailed assessment is required. As shown in **Table 6.1**, the net change between the existing and proposed predicted trip generation is below this screening threshold. The impacts from operational phase road traffic was therefore determined to be not significant and additional mitigation measures are not required.
- 6.5 It should however be noted that the proposals include the provision of two electric vehicle charging spaces and staff cycle storage within the basement. In addition, two Sheffield type hoops for up to four bicycles will be included within the car park for visitors.

Site Suitability Assessment

- 6.6 The proposed development will introduce sensitive uses onto the Site and therefore consideration was given to the suitability of the Site for the proposed residential end-use with regards to air quality.
- 6.7 The proposed development is not located within an AQMA; however the Site is located approximately 150m south west of a section of the GMCA AQMA which was declared for potential exceedances of the annual mean air quality objective for NO₂.
- 6.8 A review of MCC monitoring data in the vicinity of the Site indicates that there are two passive diffusion tube monitoring locations in close proximity. MA37NO is located approximately 1.1km to the north east and MA93NO is located approximately 620m to the south east of the Site. Both passive diffusion tube monitoring locations are within the GMCA AQMA and as shown in **Table 4.1**, there was exceedances of the annual mean NO₂ air quality objective in recent years at both locations. The proposed development is not located within the GMCA AQMA and therefore these passive diffusion tube monitoring locations are not considered to be representative of conditions at the Site. Furthermore, the Site is set back from any major roads whereas as MA37NO is located adjacent to the A5103 Princess Parkway and MA93NO is located adjacent to Palatine Road which experiences similar levels of traffic to the A5103 Princess Parkway. Therefore, pollutant concentrations at the Site are likely to be significantly lower than those recorded at MA37NO and MA93NO.
- 6.9 Defra has produced an NO₂ fall off with distance calculator¹⁸ which estimates NO₂ concentrations at a receptor close to a monitoring location by comparing monitored annual mean NO₂ concentrations to known relationships between NO₂ concentrations and the distance from a road source.
- 6.10 **Table 6.2** provides the inputs and predicted annual mean NO₂ concentration at a location set back from the road. It should be noted that the NO₂ fall off with distance calculator can only be used for predicting a concentration at a receptor up to 50m from the kerb. Monitored annual mean NO₂ concentrations for 2019 at MA93NO were utilised in the calculation as it is the closest passive diffusion tube monitoring location to the Site and concentrations at this location are higher than those at MA37NO and are therefore considered to be provide a more conservative assessment.

Table 6.2: Defra NO₂ Fall Off with Distance Calculator

Measurement Distance from Kerb (m)	Receptor Distance from Kerb (m)	2019 NO ₂ Defra Background Concentration (µg.m ⁻³)	Monitored Annual Mean NO ₂ Concentration (µg.m ⁻³)	NO ₂ Fall off with Distance Calculator Predicted Concentrations (µg.m ⁻³)
3.0	50.0	19.4	42.9	25.8

- 6.11 As shown in **Table 6.2**, predicted annual mean NO₂ concentrations at 50m from the kerb of Palatine Road is below the NO₂ annual mean air quality objective.

¹⁸ Defra (2020) NOx to NO₂ Calculator v8.1 [online] Available at: <https://laqm.defra.gov.uk/air-quality/air-quality-assessment/nox-to-no2-calculator/>

- 6.12 The Site is located approximately 150m from the closest major road where traffic flows are similar to those along Palatine Road. As such, pollutant concentrations at this distance are predicted to be lower than those predicted 50m away from the kerb and would likely be nearer background levels.
- 6.13 MCC does not undertake any PM₁₀ or PM_{2.5} monitoring in the vicinity of the Site which would be considered as representative of conditions at the Site. However, as detailed in **Table 4.2**, predicted PM₁₀ and PM_{2.5} background concentrations at the Site are below the relevant air quality objectives.
- 6.14 Based on the above, pollutant concentrations in the vicinity of the proposed development are considered to be below the relevant annual mean air quality objective and the Site is considered suitable for the proposed residential care home use with regard to the current air quality objectives

7. CONCLUSION

- 7.1 An air quality impact assessment was undertaken for the proposed residential care home at Yewtree Lane, Northern Moor.
- 7.2 A qualitative construction phase assessment was undertaken and measures were recommended for inclusion in a DMP to minimise emissions during construction activities. With the implementation of these mitigation measures the impact of construction phase dust emissions is considered to be 'not significant' in accordance with IAQM guidance¹¹.
- 7.3 The proposed development trip generation was screened using the IAQM and EPUK two stage screening process. The proposed development trip generation did not exceed the relevant screening criteria for development outside of an AQMA and therefore detailed dispersion modelling was not required.
- 7.4 A review of local air quality monitoring and background concentrations was undertaken to determine the suitability of the Site for the proposed residential end use. No exceedances of the annual mean objectives were identified at the Site and therefore the Site was considered suitable for residential use with regard to the current air quality objectives.
- 7.5 The proposals include the provision of two electric vehicles charging spaces as well as cycle storage facilities for both staff and visitors.
- 7.6 Based on the assessment results, 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 and local planning policy and is in accordance with the MCC Air Quality & Planning Technical Guidance¹³.

APPENDICES

APPENDIX A: GLOSSARY OF TERMS

Term	Definition
AADT	Annual Average Daily Traffic flow.
Air quality objective	Policy target generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedances within a specific timescale (see also air quality standard).
Air quality standard	The concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on the assessment of the effects of each pollutant on human health including the effects on sensitive sub groups (see also air quality objective).
Annual mean	The average (mean) of the concentrations measured for each pollutant for one year. Usually this is for a calendar year, but some species are reported for the period April to March, known as a pollution year. This period avoids splitting winter season between two years, which is useful for pollutants that have higher concentrations during the winter months.
AQAP	Air Quality Action Plan.
AQMA	Air Quality Management Area.
AQS	Air Quality Strategy.
Defra	Department for Environment, Food and Rural Affairs.
EPUK	Environmental Protection UK.
Exceedance	A period of time where the concentrations of a pollutant is greater than, or equal to, the appropriate air quality standard.
HDV	Heavy Duty Vehicles (HGVs + buses and coaches)
HGV	Heavy Goods Vehicles.
IAQM	Institute of Air Quality Management.
LAQM	Local Air Quality Management.
LDV	Light Duty Vehicles (motorbikes, cars, vans and small trucks)
NO	Nitrogen monoxide, a.k.a. nitric oxide.
NO ₂	Nitrogen dioxide.
NO _x	Nitrogen oxides.
Percentile	The percentage of results below a given value.
PM ₁₀	Particulate matter with an aerodynamic diameter of less than 10 micrometres.
PM _{2.5}	Particulate matter with an aerodynamic diameter of less than 2.5 micrometres.
micrograms per cubic metre (µg.m ⁻³)	A measure of concentration in terms of mass per unit volume. A concentration of 1µg.m ⁻³ means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant.

APPENDIX B: PROPOSED DEVELOPMENT MASTERPLAN



Notes				
Do not scale, use figured dimensions only.				
All dimensions to be verified on site prior to the commencement of any work or the production of any shop drawing. All discrepancies to be reported to the Architect.				
This drawing is to be read in conjunction with all related Architect's and Engineer's drawings and any other relevant information.				
This drawing is copyright © of C Squared Architects Ltd.				
REV	DATE	REVISION	INITIALS	CHECK
P1	13/05/22	Preliminary for Planning	JO	HPC
P2	30/05/22	Substation / Bins Store / Meters	JO	HPC

N

Key

+32.65
(+32.94)

Proposed Level
Existing Level

Tree Existing Context
(Refer to Tree Survey and Arboricultural Report)

Existing Site Tree Retained
(Refer to Tree Survey and Arboricultural Report)

Proposed Tree
(Refer to Landscape Architects Layout)

Existing Building Footprint (to be Demolished)

Site Boundary

1:1

10mm

20

30

40

50

60

70

80

90

100

200

2m

4

6

8

10

12

14

16

18

20

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Liberty Care Developments Ltd

Project

Proposed Care Home, Yewtree Lane, Northern Moor, Wythenshawe

Drawing Title

Proposed Site Plan

Scale

1:200 @ A1

Date

13/05/22

Drawn by

JO

Checked by

HPC

Drawing No.

L0206-105

Revision

P2

PLANNING

APPENDIX C: PLANNING POLICY AND LEGISLATION

National Legislation and Planning Policy

The UK Air Quality Strategy

European Union (EU) legislation forms the basis of air quality policy and legislation in the UK. The EU 2008 ambient Air Quality Directive¹ sets limits for ambient concentrations of air pollutants including nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5}). The air quality standards and objectives are prescribed through the Air Quality (England) Regulations 2000², as amended, for the purpose of the Local Air Quality Management Framework.

The UK Government are required under the Environment Act 1995³ to produce a national Air Quality Strategy (AQS). The AQS was first published in 1997⁴ and was most recently reviewed and updated in 2007⁵. The AQS provides an overview of the Government's ambient air quality policy and sets out the air quality standards and objectives to be achieved and measures to improve air quality.

The Environment Act 2021⁴ was granted Royal Assent in November 2021 and contains amendments to Part IV of the Environment Act 1995³ with regard to the Local Air Quality Management regime. Under the Environment Act 2021⁴, the Secretary of State must lay a statement before Parliament setting out progress made in meeting air quality objectives and standard in England and steps taken towards achieving the standards. The Environment Act 2021⁴ also places responsibility on local authorities to co-operate with air quality partners in the preparation of Air Quality Action Plans and identification of measures which should be monitored within the Plan and dates by which they should be implemented.

Part IV of the Environment Act³ requires local authorities in the UK to review local air quality within their administrative area and, if relevant air quality standards and objectives are likely to be exceeded, designate Air Quality Management Areas (AQMAs). Following the designation of an AQMA, local authorities are required to publish an Air Quality Action Plan (AQAP) detailing measures to be taken to improve local air quality and work towards meeting the relevant air quality standards and objectives.

National Planning Policy Framework

The National Planning Policy Framework (NPPF)⁶ was amended in July 2021 and sets out the Government's planning policies for England and how these are expected to be applied.

The NPPF⁶ recognises air quality within Section 15: Conserving and enhancing the natural environment, and states that:

"Planning policies and decisions should contribute to and enhance the natural and local environment by:

[...]

e) 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, taking into account relevant information such as river basin management plans;

[...]

Ground conditions and pollution

[...]

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.

[...]

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."

With regard to assessing cumulative effects the NPPF⁶ states:

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

[...]"

Planning Practice Guidance

The Planning Practice Guidance (PPG) for air quality⁷ was updated in November 2019 and provides guiding principles on how the planning process can take account of the impacts of new development on air quality.

The PPG⁷ sets out the following with regard to air quality and planning:

- *"What air quality considerations does planning need to address;*
- *What is the role of plan-making with regard to air quality;*
- *Air quality concerns relevant to neighbourhood planning;*
- *What information is available about air quality;*

- *When could air quality considerations be relevant to the development management process;*
- *What specific issues may need to be considered when assessing air quality impacts;*
- *How detailed does an air quality assessment need to be; and*
- *How can an impact on air quality be mitigated".*

The PPG⁷ sets out the pollutants for which there are legally binding limits for concentrations and those which the UK also has national emissions reduction commitments.

The PPG⁷ states that development plans may need to consider:

- *"what are the observed trends shown by recent air quality monitoring data and what would happen to these trends in light of proposed development and / or allocations;*
- *the impact of point sources of air pollution (pollution that originates from one place);*
- *the potential cumulative impact of a number of smaller developments on air quality as well as the effect of more substantial developments, including their implications for vehicle emissions;*
- *ways in which new 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; and*
- *opportunities to improve air quality or mitigate impacts, such as through traffic and travel management and green infrastructure provision and enhancement".*

The PPG⁷ also states what may be considered relevant to determining a planning application and these include whether a development would:

- *"Lead to changes (including any potential reductions) in vehicle-related emissions in the immediate vicinity of the proposed development or further afield. This could be through the provision of electric vehicle charging infrastructure; altering the level of traffic congestion; significantly changing traffic volumes, vehicle speeds or both; or significantly altering the traffic composition on local roads. Other matters to consider include whether the proposal involves the development of a bus station, coach or lorry park; could add to turnover in a large car park; or involve construction sites that would generate large Heavy Goods Vehicle flows over a period of a year or more;*
- *Introduce new point sources of air pollution. This could include furnaces which require prior notification to local authorities; biomass boilers or biomass-fuelled Combined Heat and Power plant; centralised boilers or plant burning other fuels within or close to an air quality management area or introduce relevant combustion within a Smoke Control Area; or*

extraction systems (including chimneys) which require approval or permits under pollution control legislation;

- *Expose people to harmful concentrations of air pollutants, including dust. This could be by building new homes, schools, workplaces or other development in places with poor air quality;*
- *Give rise to potentially unacceptable impacts (such as dust) during construction for nearby sensitive locations;*
- *Have a potential adverse effect on biodiversity, especially where it would affect sites designated for their biodiversity value".*

The PPG⁷ provides guidance regarding what should be included within an air quality assessment. Examples of potential air quality mitigation measures are also provided.

Local Planning Policy

The Manchester Local Development Framework: Core Strategy Development Plan Document¹ was adopted by Manchester City Council in 2012 and sets out the long term strategic policies for development within the city. The following policies relate to air quality:

"Policy CC 5

Transport

[...]

Proposals will be supported that improve pedestrian safety, improve air quality and increase the scope for accessible public realm improvements

[...]"

And;

"Policy T 1

Sustainable Transport

To deliver a sustainable, high quality, integrated transport system to encourage modal shift away from car travel to public transport, cycling and walking, to support the needs of residents and businesses and to prepare for carbon free modes of transport, the Council will support proposals that: -

[...]

Would reduce the negative impacts of road traffic, for example, congestion, air pollution and road accident casualties.

[...]"

And;

¹ Manchester City Council (2012) Manchester's Local Development Framework Core Strategy Development Plan Document [online] Available at: https://www.manchester.gov.uk/info/200074/planning/6573/core_strategy_2012-2027

"Policy EN 16

Air Quality

The Council will seek to improve the air quality within Manchester, and particularly within Air Quality Management Areas, located along Manchester's principal traffic routes and at Manchester Airport. Developers will be expected to take measures to minimise and mitigate the local impact of emissions from traffic generated by the development, as well as emissions created by the use of the development itself, including from Combined Heat and Power and biomass plant.

When assessing the appropriateness of locations for new development the Council will consider the impacts on air quality, alongside other plan objectives. This includes cumulative impacts, particularly in Air Quality Management Areas."

And;

"Policy DM 1

Development Management

All development should have regard to the following specific issues for which more detailed guidance may be given within a supplementary planning document:-

Effects on amenity, including privacy, light, noise, vibration, air quality, odours, litter, vermin, birds, road safety and traffic generation. This could also include proposals which would be sensitive to existing environmental conditions, such as noise."

The above policies were taken into consideration throughout the undertaking of the assessment

