

AIR QUALITY ASSESSMENT
LOMAX STREET
MANCHESTER
RAIN CITY DEVELOPMENTS (DUCIE STREET) LTD
AQA-21613-18-186
APRIL 2018



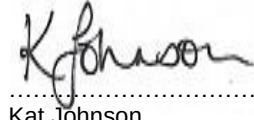
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Authors

Elizabeth Whittall

Approved by



.....
Kat Johnson

Issued by



.....
Elizabeth Whittall

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EXECUTIVE SUMMARY

An Air Quality Assessment was requested by Rain City Developments (Ducie Street) Limited and prepared by Idom Merebrook Limited (Merebrook) to accompany the planning application for the redevelopment of Lomax Street, Manchester.

The purpose of the assessment was to undertake a qualitative assessment of any effects of the proposed development on local air quality and the effect of existing air quality on future occupiers of the site.

SITE DETAILS

Approximate site area	0.053 ha
Current use	The site is currently occupied by a pay and display car park.
Proposed use	The proposed development comprises an eight-storey residential building including 41 apartments with no on-site parking.

BASELINE AIR QUALITY

Nitrogen dioxide (NO ₂) and particulate matter (PM ₁₀)	The site is located within an AQMA declared in respect of annual mean concentrations of NO ₂ . Concentrations of NO ₂ in representative locations in the vicinity of the site are below but close to the AQO of 40 µg.m ⁻³ .
Local pollution sources	Traffic-related emissions are expected to be the main source of pollution in the vicinity of the site due to its central location. A diecasting works is also located on the opposite side of Ducie Street.

EFFECTS OF DEVELOPMENT

Construction phase	The risk of dust impacts during the construction phase has been assessed as 'low' in the absence of mitigation.
	Provided appropriate mitigation is employed throughout the construction phase the overall effect on local air quality is assessed as 'not significant'.
Operational phase	The scheme is anticipated to result in a decrease in traffic on the local road network as a result of the change in use.
	Heating will be via electrical radiator panels and hot water supply via an immersion heater (electrical) therefore there will be no on-site point sources of emissions.
	The operational development is assessed as having a negligible impact on local air quality and the overall effect of the scheme is judged to be 'not significant'.



SECTION 1 INTRODUCTION

- 1.1 Rain City Developments (Ducie Street) Limited (The Client) proposes to redevelop an area of land currently occupied by a pay and display car park between Lomax Street and Ducie Street in central Manchester. The proposed development comprises an eight-storey residential building including 41 apartments, a ground floor level plan is shown on drawing 0303_03_00G - GA_Level 0 in Appendix 1.
- 1.2 Idom Merebrook Limited (Merebrook) has been commissioned by The Client to undertake an air quality assessment for the Proposed Development.
- 1.3 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.* Identify potential air quality impacts associated with the construction phase;
 - v.* Identify potential air quality impacts associated with the operational phase;
 - vi.* Where any significant air quality issues associated with the proposed developments are identified make recommendations for further assessment and /or mitigation; and,
 - vii.* Undertake a three-month diffusion tube survey to confirm baseline conditions and any mitigation required to render the site suitable for residential development.
- 1.4 This assessment has been undertaken in consultation with Laura Miller of the Environmental Protection department at Manchester City Council (MCC)
- 1.5 This report has been prepared for The Client 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 The Client and Merebrook as to the extent to which the findings may be appropriate for their use.



SECTION 2 PLANNING POLICY & ASSESSMENT CRITERIA

2.1 NATIONAL POLICY

- 2.1.1 The National Planning Policy Framework (NPPF) published in March 2012 states that air quality can be a material planning consideration and that local authority air quality action plans for Air Quality Management Areas (AQMA) should be considered as part of the planning application process. 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 National Planning Practice Guidance (NPPG) was launched on 6 March 2014. The guidance sets out guiding principles on how planning can take account of the impacts of new development on air quality.
- 2.1.3 The NPPG states that *'Whether or not air quality is relevant to a planning decision will depend on the proposed development and its location. Concerns could arise if the development is likely to generate air quality impact in an area where air quality is known to be poor. They could also arise where the development is likely to adversely impact upon the implementation of air quality strategies and action plans and/or, in particular, lead to a breach of EU legislation (including that applicable to wildlife)'*.¹
- 2.1.4 The NPPG sets out the information that may be required in an air quality assessment, making clear that *'Assessments should be proportional to the nature and scale of development proposed and the level of concern about air quality'*². 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 where necessary, will depend on the proposed development and should be proportionate to the likely impact'*³.

2.2 REGIONAL POLICY GUIDANCE

The Greater Manchester Air Quality Action Plan

- 2.2.2 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 'Key Performance Indicators' have been defined to help categorise improvement actions. Policies and interventions were subsequently divided into broad subjects including Development Management and Planning Regulation based on the area and type of effects that may be achieved.

¹ Reference ID: 32-005-20140306

² Reference ID: 32-007-20140306

³ Reference ID: 32-008-20140306



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

Greater Manchester Low Emission Strategy

- 2.2.4 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.
- 2.2.5 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'.

Greater Manchester Transport Strategy 2040

- 2.2.6 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.

Greater Manchester Spatial Framework

- 2.2.7 The Greater Manchester Combined Authority (GMCA) is working to produce the Greater Manchester Spatial Framework (GMSF), a joint plan to manage the supply of land for jobs and new homes across Greater Manchester. The second draft of the plan will be developed at the start of 2018 with a view to the draft document being published in June 2018. The redrafted spatial framework will aim to make the most of Greater Manchester's brownfield sites and reduce the impact on greenbelt.
- 2.2.8 In the first draft of the GMSF, the issue of air quality was addressed as part of its strategic vision and within Policy GM17 – 'Air Quality'. Policy GM17 seeks to make major improvements to air quality helping to minimise the detrimental impacts on human health and utilise other associated benefits.

2.3 LOCAL POLICY GUIDANCE

2.3.1 Local Plan

- 2.3.1.1 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.



- 2.3.1.2 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:
- 2.3.1.3 *'The Council will seek to improve the air quality within Manchester, and particularly within AQMAs, 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'.*
- 2.3.1.4 *'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 AQMAs'.*

2.4 ASSESSMENT CRITERIA

- 2.4.1 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 Local Authority 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 the statutory Local Air Quality Management (LAQM) technical guidance document (TG16) issued by the Department for Environment, Food and Rural Affairs (DEFRA) in February 2018.
- 2.4.2 The relevant AQO for nitrogen dioxide (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 mean of 50 µg.m⁻³ not to be exceeded more than 35 times per year. The objectives for NO₂ and PM₁₀ were to have been achieved by 2005 and 2004 respectively, and continue to apply in all future years thereafter.
- 2.4.3 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 NO₂, PM₁₀ and PM_{2.5}. Achievement of these values is a national obligation rather than a local one. The EU limit values are transposed into UK legislation within the Air Quality Standards Regulations 2010. The limit values for NO₂ and PM₁₀ are the same as the national AQO but applied from 2010 and 2005 respectively.
- 2.4.4 The focus of legislation for PM_{2.5} is on limiting long-term exposure through the use of annual standards, coupled with a reduction in PM_{2.5} background concentrations (15 %) in urban areas across the UK between 2010 and 2020. The annual mean limit value of 25 µg.m⁻³ for PM_{2.5} is to be achieved by 2015 whereas the national objective is to be achieved by 2020.



- 2.4.5 This assessment has been undertaken in accordance with current legislation and guidance including LAQM TG16.

SECTION 3 SITE SETTING

- 3.1 The Site is approximately 0.053 ha in size and is located in Manchester city centre at approximate National Grid Reference (NGR) ³85018, ³98258 as indicated on drawing 0303_02_001 in Appendix 1.
- 3.2 The Site currently comprises a 24-hour pay and display surface car park.
- 3.3 The Site is bound by Lomax Street which forms the northern boundary of the site with the Staycity apartment block beyond. Another car park is present immediately to the east with commercial properties beyond. The A665 (Manchester ring road) is present approximately 70 m from the eastern Site boundary at its closest point. Ducie Street forms the southern boundary with a diecasting works beyond, and to the west are a number of apparently derelict buildings.

SECTION 4 BASELINE AIR QUALITY

4.1 INTRODUCTION

- 4.1.1 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.
- 4.1.2 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.
- 4.1.3 The main source of air pollution in the vicinity of the site is anticipated to be transport emissions from the surrounding road network.



4.2 INDUSTRIAL INSTALLATIONS

- 4.2.1 With reference to the Environment Agency (EA) online public register there are no Part A processes within 1 km of the Site.
- 4.2.2 With reference to the Part B public register available on MCC's website, a diecasting works (Presbars Diecastings Ltd) is located approximately 20 m to the south of the Site on the opposite side of Ducie Street. The Environmental Permit makes specific reference to the reduction of emissions from the installation throughout. The Permitting Officer has advised (via the Environmental Protection Officer) that '[the operator] should be complying with their permitted emission limits therefore sensitive developments nearby shouldn't have to take their emissions into account'. It is understood that abatement measures have been installed and that stack emissions are due to be reviewed by Permitting Officer in May 2018 to ensure compliance with the permitted limits.

4.3 LOCAL AUTHORITY MONITORING DATA

- 4.3.1 Reference has been made to the following information sources:
- i. 2016 Air Quality Annual Status Report (ASR) for Greater Manchester;
 - ii. Annual Average Nitrogen Dioxide Diffusion Tube Results (Excel sheet available on MCC website); and,
 - iii. Air Quality England website.
- 4.3.2 The Site is located within the GMCA's AQMA which has been declared in respect of annual mean concentrations of NO₂.
- 4.3.3 The closest continuous monitoring station (CMS) to the site is Manchester Piccadilly (MAN3) located approximately 0.7 km to the west.
- 4.3.4 According to the Air Quality England Website, the monitoring undertaken at Manchester Piccadilly takes place at two CMS stations, MAN3 and MAN7. MAN3 records concentrations of NO₂ whilst MAN7 monitors PM₁₀ levels. For the purposes of this report the Manchester Piccadilly monitoring site will be referred to as MAN3 for all pollutants which is consistent with the ASR report.
- 4.3.5 In the 2016 Greater Manchester ASR the CMS located at Manchester Piccadilly has been classed as an urban background site, however the diffusion tube (MAN59) which is co-located with the CMS has been classed as an 'Urban Centre' site. With regards to the LAQM site type classification, an urban centre is defined as '*an urban location representative of typical population exposure in towns or city centres, for example, pedestrian precincts and shopping areas*'. This is considered to be a representative description of the MAN3 monitoring site.
- 4.3.6 Annual mean concentrations of NO₂ and PM₁₀ recorded at the MAN3 CMS are summarised in the table below.



Table 1: Annual mean concentrations of NO₂ and PM₁₀ for the MAN3 CMS.

Pollutant	Annual Mean Concentration (µg.m ⁻³)						
	2012	2013	2014	2015	2016	2017	AQO
NO ₂	41*	39	40	39	40	36	40
PM ₁₀	21	22	20	20	20	20 ^A	40

Bold values represent exceedances of AQO

A Data is provisional

* Data Capture below 90%

- 4.3.7 In recent years, annual mean concentrations of NO₂ have either exceeded or been within 10% of the AQO of 40 µg.m⁻³ at the MAN3 CMS. Hourly mean NO₂ concentrations have not exceeded 200 µg.m⁻³ on more than the allowable 18 hours per calendar year permitted by the short term AQO.
- 4.3.8 Monitored annual mean concentrations of PM⁻¹⁰ have been well below the annual mean concentration of 40 µg.m⁻³ and 24-hour mean PM₁₀ concentrations have not exceeded 50 µg.m⁻³ on more than 35 days per calendar year permitted by the short term AQO in recent years.
- 4.3.9 In 2016, non-automatic (passive) monitoring of NO₂ was undertaken at 254 sites across Greater Manchester. The table below summarises data from the nearest diffusion tubes including a roadside site (MAN71), a kerbside site (MAN9), an urban centre site (MAN59) and the closest urban background site (MAN14).

Table 2: Summary of diffusion tube monitoring data in the vicinity of the proposed development site (bias adjusted).

Site ID	Distance to development site (m)	Annual Mean Concentration NO ₂ (µg.m ⁻³)						
		2012	2013	2014	2015	2016	2017	AQO
MAN71	122	49.6	44.3	47.4	45.9	51.2	51	40
MAN9	402	50.7	53.4	56.2	55.9	51.9	51.7	40
MAN59	693	39.6	35.5	-	34.9	38	40.1	40
MAN14	2740	25.7	22.6	22.9	21.9	23.3	22.4	40

Bold values represent exceedances of AQO

*Data has not been fully ratified for the calendar year.

- 4.3.10 With reference to Table 2, annual mean concentrations of NO₂ have consistently exceeded the annual mean AQO of 40 µg.m⁻³ by a significant margin in both roadside and kerbside locations since 2012. Concentrations recorded at MAN59 (urban centre site) exceeded the AQO in 2017 only and concentrations at the urban background site MAN14 have consistently been recorded well below the AQO.
- 4.3.11 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 2015) contains estimates for NO_x, NO₂, PM₁₀ and PM_{2.5} for the period 2015 through to 2030.

- 4.3.12 The 2015 reference year background maps are based on monitoring and meteorological data for 2015. Predicted background concentrations for reference year (2015) and current year (2018) are summarised in the table below.

Table 3: Predicted annual mean background map concentrations for grid square centred at 388500, 396500.

Pollutant	Annual Mean Concentration (µg.m ⁻³)		
	2015	2018	AQO
NO ₂	27.84	24.64	40
NO _x	43.24	37.04	
PM ₁₀	14.22	13.86	40
PM _{2.5}	9.23	8.85	25

- 4.3.13 Predicted DEFRA background concentrations for the proposed development site are well below their respective annual mean AQO.
- 4.3.14 To verify the reliability of the predicted DEFRA background map concentrations for the Site, a comparison was made between the 2015 monitored concentration at the background diffusion tube MAN14 and the background map prediction for the grid square in which it is situated. The diffusion tube recorded a concentration of 21.9 µg.m⁻³ compared to the predicted background map concentration of 20.8 µg.m⁻³. This indicates that the DEFRA background maps are slightly underpredicting background concentrations in the local area.
- 4.3.15 The site is set back from the main road network and is therefore considered likely to experience concentrations of air pollutants similar to those in an urban centre monitoring location. At the nearest urban centre monitoring location (Manchester Piccadilly) the most recent concentrations of NO₂ recorded at the CMS site was 36 µg.m⁻³ in 2017. However, the co-located diffusion tube recorded a concentration of 40.1 µg.m⁻³ for the same period.

SECTION 5 CONSIDERATION OF THE SCHEME IN RESPECT OF AIR QUALITY

5.1 GENERAL

- 5.1.1 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.

5.2 SITE SUITABILITY ASSESSMENT

- 5.2.1 The site is situated within an AQMA which has been declared in respect of annual mean NO₂ concentrations. Monitoring data indicates that concentrations of air



pollutants in a representative location in the vicinity of the site are likely to be close to the relevant AQO for NO₂ but well below the relevant AQO for PM₁₀ and PM_{2.5}.

- 5.2.2 Given the difference in recorded concentrations of NO₂ between the CMS and co-located diffusion tubes (and the proximity of concentrations to the AQO) a period of monitoring will be undertaken to confirm baseline conditions. Monitoring will be undertaken over a three-month period with subsequent annualisation of results (undertaken in accordance with LAQM TG16) for comparison with the annual mean AQO. The results will be used to assess whether mitigation measures are required to be incorporated into the Proposed Development to protect future residents against poor air quality.

5.3 CONSTRUCTION PHASE

- 5.3.1 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 qualitatively assessed in Section 6.

5.4 OPERATIONAL PHASE

- 5.4.1 As the site currently operates as a surface car park and will not incorporate on-site car parking as part of the redevelopment there will be a reduction in vehicle trips compared with the extant use. Data provided by SK Transport Planning Ltd (SK Transport) indicates a reduction of 53 vehicle trips per day.
- 5.4.2 Heating will be via electrical radiator panels and hot water supply via an immersion heater (electrical) therefore there will be no on-site point sources of emissions.
- 5.4.3 The potential operational impacts of the Proposed Development are therefore considered to be negligible.

SECTION 6 CONSTRUCTION PHASE IMPACT ASSESMENT

6.1 GENERAL

- 6.1.1 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.
- 6.1.2 Guidance has been issued by the Institute of Air Quality Management (IAQM) 'Guidance on the Assessment of dust from demolition and construction', 2014. The construction phase impacts on local air quality associated with the redevelopment of the site have been assessed in accordance with this guidance.
- 6.1.3 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.

- 6.1.4 The IAQM guidance indicates that construction impacts on local air quality can be divided into four key areas;

Demolition,

Earthworks,

Construction, and,

Trackout

- 6.1.5 Dust Emission Magnitude

- 6.1.5.1 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.

- 6.1.6 Demolition

- 6.1.6.1 There are currently no buildings occupying the Site therefore demolition activities will be limited to removal of hardstanding which covers the site.

- 6.1.6.2 The potential dust emission magnitude in the absence of mitigation is considered to be 'small'.

- 6.1.7 Earthworks

- 6.1.7.1 The Site area is less than 2,500 m² and it is not anticipated that significant levelling will be required. The key earthworks are identified as excavation for foundations and infrastructure.

- 6.1.7.2 With reference to the British Geological Society 'Open Geology of Britain viewer' superficial deposits beneath the site comprise Devensian Till (Diamicton) with underlying bedrock of Chester formation (sandstone).

- 6.1.7.3 The potential dust emission magnitude in the absence of mitigation is considered to be 'small'.

- 6.1.8 Construction

- 6.1.8.1 It is anticipated the total building volume will be less than 25,000 m³. The proposed development will be of traditional construction materials including brick, steel, glass and concrete.



- 6.1.8.2 The potential dust emission magnitude in the absence of mitigation is considered to be 'small'.
- 6.1.9 Trackout
- 6.1.9.1 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.
- 6.1.9.2 It is anticipated total outward movements of HDVs will be less than ten in any one day.
- 6.1.9.3 The potential dust emission magnitude in the absence of mitigation is considered to be 'small'.
- 6.1.10 Summary
- 6.1.10.1 A summary of the assessed dust emission magnitude for each of the site activities is displayed in Table 4 below.

Table 4: Summary of the potential Dust Emission Magnitude

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

6.2 SENSITIVITY OF THE AREA

6.2.1 Introduction

- 6.2.1.1 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 with the closest residential properties located approximately 130 m to the southeast.

- 6.2.1.2 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.

6.2.2 Dust Soiling Effects

- 6.2.2.1 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.



- 6.2.2.2 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.
- 6.2.2.3 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.
- 6.2.2.4 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.
- 6.2.2.5 The proposed development is located in Manchester city centre however the area immediately surrounding the site is not occupied by any high sensitivity receptors. An aparthotel is situated to the north of the site potentially introducing greater than 100 medium sensitivity receptors within 50 m of the site boundary.
- 6.2.2.6 The sensitivity of the surrounding area with regards to dust soiling effects is considered to be 'medium'.
- 6.2.3 Human Health
- 6.2.3.1 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.
- 6.2.3.2 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.
- 6.2.3.3 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.
- 6.2.3.4 With reference to recent data from a nearby representative monitoring station, concentrations of PM₁₀ are expected to be below 24 ug.m⁻³.



- 6.2.3.5 Based on the estimated number of sensitive receptors as set out in 6.2.7 and the low baseline PM₁₀ concentration, the sensitivity of the surrounding area with regards to human health impacts is considered to be 'low'.
- 6.2.4 Ecological Sensitivity
- 6.2.4.1 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).
- 6.2.4.2 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.
- 6.2.4.3 With reference to the MaGIC website there are no designated ecological sites within 50 m of the Proposed Development boundary or construction traffic routes.
- 6.2.5 Summary
- 6.2.5.1 The sensitivity of identified receptors within 350 m of the site boundary is summarised in the table below. For trackout receptors have been identified up to 50 m from the site entrance along the anticipated routes for HDVs.

Table 5: Summary of the surrounding area

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium	Medium	Medium	Medium
Human Health	Low	Low	Low	Low
Ecological	n/a	n/a	n/a	n/a

- 6.2.5.2 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 6 below.

Table 6: Summary of Risk of Impacts

	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Low	Low	Low	Negligible



	Demolition	Earthworks	Construction	Trackout
Human Health	Negligible	Negligible	Negligible	Negligible
Ecological	n/a	n/a	n/a	n/a

- 6.2.5.3 Due to the proximity and number of receptors there is considered to be a 'low risk' of dust impacts during the construction phase in the absence of mitigation.

SECTION 7 MITIGATION MEASURES

7.1 CONSTRUCTION PHASE

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

- 7.1.2 With reference to IAQM guidance the following measures are highly recommended based on the risk assessment presented in Section 6:

7.1.3 Communications

- i.* 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.

7.1.4 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 local authority 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.

7.1.5 Monitoring

- i.* Carry out regular site inspections increasing the frequency when activities with a high potential to produce dust are being carried out or during prolonged dry/windy conditions.

7.1.6 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; and,
- iii.* Avoid site runoff of water and mud.



7.1.7 Operating vehicle/machinery and sustainable travel

- i.* Implement a site policy that no vehicles are left idling and engines are switched off when not in use; and,
- ii.* Avoid the use of diesel or petrol-powered generators using mains electricity or battery powered equipment where practicable.

7.1.8 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

7.1.9 Waste Management

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

7.2 **OPERATIONAL PHASE**

7.2.1 General

7.2.1.1 Guidance on mitigating against air quality impacts is provided in a document produced jointly by the IAQM and Environmental Protection UK (EPUK). 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.

7.2.1.2 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.



7.2.1.3 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.

7.2.2 As the Proposed Development does not incorporate on-site parking or combustion sources the operational phase measures outlined above are not applicable. Notwithstanding the findings of the operational phase impact assessment (which concluded that the potential impacts of the scheme is negligible), a Travel Plan has been prepared by SK Transport to accompany the planning application.

7.2.2.1 The Travel Plan measures will be concentrated on promotional initiatives to build on the good location of the site and existing infrastructure available. This will include the provision of a travel pack for each resident with information on:

- i.* location of car club vehicles (there are three nearby on Tariff Street and China Lane) and how to become a member;
- ii.* location of main public transport nodes;
- iii.* information on bike hire (mobike and Bike & Go);
- iv.* information on sharing economy facilities (blabla car, uber, GM car share);
- v.* information on public transport passes that can be purchased from TfGM;
- vi.* maps of local walk, cycle and public transport routes;
- vii.* details of local retailers who do home shopping delivery; and,
- viii.* details of local walking and cycling interest groups.

7.2.2.2 The proposal also includes 100% cycle parking provision.



SECTION 8 CONCLUSIONS

- 8.1 The Client proposes to redevelop a site situated between Lomax Street and Ducie Street in central Manchester to provide an eight-storey residential apartment block comprising 41 units
- 8.2 The site is located within the AQMA and is currently occupied by a pay and display surface car park. The site is set back from the main road network and is therefore considered likely to experience concentrations of air pollutants similar to those in urban centre monitoring locations.
- 8.3 Concentrations recorded at the nearby urban centre monitoring location (Manchester Piccadilly) are typically around or just below the AQO. A period of monitoring (three months followed by annualisation of data in accordance with TG16) will be carried out to confirm baseline conditions and the requirement for any mitigation measures to protect future residents from poor air quality.
- 8.4 Concentrations of PM₁₀ and PM_{2.5} are anticipated to be well below their respective long and short term AQOs.
- 8.5 The Proposed Development has been assessed as presenting a 'low risk' of dust/PM10 impacts during the construction phase in the absence of mitigation. Risks can be mitigated using appropriate management and dust suppression techniques commensurate with the level of risk and secured via planning condition. Provided appropriate mitigation is employed for the duration of the construction works the overall effect on local air quality is judged to be 'not significant'.
- 8.6 The redevelopment of the Site will lead to a reduction in vehicle movements on the local road network. The heating and hot water demand will be met using electrically operated equipment therefore the potential operational impact of the Proposed Development is considered to be negligible.
- 8.7 Notwithstanding the findings of the operational phase impact assessment a Travel Plan has been produced to support the planning application and the Proposed Development will incorporate 100% cycle parking provision.
- 8.8 It is considered that the development proposals adhere to policy guidance. 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



7 Constance Street
Knott Mill
Manchester
M15 4JQ
Tel: +44 (0)161 870 1152
www.timgroomarchitects.com

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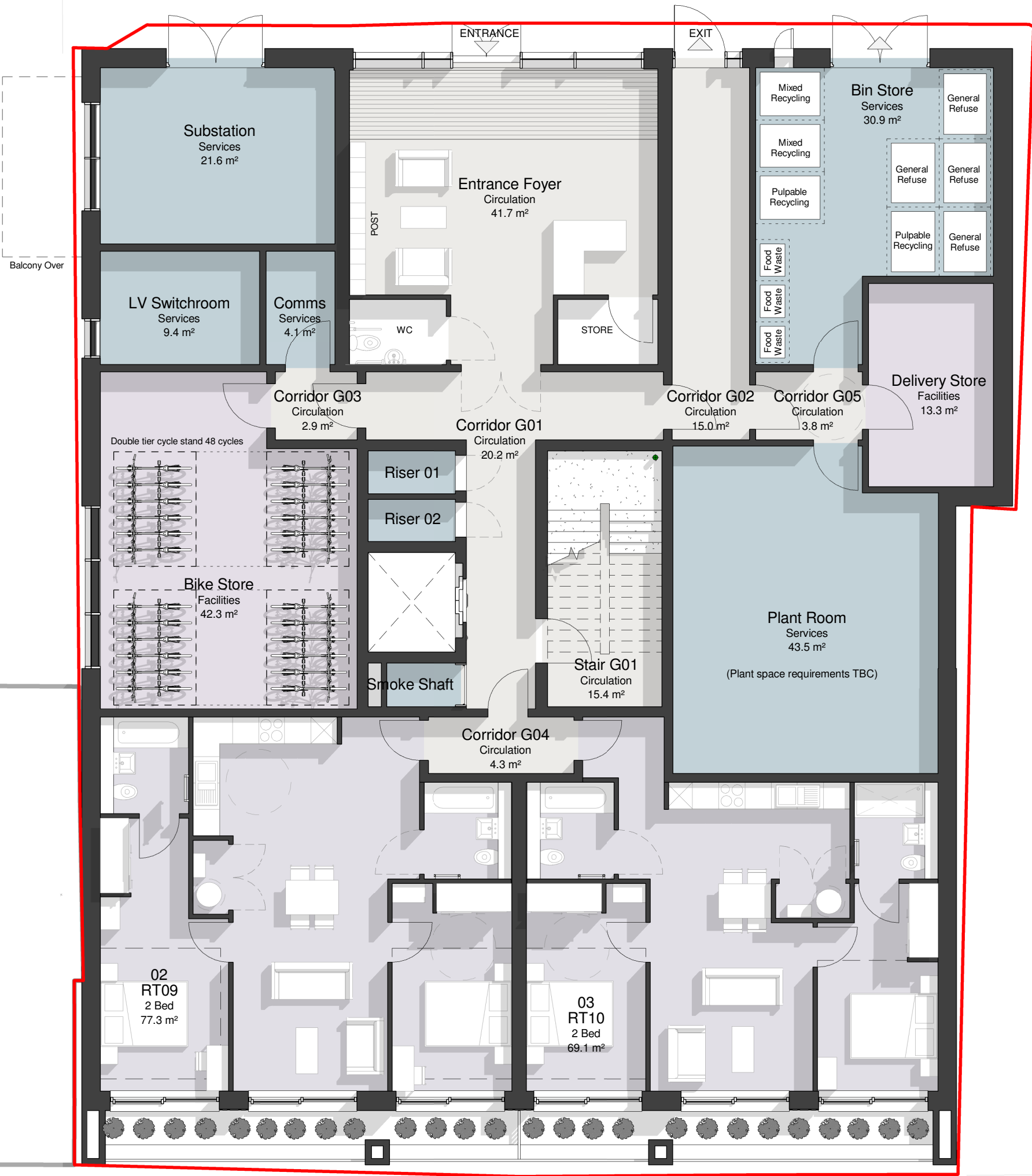
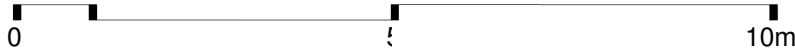
Rev.	Description	Date
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Client	Raincity Developments (Lomax Street)
Project	Lomax Street
Title	GA_Level 0
Status	Planning
Project number	0303
Date	Issue Date
Drawn by	LS
Checked by	Checker
Scale	1 : 100@A2
Drawing No.	0303_03_00G
Revision	

LOMAX STREET

DUCIE STREET

GA_Level 0
1 : 100





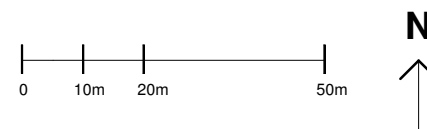
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Client	Raincity Developments (Lomax Street)
Project	Lomax Street
Title	Location Plan
Status	Planning
Project number	0303
Date	Issue Date
Drawn by	LS
Checked by	Checker
Scale	As indicated@A4
Drawing No.	0303_02_001
Revision	

1 : 1250





AN **idom** GROUP COMPANY

Idom Merebrook Ltd Cromford Mills, Mill Lane, Matlock, Derbyshire, DE4 3RQ
t +44 (0)1773 829 988 **f** +44 (0)1773 829 393 **e** consulting@merebrook.co.uk **merebrook.co.uk idom.com**

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offices London Kent Derbyshire Cardiff Manchester Stirling