

**AIR QUALITY ASSESSMENT
PLANT HILL ROAD
MANCHESTER
IRWELL VALLEY HOMES
AQA-22522B-22-494
JANUARY 2023**

IDOM



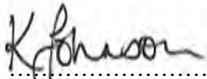
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Current Document Details

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Document Revisions

Rev	Date	Author	Approved	Issued	Remarks
0	27-01-23	HDF	KRJ	HDF	

Report issued from

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SECTION 1 INTRODUCTION

- 1.1 IDOM Merebrook Limited (IDOM) has been commissioned by Irwell Valley Homes to undertake an Air Quality Assessment (AQA) to support the forthcoming planning application for a residential development off Plant Hill Road in Manchester. The proposal comprises 12 No. residential dwellings, each with one dedicated parking space.
- 1.2 The objectives of the investigation are to:
- i.* Set out the legislative and planning policy context;
 - ii.* Establish baseline air quality from a desk-based review of published data sources;
 - iii.* Identify sources of existing air pollution and sensitive receptors in the vicinity of the site;
 - iv.* Assess the suitability of the site for the proposed development;
 - v.* Identify potential air quality impacts associated with the construction phase;
 - vi.* Identify potential air quality impacts associated with the operational phase; and
 - vii.* Where any significant air quality issues associated with the proposed developments are identified, make recommendations for further assessment and/or mitigation.
- 1.3 The scope of this assessment has been agreed with Rebecca Twigg-Purcell, Environmental Protection Officer at Manchester City Council (MCC).
- 1.4 This report has been prepared for Irwell Valley Homes for the sole purpose described above and no extended duty of care to any third party is implied or offered. Third parties making reference to the report should consult Irwell Valley Homes and IDOM as to the extent to which the findings may be appropriate for their use.

SECTION 2 PLANNING POLICY

2.1 NATIONAL POLICY

- 2.1.1 The National Planning Policy Framework (NPPF) published in March 2012 stated that air quality can be a material planning consideration and that local authority Air Quality Action Plans (AQAPs) for Air Quality Management Areas (AQMA) should be considered as part of the planning application process. It emphasised that the planning process should prevent both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of pollution and should consider cumulative impacts on air quality from individual sites in local areas.
- 2.1.2 The revised NPPF (most recently updated in July 2021) reiterates these points stating that planning decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of AQMAs and Clean Air Zones (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. Planning decisions should ensure that any new development in AQMAs and CAZs is consistent with the local AQAP.
- 2.1.3 National Planning Practice Guidance (NPPG) was launched on 6 March 2014 to support the previous version of the NPPF. The guidance set out guiding principles on how the planning regime can take account of the impacts of new development on air quality. The guidance relating to air quality was updated in November 2019 and places greater emphasis on biodiversity effects (including cumulative effects) and includes the aspiration to deliver a net improvement in overall air quality.
- 2.1.4 The NPPG states that *'Whether air quality is relevant to a planning decision will depend on the proposed development and its location. Concerns could arise if the development is likely to have an adverse effect on air quality in areas where it is already known to be poor, particularly if it could affect the implementation of air quality strategies and action plans and/or breach legal obligations (including those relating to the conservation of habitats and species). Air quality may also be a material consideration if the proposed development would be particularly sensitive to poor air quality in its vicinity'*.
- 2.1.5 The NPPG sets out the information that may be required in an air quality assessment, making clear that *'assessments need to be proportional to the nature and scale of development proposed and the potential impacts (taking into account existing air quality conditions)'*. It also provides guidance on options for mitigating air quality impacts, as well as examples of the types of measures to be considered. It makes clear that *'mitigation options will need to be locationally specific, will depend on the proposed development and need to be proportionate to the likely impact'*.

2.1.6 The Greater Manchester Air Quality Action Plan

2.1.6.1 The Greater Manchester Air Quality Action Plan 2016 – 2021 was published in January 2018 and sets out measures to reduce air pollution whilst supporting sustainable economic growth of the region. In this plan 'Key Priority Areas' have been identified where air quality is poor and 'Key Performance Indicators' have been defined to help categorise improvement actions. Policies and interventions were subsequently divided into broad categories including Development Management and Planning Regulation based on the area and type of effects that may be achieved.

2.1.6.2 For Development Management and Planning Regulation, Greater Manchester councils are instructed to adopt Institute of Air Quality Management (IAQM) guidance on the Assessment of Dust from Demolition and Construction Sites¹ and the most recent IAQM air quality planning guidance². These documents ensure that planning applications consider impacts consistently, that appropriate mitigation controls are conditioned and that opportunities to improve air quality are realised.

2.1.7 Greater Manchester Low Emission Strategy 2016

2.1.7.1 The Greater Manchester Low-Emission Strategy takes a long-term approach to carbon emissions and air quality, aiming to reduce emissions from transport and encourage sustainable travel including public transport, cycling and walking.

2.1.7.2 In terms of air quality, the aims of this strategy are to 'support the UK Government in meeting all EU thresholds for key pollutants at the earliest date' and 'reduce air pollution as a contributor to ill-health in Greater Manchester'.

2.1.8 Greater Manchester Transport Strategy 2040

2.1.8.1 The Greater Manchester Transport Strategy focuses on creating a sustainable and co-ordinated transport system which supports a wide range of different travel needs. It also aims to bring about a behaviour change to encourage the use of sustainable modes of travel, to reduce emissions from transport, and reduce the need to travel through better integration between land use and transport planning.

2.1.9 Places for Everyone

2.1.9.1 Places for Everyone is a long-term plan of nine Greater Manchester districts (Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan) for jobs, new homes, and sustainable growth. It has been published by the Greater Manchester Combined Authority (GMCA) on behalf of the nine districts.

2.1.9.2 The plan is a joint development plan of the nine districts which will determine the kind of development that takes place in their boroughs until 2037, maximising the

¹ Holman et al, (2014) 'IAQM Guidance on the Assessment of Dust from Demolition and Construction', IAQM

² Moorcroft and Barrowcliffe et al, (2017) 'Land-Use Planning & Development Control: Planning for Air Quality' v1.2, IAQM/EPUK

use of brownfield land and urban spaces while protecting Green Belt land from the risk of unplanned development.

- 2.1.9.3 It will also ensure all new developments are sustainably integrated into Greater Manchester's transport network or supported by new infrastructure.

2.2 LOCAL POLICY

2.2.1 Local Plan

- 2.2.1.1 MCC's Local Plan consists of the Core Strategy, Policies Map and the extant Unitary Development Plan policies (UDP). The Core Strategy was implemented by the Local Council in July 2012 replacing many of the UDP policies. It is the key strategic planning document for MCC and is used to help shape development and determine planning applications up until 2027.

- 2.2.1.2 The Core Strategy addresses the issue of poor air quality in various chapters throughout with specific reference made in Policy EN16 'Air Quality' which states:

'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.'

- 2.2.1.3 Policy DM 1 'Development Management' also includes a reference to air quality, stating that all development should have regard to effects on amenity, including air quality.

2.2.2 Air Quality and Planning Technical Guidance

- 2.2.2.1 The guidance aims to provide help and advice in relation to air quality in a planning context to encourage good practice and mitigation of impacts. It outlines what is expected in relation to current guidance and policy with the aspiration that new developments achieve the highest possible standards without compromising the health and well-being of people that live and work within the City of Manchester.
- 2.2.2.2 The technical guidance is focused on reducing air pollution from road transport as the major source of emissions in Manchester.
- 2.2.2.3 For the purpose of improving air quality and health impacts in Manchester, the guidance is concerned with achieving and maintaining compliance with air quality

objectives, and with improving air quality further, particularly with respect to particulate matter concentrations³.

- 2.2.2.4 The document states that construction and operational phase assessments should be undertaken in accordance with relevant IAQM/EPUK guidance and outlines best practice recommendations for electric vehicle charging infrastructure.

SECTION 3 ASSESSMENT CRITERIA

3.1 AIR POLLUTANTS OF CONCERN

- 3.1.1 Oxides of nitrogen (NO_x) are emitted by combustion processes, mostly in the form of the less harmful nitrogen oxide (NO). This is converted in the atmosphere to the Air Quality Strategy pollutant nitrogen dioxide (NO₂). The amount of NO₂ produced depends on a number of factors, including the presence of other pollutants (particularly ozone) and meteorological conditions. It therefore varies considerably over time and geographical area. However, the relative contribution of various sources to the resulting ambient concentrations of NO₂ can generally be assumed to be in proportion to their emissions of NO_x.

- 3.1.2 PM₁₀ comprises the proportion of airborne particulate matter that is less than 10 µm in diameter. This includes fine particles of less than 2.5 µm diameter (PM_{2.5}), which can penetrate deeper into the lungs than coarser particles and are becoming increasingly associated with the health effects of particulate pollution. Fine particles are emitted by combustion processes, non-exhaust traffic-related emissions (tyre and brake wear) and also include secondary particles, which are formed in the atmosphere by chemical reactions between other pollutants. The sources of secondary particles can be very distant and include areas outside the UK. The coarser fraction of PM₁₀ originates primarily from non-combustion sources.

3.2 AIR QUALITY STANDARDS

- 3.2.1 The Environment Act 1995 requires Local Authorities to review and document air quality within their area with the aim of meeting specified Air Quality Objectives (AQO) by target years, as defined in the Air Quality (England) Regulations 2000 and Air Quality (England) (Amendment) Regulations 2002 and set out in the UK National Air Quality Strategy 2007. The AQO are designed to be protective of human health and where they are unlikely to be achieved by the target year the LA is required to designate an AQMA. The authority is then obliged to plan for future compliance with the objectives. Guidance is provided in the UK Air Quality Strategy 2007 and Local Air Quality Management (LAQM) Policy Guidance⁴ (PG22).
- 3.2.2 The relevant AQO for NO₂ are an annual mean concentration of 40 µg.m⁻³ and an hourly concentration of 200 µg.m⁻³ not to be exceeded more than 18 times per year. For PM₁₀ the AQO are an annual mean concentration of 40 µg.m⁻³ and a 24-hour

³ MCC, Air Quality & Planning Technical Guidance 2022

⁴ DEFRA (2022), Local Air Quality Management Policy Guidance (PG22)

mean of $50 \mu\text{g.m}^{-3}$ not to be exceeded more than 35 times per year. The objectives for NO_2 and PM_{10} were to have been achieved by 2005 and 2004 respectively and continue to apply in all future years thereafter.

- 3.2.3 The 2008 European Directive on ambient air quality and cleaner air for Europe (2008/50/EC) was published in May 2008. The Directive sets limit values for NO_2 , PM_{10} and $\text{PM}_{2.5}$. The EU limit values are transposed into UK legislation within the Air Quality Standards Regulations 2010. The limit values for NO_2 and PM_{10} are the same as the national AQO but applied from 2010 and 2005 respectively.
- 3.2.4 The focus of legislation for $\text{PM}_{2.5}$ is on limiting long-term exposure through the use of annual standards, coupled with a reduction in $\text{PM}_{2.5}$ background concentrations (15 %) in urban areas across the UK between 2010 and 2020. The annual mean limit value of $25 \mu\text{g.m}^{-3}$ for $\text{PM}_{2.5}$ is to be achieved by 2015 whereas the national objective is to be achieved by 2020.
- 3.2.5 This assessment has been undertaken in accordance with current legislation and guidance including LAQM TG22⁵ issued by the Department for Environment Food and Rural Affairs (DEFRA) in August 2022.

SECTION 4 SITE SETTING

- 4.1 The site is located at the junction of Plant Hill Road and Bank House Road in Manchester, M9 8LX. The site is located at approximate National Grid Reference (NGR) ³85185, ⁴03447 as indicated on drawing 22522b-001-001 in Appendix 1.
- 4.2 The site is currently occupied by a disused former Police Station. It is bound by Prospect House Primary School to the north, Bank House Road to the west with residential properties beyond and Plant Hill Road to the south with Plant Hill Clinic beyond. The western boundary of the site is formed by mature trees with soft landscaping beyond (associated with the Co-op Academy secondary school).

SECTION 5 BASELINE AIR QUALITY

5.1 INTRODUCTION

- 5.1.1 The main source of air pollution in the vicinity of the site is anticipated to be transport emissions from the surrounding road network. However, the site is situated at some distance from the road network (over 600 m from the nearest 'A' road, Victoria Avenue to the north).
- 5.1.2 The site is not located within or in close proximity to an AQMA.
- 5.1.3 Reference has been made to the following information sources:
 - i.* Greater Manchester Air Quality Annual Status Report (ASR) 2021; and

⁵ DEFRA (2022), Local Air Quality Management Technical Guidance (TG22)

ii. Air Quality in England website⁶.

5.2 AUTOMATIC MONITORING

5.2.1 There are no continuous monitoring stations (CMS) within the vicinity of the site that provide representative data for the development site. The closest CMS site, BUR2 (Bury Prestwich), is a roadside monitoring site located approximately 3 m from the A56, Bury New Road (close to the junction with Butterstile Lane). According to the Greater Manchester Air Quality ASR 2021, the data capture at this site in 2020 was lower than 25% due to an irreparable leak to the roof of the analyser and therefore, the site was closed in early 2020.

5.2.2 Table 1 below summarises the recent monitoring data from this site.

Table 1: Annual mean concentrations of NO₂ and PM₁₀ at the nearby CMS.

Site ID	Distance to site	Pollutant	Annual Mean Concentration (µg.m ⁻³)					
			2016	2017	2018	2019	2020	AQO
BUR2	3.5 km W	NO ₂	42	42	38	39	38*	40
		PM ₁₀	19	19	19	19	17*	40

Bold values exceed the AQO

* Data capture below 25 %

^ Monitored concentrations from 2020 should be treated with caution due to unusually low traffic levels as a result of travel restrictions imposed during the Covid-19 pandemic

5.2.3 With reference to Table 1, annual mean concentrations of NO₂ at the CMS site BUR2 exceeded the AQO of 40 µg.m⁻³ up until 2018, after which they declined below the AQO and have remained stable in recent years. Annual mean concentrations of PM₁₀ have remained well below the AQO in all years reviewed.

5.2.4 Hourly mean concentrations of NO₂ at BUR2 did not exceed 200 µg.m⁻³ on more than the allowable 18 occasions per year permitted by the AQO between 2016 and 2020.

5.2.5 Concentrations of PM₁₀ have not exceeded the annual mean or 24-hour mean AQO at the CMS site since at least 2014.

5.2.6 BUR2 is not considered to be representative of baseline conditions at the subject site due to proximity of major roads. The development site itself is considered to be in an urban background location and concentrations are therefore expected to be significantly lower than recorded at the BUR2 CMS.

5.2.7 Monitoring of PM_{2.5} is currently undertaken at seven sites across Greater Manchester although three of these were commissioned during 2020 and results should therefore be treated with caution. The closest of the monitoring sites is Manchester Piccadilly which is located 5.1 km to the south of the subject site. Concentrations of PM_{2.5} in

⁶ <https://www.airqualityengland.co.uk> (accessed 01/12/22)

2019 (the most recent year of reliable data) were $12 \mu\text{g.m}^{-3}$, well below the AQO of $25 \mu\text{g.m}^{-3}$.

5.3 PASSIVE MONITORING

5.3.1 Diffusion tubes are also used to passively monitor concentrations of NO_2 across Greater Manchester.

5.3.2 The tables below summarise the closest diffusion tube locations to the proposed development site, along with bias-adjusted monitoring data from recent years.

Table 2: Diffusion tubes in the vicinity of the site

Site ID	Description	Type	Distance to kerb (m)	Distance and direction from development site
BU1NO	Baguley Crescent	Roadside	1.2	1.66 km NW
MA98BNO	Greengate East	Kerbside	35	3.22 km E
MA100BNO	Middleton Road	Roadside	2	1.92 km SW
MA101BNO	Rochdale Rd, Harpurhey	Roadside	2	1.62 km SE
MA102BNO	Rochdale Rd, Charlestown	Roadside	2	0.75 km SE
BU20NO	Droughts Lane	Urban background	25	3.29 km NW
RO5ANO	Oldham Road	Roadside	10	1.76 km NE
SA86NO	Bury Old Road	Kerbside	0.5	2.13 km SW
RO4ANO	Long Street	Urban background	5	3.37 km NE

Table 3: Summary of diffusion tube monitoring data in the vicinity of the proposed development site

Diffusion tube ID	Annual Mean Concentration ($\mu\text{g.m}^{-3}$)					
	2016	2017	2018	2019	2020	2021
BU1NO	35.2	31.9	32.3	32.4	24.4	25.3
MA98BNO	-	-	-	36.2	26.6	28.9
MA100BNO	-	-	-	-	31.2	33.6
MA101BNO	-	-	-	-	28.1	35.9
MA102BNO	-	-	-	-	28.3	31
BU20NO	-	-	-	-	26.1	28.4
RO5ANO	24.7	25.9	31.5	24.5	16.5	16.4

Diffusion tube ID	Annual Mean Concentration ($\mu\text{g.m}^{-3}$)					
	2016	2017	2018	2019	2020	2021
SA86NO	-	-	-	-	-	44
RO4ANO	30.9	29.5	26.7	33.2	22.2	22.8

Bold values represent exceedances the AQO

* Monitored concentrations should be treated with caution due to unusually low traffic levels as a result of travel restrictions imposed during the Covid-19 pandemic

- 5.3.3 With reference to the table above, annual mean concentrations of NO_2 at all sites have remained below the AQO except for diffusion tube site SA86NO. This diffusion tube is a kerbside monitoring site, located adjacent to the A665 (Bury New Road) and is therefore expected to be significantly influenced by road traffic emissions.
- 5.3.4 The majority of the nearby diffusion tube sites were commissioned during 2020 therefore monitoring data should be treated with caution. No clear trend is discernible in the monitoring data from the three long-term monitoring sites.
- 5.3.5 The roadside monitoring site RO5ANO is located on a public footpath between Rossway and the M60. Despite being classified as a roadside site, the nearest road to the diffusion tube is Rossway, located 23 m to the north, with the second closest road (M60) being approximately 70 m to the south (separated by vegetation buffers). Annual mean NO_2 concentrations have remained well below the AQO of $40 \mu\text{g.m}^{-3}$ at this monitoring site over the last five years.
- 5.3.6 Despite being the nearest 'urban background' site, the RO4ANO diffusion tube is located approximately 7 m from the nearest major road (Long Street (A664)) and is therefore expected to experience higher concentrations in comparison to the development site. Despite being located in close proximity to a road, the annual mean concentrations have remained below the AQO in all years reviewed.
- 5.4 **DEFRA BACKGROUND MAPS**
- 5.4.1 Reference has also been made to the UK-AIR background air pollutant concentration maps. The background maps are presented in 1 km x 1 km grid squares across England, Wales, Scotland and Northern Ireland. The current version of the background maps (reference year 2018) contains estimates for NO_x , NO_2 , PM_{10} and $\text{PM}_{2.5}$ for the period 2018 through to 2030.
- 5.4.2 The 2018 reference year background maps are based on monitoring and meteorological data for 2018. Predicted background concentrations for the reference year (2018) and current year (2023) are summarised in the table below.

Table 4: Predicted annual mean background map concentrations for grid square centred at ³85500, ⁴03500.

Pollutant	Annual Mean Concentration ($\mu\text{g.m}^{-3}$)		
	2018	2023	AQO
NO ₂	17.14	14.01	40
PM ₁₀	12.16	11.34	40
PM _{2.5}	8.30	7.74	25

5.4.3 Predicted background concentrations of all key air pollutants at the proposed development site are well below (less than half) their respective annual mean AQO.

5.5 INDUSTRIAL INSTALLATIONS

5.5.1 With reference to the Environment Agency (EA) online public register there are no Part A processes within 1 km of the proposed development site.

5.5.2 With reference to MCC's Environmental Permitting Public Registers⁷, there are no Part A2 or B processes within 500 m of the development site.

5.6 SUMMARY

5.6.1 None of the nearby monitoring locations are considered to be directly representative of baseline conditions at the subject site. However, given that monitored concentrations are all below the AQO, it is a reasonable assumption that concentrations at the subject site will also be well below the AQO as the site is less likely to be influenced by significant road traffic emissions compared with the monitoring locations.

5.6.2 Concentrations predicted by the DEFRA background maps are considered to provide a reasonable estimate of baseline conditions at the subject site and indicate that concentrations of key air pollutants are likely to be well below the relevant AQOs,

SECTION 6 POTENTIAL IMPACT OF THE SCHEME ON LOCAL AIR QUALITY

6.1 INTRODUCTION

6.1.1 Developments can introduce new receptors into an area of poor air quality. They can also increase emissions of air pollutants during their construction and operational phases.

⁷ https://www.manchester.gov.uk/info/500217/licence_-_public_registers/8272/environmental_permit_register/3
(Accessed 30/11/22)

6.2 SITE SUITABILITY

6.2.1 The proposals are for a residential development.

6.2.2 The site is not situated within an AQMA and monitoring data from 2019 (the most recent year of reliable data) indicates that, even in close proximity to major roads in the vicinity of the site, concentrations are not exceeding the annual mean AQO for NO₂. It is therefore expected that pollutant concentrations at the subject site (which is located in a residential area) will be comfortably below the AQO.

6.2.3 The site is considered to be suitable for the proposed use without the requirement for specific mitigation measures to reduce future occupants' exposure to air pollution.

6.3 CONSTRUCTION PHASE

6.3.1 The development has the potential to result in emissions of dust and PM₁₀ during the construction phase in the absence of appropriate mitigation. The risk of impacts is assessed in Section 7 with recommended mitigation measures outlined in Section 8.

6.4 OPERATIONAL PHASE

6.4.1 Traffic

6.4.2 A Transport Statement (TS) has been prepared by the project transport consultant, TPS Transport Consultants Ltd (TPS), to support the planning application.

6.4.3 The proposals are for 12 No. residential properties each with their own dedicated car parking space, all of which have electric vehicle charging points.

6.4.4 With reference to figures provided by TPS, the proposed development is expected to generate 59 vehicle movements as Annual Average Daily Traffic (AADT). Delivery and servicing vehicles have not been incorporated into this figure as it is expected that these will already be utilising the surrounding highway network.

6.4.5 An increase of this magnitude is below the indicative criteria set out in the IAQM guidance for schemes not within, or adjacent to, an AQMA (>500 vehicles as AADT flows for light-duty vehicles (LDVs)) which would trigger the requirement for further assessment. Detailed modelling of traffic impacts has therefore been scoped out of this assessment.

6.4.6 Heating Strategy

6.4.6.1 The energy strategy makes provision for heating & hot water to be supplied by Air Source Heat Pumps (ASHP) and therefore, the development will result in zero on-site emissions.

6.4.7 Due to the relatively small scale of the development, the overall effect of the operational scheme on local air quality is judged to be 'not significant'.

SECTION 7 CONSTRUCTION PHASE IMPACT ASSESMENT

7.1 GENERAL

- 7.1.1 Potential emissions during the construction phase include dust and other forms of air pollution. Sources of emissions of air pollutants are exhaust from on-site plant and site traffic and dust-generating activities, including earthworks and vehicle movements on dry ground.
- 7.1.2 Guidance was issued by the IAQM '*Guidance on the Assessment of dust from demolition and construction*', in 2014 and later updated in 2016. The construction phase impacts on local air quality associated with the redevelopment of the site have been assessed in accordance with this guidance.
- 7.1.3 In terms of vehicle movements within the site (plant exhaust), the impact of emissions would be very small, very localised and limited to vehicles in close proximity to potential receptors. With reference to the IAQM guidance, '*experience of assessing the exhaust emissions from on-site plant and site traffic suggest that they are unlikely to make a significant impact on local air quality and in the vast majority of cases they will not need to be quantitatively assessed*'. Exposure can be minimised by standard good practice.
- 7.1.4 The IAQM guidance indicates that construction impacts on local air quality can be divided into four key areas;
- Demolition,
 - Earthworks,
 - Construction, and,
 - Trackout.
- 7.1.5 Dust Emission Magnitude
- 7.1.5.1 Potential dust emission magnitude has been assessed for each of the four key areas above in relation to the development site. The dust emission magnitude is based on the scale of the anticipated works and is classified as small, medium, or large. The guidance provides examples of how the potential dust emission magnitude for different activities can be defined.
- 7.1.6 Demolition
- 7.1.6.1 The proposed development site is currently occupied by a former Police Station which is of brick construction. The total building volume to be demolished is estimated to be less than 10,000 m³, with demolition activities occurring at no greater than 10 m above ground level.

- 7.1.6.2 The potential dust emission magnitude in the absence of mitigation is considered to be 'small'.
- 7.1.7 Earthworks
 - 7.1.7.1 The site area is less than 2,500 m². Significant levelling is not expected to be required due to the site being previously developed. The main earthworks are anticipated to be associated with excavation for foundations and infrastructure. Fewer than five heavy earth-moving vehicles are expected to be active at any one time with less than 20,000 tonnes of material to be moved in total.
 - 7.1.7.2 With reference to the British Geological Society online geology viewer, the site is underlain by superficial deposits of Till overlying bedrock geology of the Manchester Marls Formation (Mudstone). Till is an unsorted and unstratified accumulation of glacial sediment of variable grain size. Such material is conservatively assessed as having a moderate to high dust-generation potential when dry.
 - 7.1.7.3 The potential dust emission magnitude in the absence of mitigation is considered to be 'small'.
- 7.1.8 Construction
 - 7.1.8.1 The proposed development consists of the construction of 12 No. residential units, each with one dedicated parking space. The proposed dwellings are expected to be two-storeys in height and of traditional brick and tile construction. It is not expected that concrete batching will take place on site and the total building volume will be less than 25,000 m³.
 - 7.1.8.2 The potential dust emission magnitude in the absence of mitigation is considered to be 'small'.
- 7.1.9 Trackout
 - 7.1.9.1 Trackout dust impacts are associated with heavy-duty vehicles (HDVs) leaving the site after moving over unpaved ground where they will accumulate mud and dirt that can then be tracked out onto the public highway. Trackout impacts are linked to the number of outward HDV movements over the course of a day.
 - 7.1.9.2 Due to the size of the site, retention of existing hardstanding along with the proximity of the existing roads, the potential for HDV movements over bare ground is limited. It is expected that internal roads will be introduced during the early stages of the development and that construction traffic will use the existing site access which is situated along Plant Hill Road. Once HDVs leave site it is anticipated they will travel along Plant Hill Road in either direction, heading northeast towards the M60 or west towards the A576.
 - 7.1.9.3 The potential dust emission magnitude in the absence of mitigation is considered to be 'small'.

7.1.10 Summary

- 7.1.10.1 A summary of the assessed dust emission magnitude for each of the site activities is displayed in Table 5 below.

Table 5: Summary of the potential Dust Emission Magnitude

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

7.2 SENSITIVITY OF THE AREA

7.2.1 Introduction

- 7.2.1.1 The following assessment of site sensitivity has been undertaken using IAQM methodology. A number of high sensitivity receptors have been identified in the vicinity of the development site including Prospect House Special Support Primary School immediately to the north, residential dwellings to the west and a children's nursery to the southwest.

- 7.2.1.2 The overall sensitivity of the area (as determined by the number and sensitivity of receptors within a given distance) is summarised in the following sections.

7.2.2 Dust Soiling Effects

- 7.2.2.1 Nuisance dust is defined here as all particulate matter less than 75 µm but greater than 10 µm diameter, comprising both suspended and deposited dust.

- 7.2.2.2 The sensitivity of receptors to dust soiling effects is dependent upon the duration and frequency that people would expect to be exposed to the effects. Residential receptors can be expected to enjoy a high level of amenity and background levels of dust soiling are expected to be low. It can be expected that dust soiling would diminish the aesthetics of their property and such receptors are therefore assessed as being of high sensitivity. Residential properties, schools, nurseries and care homes are considered to be of high sensitivity for the purpose of this assessment.

- 7.2.2.3 Medium sensitivity receptors are those where 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 or people or property would not reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. Places of work and community uses are considered to be of medium sensitivity for the purpose of this assessment.

- 7.2.2.4 Low sensitivity receptors are those where the enjoyment of amenity would not reasonably be expected or property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling. Exposure is of a transient nature and people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land.
- 7.2.2.5 Within 20 m of the site boundary the only receptors identified are within the school to the north (approximately 10 % of the building footprint). It is conservatively assumed that the number of individual receptors present within 20 m is between 10 and 100. Within 50 m of the subject site, fewer than 10 residential properties are present but the area of the school included to the north increases to approximately 50 % of the total footprint and the nursery and clinic to the south of Plant Hill Road are also included.
- 7.2.2.6 Less than 10 receptors are present within 20 m of the proposed trackout route increasing to between 10 and 100 within 50 m (including the school and nursery).
- 7.2.2.7 The sensitivity of the surrounding area with regards to dust soiling impacts is considered to be 'medium' associated with trackout and 'high' in relation to work undertaken on the site itself.
- 7.2.3 Human Health
- 7.2.3.1 For health effects of PM₁₀, sensitivities are based on whether or not the receptor is likely to be exposed to elevated concentrations over a 24-hour period.
- 7.2.3.2 High sensitivity receptors are those locations where members of the public are exposed over a time period relevant to the air quality objective for PM₁₀ (eight hours or more in a 24-hour period). Indicative examples include residential properties, hospitals, schools, nurseries and residential care homes.
- 7.2.3.3 Workers are considered to be of medium sensitivity for the purpose of this assessment and low sensitivity receptors are those locations where human exposure is transient e.g. public footpaths, playing fields, parks and shopping streets.
- 7.2.3.4 With reference to the DEFRA background maps, concentrations of PM₁₀ are expected to be below 24 µg.m⁻³ (11.34 µg.m⁻³ in 2023). With reference to the monitoring data from the BUR2 CMS, roadside concentrations of PM₁₀ are also below 24 µg.m⁻³ (19 µg.m⁻³ in 2019). It is therefore assumed that concentrations of PM₁₀ surrounding the development site, even in close proximity to roads, will be less 24 µg.m⁻³.
- 7.2.3.5 Taking into account the number and proximity of high sensitivity receptors in the vicinity of the site and the assumed baseline concentrations of PM₁₀, the sensitivity of the surrounding area with regard to human health impacts is considered to be 'low' in respect of both trackout and work undertaken on the site itself.

7.2.4 Ecological Sensitivity

7.2.4.1 An 'ecological receptor' refers to any sensitive habitat affected by dust soiling. This includes the direct impacts on vegetation or aquatic ecosystems of dust deposition, and the indirect impacts on fauna (e.g. on foraging habitats).

7.2.4.2 Dust can have two types of effect on vegetation: physical and chemical. Direct physical effects include reduced photosynthesis, respiration and transpiration through smothering. Chemical changes to soils or watercourses may lead to a loss of plants or animals for example via changes in acidity. Indirect effects can include increased susceptibility to stresses such as pathogens and air pollution. These changes are likely to occur only as a result of long-term demolition and construction works adjacent to a sensitive habitat. Often impacts will be reversible once the works are completed, and dust emissions cease.

7.2.4.3 With reference to the Multi-Agency Geographic Information for the Countryside (MAGIC) website⁸ there are no designated ecological sites or waterways within 50 m of the site boundary.

7.2.5 Summary

7.2.5.1 The sensitivity of the area surrounding the site is summarised in the table below. For trackout impacts, receptors have been included up to 50 m from the site entrance, and within 50 m of, the anticipated routes for HDVs.

Table 6: Summary of the sensitivity of the surrounding area

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	Medium
Human Health	Low	Low	Low	Low
Ecological	N/A	N/A	N/A	N/A

7.3 RISK OF DUST IMPACTS

7.3.1 The potential dust emissions magnitude for each of the site activities has been combined with the sensitivity of the surrounding area to summarise the risk of dust impacts with no mitigation. This in turn determines the level of mitigation which must be applied. The dust risk is summarised in Table 7 below.

⁸ www.magic.gov.uk

Table 7: Summary of Risk of Impacts

	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium	Low	Low	Negligible
Human Health	Negligible	Negligible	Negligible	Negligible
Ecological	N/A	N/A	N/A	N/A

7.3.2 The risk of dust soiling during construction of the proposed development in the absence of mitigation is generally assessed as low to negligible. However, a medium risk is considered to exist during demolition of the existing structures on site.

7.3.3 There is considered to be a 'negligible' risk of human health impacts during all phases of development in the absence of mitigation.

SECTION 8 MITIGATION MEASURES

8.1 CONSTRUCTION PHASE

8.1.1 The IAQM guidance provides recommendations for mitigation measures commensurate with the risk of dust impacts.

8.1.2 With reference to IAQM guidance the following measures are highly recommended based on the risk assessment presented in Section 7:

8.1.3 Communications

- i.* Develop and implement a stakeholder communications plan that includes community engagement before work commences on site;
- ii.* Display the name and contact details of persons accountable for air quality and dust issues on the site boundary together with head or regional office contact information; and,
- iii.* Develop and implement a Dust Management Plan (DMP) which may include measures to control other emissions, approved by the LA. The DMP may include monitoring of dust deposition, dust flux, real-time PM₁₀ continuous monitoring and/or visual inspections.

8.1.4 Site Management

- i.* Record all dust and air quality complaints, identify causes and take appropriate measures to reduce emissions in a timely manner. All records should be made available to the LA when asked; and
- ii.* Record any exceptional incidents that occur, causing dust and/or air emissions, either on or off site, and the action taken to resolve the situation.

8.1.5 Monitoring

- i.* Carry out regular site inspections to monitor compliance with the DMP, increasing the frequency when activities with a high potential to produce dust are being carried out or during prolonged dry/windy conditions; and
- ii.* Agree dust deposition, dust flux, or real-time PM₁₀ continuous monitoring locations with the LA. Where possible commence baseline monitoring at least three months before work commences on site.

8.1.6 Preparing and maintaining the site

- i.* Plan site layout so that, where possible, machinery and dust causing activities are located away from receptors;
- ii.* Erect solid screens or barriers around the site boundary and implement intelligent screening, such as positioning site offices between potentially dusty activities and receptors;
- iii.* Fully enclose site or specific operations where there is a high potential for dust-production;
- iv.* Avoid site runoff of water and mud;
- v.* Keep site fencing, barriers and scaffolding clean using wet methods;
- vi.* Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site; and
- vii.* Cover, seed or fence stockpiles to prevent wind whipping.

8.1.7 Operating vehicle/machinery and sustainable travel

- i.* Ensure all vehicles switch off engines when stationary - no idling vehicles; and
- ii.* Avoid the use of diesel or petrol-powered generators using mains electricity or battery powered equipment where practicable; and
- iii.* Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.

8.1.8 Operations

- i.* Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques;
- ii.* Ensure adequate water supply for dust suppression, to avoid generation of wind-blown dust, using non-potable water where possible;
- iii.* Minimise drop-heights into skips and use enclosed chutes, conveyers and covered skips, where possible; and,

- iv.* Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

8.1.9 Waste Management

- i.* Ban the disposal of waste material by burning on site.

8.1.10 Demolition

- i.* 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 where it is needed;
 - ii.* Avoid explosive blasting using appropriate manual or mechanical alternatives; and,
 - iii.* Bag and remove any biological debris or damp down such material before demolition.
- 8.1.11 Provided mitigation is employed for the duration of the construction works the overall effect on local air quality is judged to be 'not significant'.

8.2 OPERATIONAL PHASE

8.2.1 Recommended Measures

- 8.2.1.1 Guidance on mitigating against air quality impacts is provided in the IAQM/EPUK guidance document. The guidance emphasises that all developments should adopt good design principles to reduce emissions and minimise cumulative impacts regardless of the outcome of individual air quality assessments.

8.2.1.2 For the design phase:

- i.* New developments should not contravene the Council's AQAP, or render any of the measures unworkable;
- ii.* Wherever possible, new developments should not create a new 'street canyon', or a building configuration that inhibits effective pollution dispersion;
- iii.* Delivering sustainable development should be the key theme of any application; and,
- iv.* New development should be designed to minimise public exposure to pollution sources, e.g. by locating habitable rooms away from busy roads, or directing combustion generated pollutants through well sited vents or chimney stacks.

8.2.1.3 For the operational phase:

- i.* The provision of at least 1 electric vehicle (EV) “rapid charge” point per 10 residential dwellings and/or 1000m² of commercial floorspace. Where on-site parking is provided for residential dwellings, EV charging points for each parking space should be made.
- ii.* Where development generates significant additional traffic, provision of a detailed travel plan (with provision to measure its implementation and effect) which sets out measures to encourage sustainable means of transport (public, cycling and walking) via subsidised or free-ticketing, improved links to bus stops, improved infrastructure and layouts to improve accessibility and safety.
- iii.* A presumption should be to use natural gas-fired installations as opposed to biomass especially in urban areas. All gas-fired boilers should meet a minimum standard of <40 mgNO_x/kWh and all gas-fired CHP plant to meet minimum emissions standards as dictated by the engine type.

8.2.2 Proposed Measures

Minimising exposure to poor air quality

- 8.2.2.2 The site is located in an area where concentrations of all air pollutants are expected to be below their respective AQOs. The site is considered to be suitable for the proposed use without the requirement for mitigation measures to reduce exposure.

Traffic

- 8.2.2.3 In accordance with IAQM/EPUK guidance the impact of the proposed development is assessed as not significant.

- 8.2.2.4 All parking spaces are all to be provided with charging points for electric vehicles. This accords with MCC’s best practice recommendations⁹. Each charge point should be a minimum of 7 kW.

Heating scheme

- 8.2.2.5 The proposed energy strategy is expected to be met using ASHPs which will not introduce emissions on site.

- 8.2.2.6 The overall effect of the operational scheme on local air quality is judged to be ‘not significant’.

⁹ MCC (August 2022) Air Quality & Planning Technical Guidance - Appendix IV

SECTION 9 CONCLUSIONS

- 9.1 This report presents the findings of an AQA for the proposed development of Plant Hill Road which is located at the junction of Plant Hill Road and Bank House Road in Manchester.
- 9.2 The proposed development involves the demolition of the former police station and construction of 12 No. residential properties each with their own EV charging parking spaces.
- 9.3 The site is not situated within an AQMA and monitoring data from 2019 (the most recent, reliable data) indicates that, even in close proximity to major roads in the vicinity of the site, concentrations are not exceeding the annual mean AQO for NO₂. Consequently, it is expected that pollutant concentrations at the subject site (which is located in a residential area) will be comfortably below the AQO. The site is therefore considered to be suitable for the proposed development without the requirement for specific mitigation measures to reduce future occupants' exposure to air pollution.
- 9.4 The risk of dust soiling during construction of the proposed development in the absence of mitigation is generally assessed as low to negligible. However, a medium risk is considered to exist during demolition of the existing structures on site. All phases of the development are considered to pose a negligible risk to human health in the absence of mitigation.
- 9.5 Recommended mitigation measures are outlined in this report and should be incorporated into a future DMP or wider Construction Environmental Management Plan (CEMP). Provided mitigation is employed for the duration of the construction works the overall effect on local air quality is judged to be 'not significant'.
- 9.6 The proposed development is expected to generate 59 daily vehicle trips. Detailed consideration of operational traffic impacts is not therefore considered to be warranted.
- 9.7 The energy strategy makes provision for heating and hot water to be supplied by ASHP and therefore, the development will result in zero on-site emissions.
- 9.8 The overall effect of the proposed development on local air quality is judged to be 'not significant'.
- 9.9 It is considered that the development proposals adhere to policy guidance and that there is no reason falling within the scope of this report, that precludes the granting of planning permission for the development as proposed.

APPENDIX 1 ▪ Drawings



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Notes

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KEY

- Existing trees / Hedges
- Proposed trees
- 2.4mm x 4.8m parking bay
- Electric vehicle charging point
- 240L Bin
- Indicates site boundary taken from PDF copy of HM Land Registry
- 2 no Cycle Spaces

Accommodation Schedule	
Unit Type	No.
3B5P House 99m ²	12
Total Units	12
Car Parking Spaces	12
Site Area (ha)	0.18
Units Per Ha	67

D	Amendments to parking following planners comments	28.10.22	DH
C	Minor Amendments to gardens 6/7	07.03.22	DH
B	Minor Amendments added	10.02.22	DH
A	5G Mast annotated on site	20.01.22	DH
Rev	Description	Date	By

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manchester: 0161 336 5011
liverpool: 0151 665 0112

Client:	Irwell Valley		
Project:	Plant Hill Road, Manchester		
Project Status:	P - Preliminary		
Scale:	@ Original Size	Date:	Drawn By:
1:200	A2	10.11.2021	DH
			TK

Project Number	Drawing Number		Rev
1227	A	DR	007
Description	Proposed Site Plan Option 2		D



Z:\1227 - Plant Hill Road, Manchester\Drawings\Live\plots\1227_A_DR_007_ProposedSitePlan_Opt2.dwg

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