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PROVIDENCE LAND
THORLEY DRIVE,
CHEADLE

AIR QUALITY ASSESSMENT

JANUARY 2016

the journey is the reward

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THORLEY DRIVE,
CHEADLE

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Providence Land
Thorley Drive,
Cheadle
Air Quality Assessment

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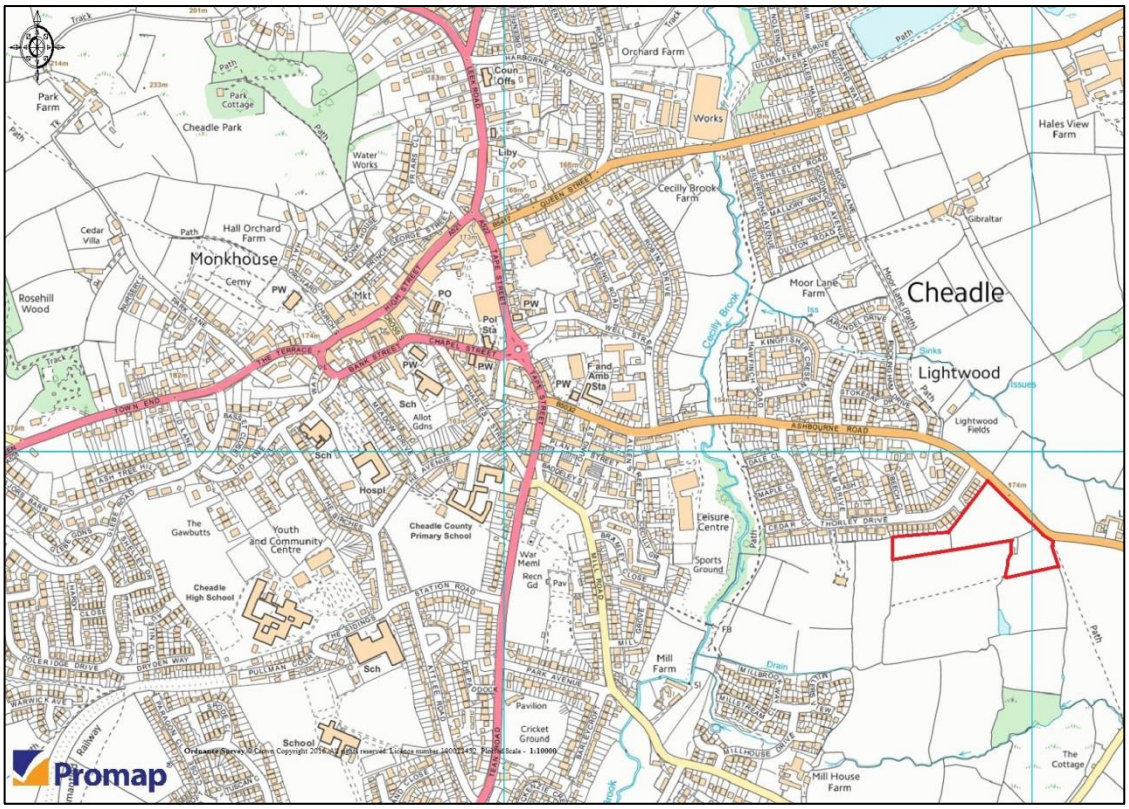
1 Introduction

1.1 Mayer Brown Ltd has been appointed by Providence Land Ltd to undertake this air quality impact assessment in support of a planning application for a proposed residential development off Thorley Drive, Cheadle, Staffordshire. The location of the proposed development area is illustrated in **Figure 1.1**: Site Location in Relation to the Local Highway Network.



(Source: Ordnance Survey, Licence: AL100002189)

Figure 1.1: Site in Relation to the Local Highway Network

1.2 The site is located on the eastern side of Cheadle and is bounded by residential dwellings along Thorley Drive, and the B5032 Ashbourne Road to the eastern side. The outstanding boundaries are greenfield. This is illustrated in **Figure 1.2**: Existing Site Layout.

(Source: Ordnance Survey, Licence: AL100002189)

Figure 1.2: Existing Site Layout

1.3 The proposal to which this Air Quality Assessment relates is to support a full planning application for 60 no. residential dwellings, as illustrated in **Figure 1.3**: Proposed Site Layout.

Figure 1.3: Proposed Site Layout

1.4 The main issue in terms of air quality for a development of this nature will be from vehicular emissions of Nitrogen Dioxide (NO_2) and Particulate Matter (PM_{10} and $PM_{2.5}$). Emissions from road traffic are most likely to affect receptors within 200m of a road[1]. The receptors associated with this Proposed Development will be existing and proposed residential receptors in the surrounding area.

1.5 As advised by the associated Transport Statement[2] prepared in support of the application, the Proposed Development is likely to contribute a negligible increase in daily vehicular trips. Therefore, the requirement of an impact assessment of the proposed development traffic has been considered unnecessary. Further details regarding the predicted traffic can be seen in Section 5.

1.6 A qualitative assessment of the air quality impacts of the construction phase upon local residents is provided, based upon the scale of the development and appropriate referenced guidance.

1.7 It should be noted however, that at this stage of the application, it is not possible to fully quantify the likely impacts upon sensitive receptors as the routeing of any construction

[1] Design Manual for Roads and Bridges Volume 11, Section 3, Part 1, HA207/07, Highways Agency, 2007.
[2] Mayer Brown Ltd (MB) (2015) Transport Assessment for Thorley Drive, Cheadle MB,Birmingham.

vehicles will be considered within a routeing plan built into the Construction Environmental Management Plan (CEMP).

1.8 This Air Quality Assessment is divided into the following sections:

- National and Local Policies & Principles;
- Assessment Guidance;
- Baseline Conditions;
- Assessment Criteria and Impact;
- Mitigation Measures and Residual Impacts; and
- Conclusions.

2 National and Local Policies & Principles

National Legislation

2.1 Part IV of the Environment Act 1995[3] requires local authorities to review and assess the air quality within their boundaries. As a result, the Air Quality Strategy was adopted in 1997, with national health based standards and objectives set out for the then, key eight air pollutants of benzene, 1-3 butadiene, carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter and sulphur dioxide.

2.2 The purpose of the Air Quality Strategy was to identify areas where air quality was unlikely to meet the objectives prescribed in the regulations. The strategy was reviewed in 2000 and the amended Air Quality Strategy for England, Scotland, Wales and Northern Ireland (2000) was published. This was followed by an Addendum in February 2003 and in July 2007, an updated Air Quality Strategy was published.

2.3 The pollutant standards relate to ambient pollutant concentrations in air, set on the basis of medical and scientific evidence based on how each pollutant affects human health. Pollutant objectives are the future dates by which each standard is to be achieved, taking into account economic considerations, practical and technical feasibility.

2.4 The air quality objectives applicable in LAQM in England are set out in the Air Quality (England) Regulations 2000, (SI 928), The Air Quality (England) (Amendment) Regulations 2002, (SI 3043) and are shown in **Table 2.1** below. This table shows the objectives in units of micrograms per cubic metre µg/m^3 (milligrammes per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedances in each year that are permitted (where applicable).

2.5 The main air quality pollutants of concern with regards to new developments such as the one proposed at this Application Site, are the traffic related pollutants of Nitrogen Dioxide (NO_2), Particulate Matter (PM_{10} and $PM_{2.5}$).

[3] Department for Environment, Food and Rural Affairs (1995) The Environment Act. HMSO, London.

Pollutant	Air Quality Objectives		Date to be Achieved by
	Concentration	Measured As	
Benzene	16.25 µg/m^3	Running annual Mean	31.12.2003
	5.00 µg/m^3	Running annual Mean	31.12.2010
1,3 Butadiene	2.25 µg/m^3	Running annual Mean	31.12.2003
Carbon monoxide	10mg/m^3	Running 8 –hour Mean	31.12.2003
Lead	0.5 µg/m^3	Annual Mean	31.12.2004
	0.25 µg/m^3	Annual Mean	31.12.2008
Nitrogen dioxide	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m^3	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 µg/m^3 not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 µg/m^3	Annual mean	31.12.2004
Sulphur dioxide	350 µg/m^3 not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

Table 2.1: Air Quality Objectives

Air Quality Standards Regulations, 2010

2.6 The air quality limit values set out in EU Directive (2008/50/EC, 2008) are transposed in English law by the Air Quality Standards Regulations (2010). This imposes duties on the Secretary of State relating to achieving the limit values.

2.7 With regards to dust, it is recognised that major construction works may give rise to dust emissions within the PM_{10} and $PM_{2.5}$ size fraction. It is noted within section 79 of the Environmental Protection Act 1990 that a statutory nuisance is defined as:

'Any dust or effluvia arising from an industrial, trade or business premises and being prejudicial to health or a nuisance'

National Policy

National Planning Policy Framework, March 2012

2.8 In March 2012, the current Planning Policy Guidance documents were superseded by the National Planning Policy Framework (NPPF). The aim of this document is to set out the Government's requirements for the planning system, only to the extent that it is relevant, proportionate and necessary to do so. It also aims to enable local people and councils to produce their own distinctive local and neighbourhood plans.

2.9 The NPPF is based upon 12 Core planning principles, two of which have relevance to the proposals:

2.10 Number 4 states that planning should:

"...contribute to conserving and enhancing the natural environment and reducing pollution..."

2.11 Policy 11 Conserving and Enhancing the Natural Environment also states that the planning system should contribute to and enhance the natural and local environment by:

"...preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability;

2.12 The core principle and Policy 11 are reflected in the provision of this assessment which seeks to provide evidence that there will be no adverse effects upon air quality.

2.13 The NPPF states that the effects of pollution on health and the sensitivity of the area and the development should be taken into account.

2.14 More specifically the NPPF makes clear that: "Planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan."

2.15 The NPPF also sets out the National planning policy on biodiversity and conservation. This emphasises that the planning system should seek to minimise effects on biodiversity and provide net gains in biodiversity wherever possible as part of the

Government's commitment to halting declines in biodiversity and establishing coherent and resilient ecological networks.

Planning Policy Guidance (PPG, 2014)

2.16 The NPPF is now supported by Planning Practice Guidance (DCLG, 2014), which includes guiding principles on how planning can take account of the impacts of new development on air quality. The NPPG states that

"Defra carries out an annual national assessment of air quality using modelling and monitoring to determine compliance with EU Limit Values."

and

"It is important that the potential impact of new development on air quality is taken into account … where the national assessment indicates that relevant limits have been exceeded or are near the limit".

2.17 The role of the local authorities is covered by the LAQM regime, with the NPPG stating that local authority Air Quality Action Plans "identify measures that will be introduced in pursuit of the objectives". The NPPG makes clear that:

"Air quality can also affect biodiversity and may therefore impact on our international obligation under the Habitats Directive".

2.18 In addition, the NPPG makes clear that:

"Odour and dust can also be a planning concern, for example, because of the effect on local amenity"

2.19 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)".

2.20 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". 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".

Local Planning Policy

Staffordshire Moorlands Core Strategy (2014)

2.21 The Staffordshire Moorlands Core Strategy was adopted in March 2014. One of the policies has particular relevance to air quality.

2.22 SD4 – Pollution and Flood Risk states:

"The Council will ensure that the effects of pollution (air, land, noise, water, light) are avoided or mitigated by refusing schemes which are deemed to be (individually or cumulatively) environmentally unacceptable and by avoiding unacceptable amenity impacts by refusing schemes which are pollution-sensitive adjacent to polluting developments, or polluting schemes adjacent to pollution sensitive areas, in accordance with national guidance."

3 Assessment Guidance

3.1 The assessments have been undertaken using the parameters set out in the recognised standards and guidelines below.

Standards and Guidelines

3.2 Local Air Quality Management Technical Guidance LAQM. TG (09)[4]: Published by DEFRA in order to provide technical guidance to local authorities in the assessment of the seven key air pollutants of Nitrogen Dioxide, Particulate Matter, Lead, 1-3 butadiene, Benzene, Carbon Dioxide and Sulphur Dioxide.

3.3 Development Control: Planning for Air Quality[5]: This guidance has been produced to help ensure that air quality is properly accounted for in local development control processes. It states that, particular attention will inevitably be paid to development within or close to areas formally designated as air quality management areas (AQMAs). These guidelines have been followed, where appropriate, when preparing this air quality assessment.

3.4 The National Atmospheric Emissions Inventory (NAEI)[6]: This is a website run by Ricardo AEA Technology where emission data can be obtained which relates the vehicle fleet composition for the year of study. The NAEI is the standard reference for air emissions in the UK and compiles annual estimates of emission for a wide range of important pollutants, including air quality pollutants and greenhouse gases to the atmosphere from UK sources such as cars, trucks, power stations and industrial plant.

3.5 The Local Air Quality Management Tools within the Department for Environment, Food & Rural Affairs website [7] contains information pertaining to monitoring networks across the UK and provides tools, which aid in the estimation of pollutant concentrations with reference to the year of study.

3.6 Air Quality and Planning Guidance[8]: This guidance is aimed at local authorities, developers and their consultants, and provides technical advice on how to deal with

[4] Department for Environment, Food and Rural Affairs (2009) Local Air Quality Management Technical Guidance LAQM, TG (09). DEFRA. London

[5] Environmental Protection UK (2010) Development Control: Planning for Air Quality (2010 Update). Environmental Protection UK, Brighton

[6] http://naei.defra.gov.uk

[7] http://laqm.defra.gov.uk/

[8] London Councils. (2007),Air Quality and Planning Guidance, The London Air Pollution Planning and the Local Environment (APPLE) working group, London

planning applications that could have an impact on air quality. Where developers and local authorities follow the procedures in this guidance, helps ensure consistency in the approach to dealing with air quality and planning.

3.7 Institute of Air Quality Management (IAQM)[9]: provides advice and guidance on the assessment of the impact of dust from demolition, construction, earthworks and trackout upon local air quality.

3.8 The EPUK & IAQM Land-Use Planning & Development Control: Planning for Air Quality (2015)[10] provides advice and guidance on an air quality assessment should be undertaken.

[9] The Institute of Air Quality Management (IAQM),(2014) Guidance on the Assessment of Dust from Demolition and Construction, IAQM, London

[10] Environmental Protection UK & Institute of Air Quality Management (EPUK & IAQM) (2015) Land-Use Planning & Development Control: Planning for Air Quality, EPUK & IAQM, London

4 Baseline Conditions

Baseline Conditions

General Air Quality Status

4.1 Under the Air Quality Strategy, there is a duty on all Local Authorities to consider the air quality within their boundaries and to report annually to Defra.

4.2 Having undertaken a district wide review and assessment of their air quality, Staffordshire Moorlands District Council have not declared any Air Quality Management Areas.

Staffordshire Moorlands District Council Air Quality Monitoring Data

4.3 The most recent monitored NO_2 concentrations from the closest monitoring locations to the Application Site are set out in **Table 4.1** below.

Site No:	Site Name	NO_2 (µg/m^3)
7	Leek Road Rbt_ Central	38.5
29	Leek Road Rbt _North	39.4
30	Leek Road Rbt _South	33.2
14	Tape Street	30.2

Table 4.1: Cheadle 2013 NO_2 Roadside (Non)-Automatic Monitored Concentrations

4.4 A review of the monitored results indicates that the centre of Cheadle range from 4% to 24% below the air quality action level (40 µg/m^3), and therefore would be of concern to the local authority.

4.5 It is worth noting that the Application Site is approximately 1.2km southeast of the these sensitive locations, and none of these monitoring sites are considered to be a good representation of the Application Site.

4.6 The lack of monitoring data near the Application Site indicates that air quality is not of concern to the local authority and suitable for residential receptors. This is confirmed by the DEFRA background mapping (for the nearest 1km^2 – 401500:342500), set out in **Table 4.2** below, which indicates air quality concentrations are 62 – 75% below the Air Quality Action Levels.

NO_2 (µg/m^3)	PM_{10} (µg/m^3)	$PM_{2.5}$ (µg/m^3)
10.01	13.75	9.58
40	**40**	**25**

Table 4.2: DEFRA Mapping Concentrations

5 Assessment Criteria and Impact

Impact Assessment Criteria

5.1 Three key guidance documents the Design Manual for Roads and Bridges (DMRB)[11], Environmental Protection UK (EPUK) Development Control: Planning for Air Quality (2010 update)[12] and the EPUK & IAQM (2015)[13] Land-Use Planning & Development Control: Planning for Air Quality guidance documents to determine the potential for trips generated by the development to affect local air quality.

5.2 The most stringent EPUK & IAQM (2015) provides indicative criteria for the requirement of an Air Quality Assessment. Of which the following criteria have been considered as part of this assessment:

- A change of LDV flow of:
    - More than 100 AADT within or adjacent to an AQMA; or
    - More than 500 AADT elsewhere.
- A change of HDV flow of:
    - More than 25 AADT within or adjacent to an AQMA; or
    - More than 100 AADT elsewhere.

5.3 Should these criteria not be met, then the guidance documents consider air quality impacts associated with a scheme to be negligible and no further assessment is required.

Construction Air Quality Assessment

Construction Traffic

5.4 Emissions from construction traffic, from the proposed development would generate vehicle movements on to the local highway network. These would include:

- Contractors' vehicles;
- Heavy Goods Vehicles;
- Diggers; and
- Other diesel Powered vehicles.

5.5 This will result in elevated levels of NOx, particulates and other combustion related pollutants. However, these would be considered localised and of a temporary nature.

[11] Design Manual for Roads and Bridges Volume 11, Section 3, Part 1, HA207/07, Highways Agency, 2007.
[12] Development Control: Planning for Air Quality (2010 update), Environmental Protection UK, 2010.
[13] Environmental Protection Uk & Institute of Air Quality Management (EPUK & IAQM) (2015) Land-Use Planning & Development Control: Planning for Air Quality, EPUK & IAQM, London

5.6 Based upon previous experience of working on similar sized sites it is not anticipated this Application Site will generate more than 500 LDV's or 100 HDV's a day and therefore the impact is considered negligible and no detailed assessment has been undertaken.

Construction Dust

5.7 Construction related dust effects cannot be easily quantified as the exact time and duration of any demolition/construction activity is not known at this stage. Therefore, in line with recognised guidance (Institute of Air Quality Management, 2014) a more qualitative approach has been employed to predict potential effects.

Step 1 – Screening the need for a Detailed Assessment

5.8 An assessment will normally be required where there are sensitive receptors within 350m of the site boundary and/or within 50m of the routes used by construction vehicles on the local highway network and 500m from site entrances. Ecological receptors within 50m of the site boundary or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s), are also identified at this stage and any ecological assessment should consider the sensitivity of present habitats and plant communities to potential dust deposition. However, as the majority of the renovation works are internal it is not anticipated any human receptors will be effected by any demolition and construction works.

5.9 An ecological receptor refers to any sensitive habitat that is affected by dust soiling. For locations with a statutory designation, such as a Site of Specific Scientific Interest (SSSI), Special Area of Conservation (SACs) and Special Protection Areas (SPAs), consideration should be given as to whether the particular site is sensitive to dust. Some non-statutory sites may also be considered if appropriate.

5.10 Having reviewed the Natural England 'Magic[14]' website as illustrated in **Figure 5.1**, no Ramsar, SSSI's, SACs or SPAs are located in the vicinity of the Application Site.

[14] http://www.natureonthemap.naturalengland.org.uk/MagicMap.aspx

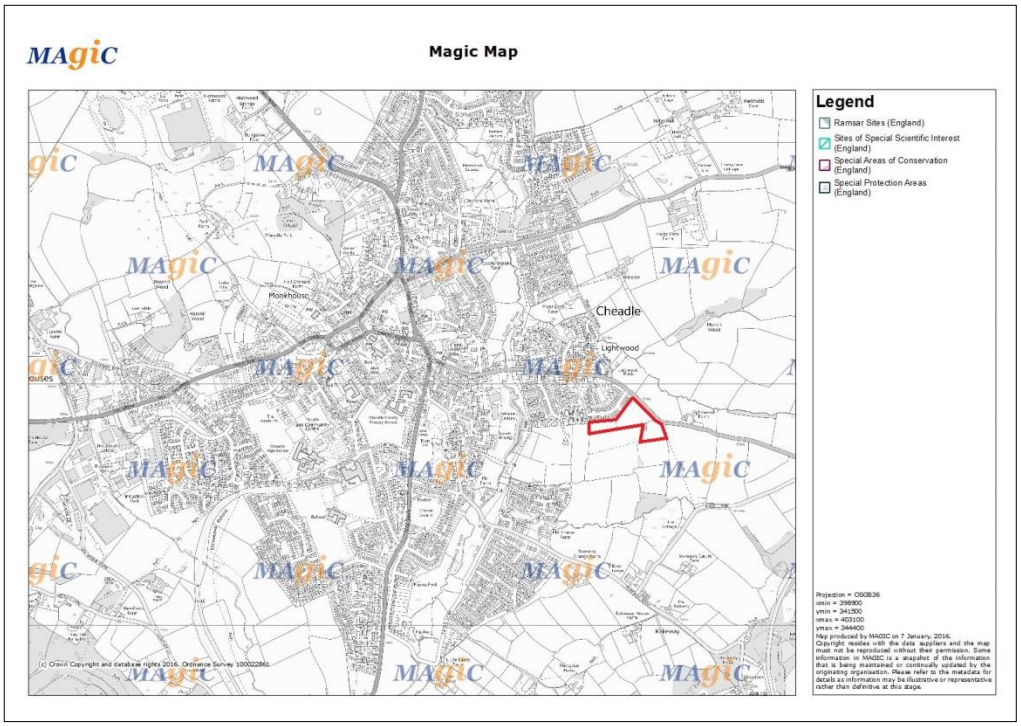


Figure 5.1: Ecological Designated Sites

5.11 Where an assessment can be screened out, it can be concluded that the level of risk impact is 'negligible.'

5.12 As set out in earlier in this section the requirement for a detailed assessment of construction traffic has been screened out of the assessment, this is also the case for the operational road traffic element of the proposed development.

5.13 However, as receptors are located within 350m of the site boundary a more detailed assessment of dust impact is required.

5.14 No demolition requirements have been identified within the site. Therefore, demolition impacts have also been screened out of this assessment.

5.15 To note, not all the criteria for a particular class need to be met for magnitude or significance. Other criteria maybe (such as professional judgement) can be used to justify the assessment.

Step 2 – Assess the Risk of Dust Arising

5.16 A site is allocated to a risk category on the basis of the scale and nature of the works (Step 2A) and the sensitivity of the area to dust impacts (Step 2B). These two factors arecombined in Step 2C to determine the risk of dust impacts before the implementation of mitigation measures. The assigned risk categories may be different

for each of the construction activities (demolition, construction, earthworks and trackout).

Step 2A – Define the Potential Dust Emission Magnitude

5.17 The dust emission magnitude is determined for earthworks, construction and trackout, based upon the scale of the anticipated works. **Table 5.1** describes the potential dust emission categories for each construction activity.

Activity	Small	Medium	Large
Earthworks	Total site area less than 2,500 m^2. Soil type with large grain size (e.g. sand), < 5 heavy earth moving vehicles active at any one time, formation of bunds < 4 m in height, total material moved < 10,000 tonnes earthworks during winter months.	Total site area between 2,500 to 10,000 m^2, moderately dusty soil type (e.g. silt), 5 – 10 heavy earth moving vehicles active at any one time, formation of bunds 4 - 8 m in height, total material moved 20,000 to 100,000 tonnes.	Total site area over 10,000 m^2, potentially dusty soil type (e.g. clay), >10 heavy earth moving vehicles active at any one time, formation of bunds > 8 m in height, total material moved > 100,000 tonnes.
Construction	Total building volume below 25,000m^3, use of construction materials with low potential for dust release (e.g. metal cladding or timber). Period of construction activities less than one year.	Total building volume between 25,000 and 100,000 m^3, use of construction materials with high potential for dust release (e.g. concrete), activities include piling, on-site concrete batching. Period of construction activities between one and two years.	Total building volume over 100,000 m^3, activities include piling, on-site concrete batching, and sand blasting. Period of activities more than two years.
Trackout	<10HDV (>3,5t) outward movements in any one day. (Trackout may occur up to 50m from the site entrance).	10-50 HDV (>3.5t) outwards movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50m – 100m. (Trackout may occur up to 200m from the site entrance).	> 50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100m. (Trackout may occur up to 500m from the site entrance).

Table 5.1: Criteria Used to Determine the Dust Emission Magnitude

5.18 The potential dust emission categories for the proposed development have been determined by the criteria in **Table 5.1**:

- Demolition:
  - Scoped out of the assessment.
- Earthworks
  - The total site area is greater than 10,000m^2;
  - The dust emission magnitude was therefore defined as **Large.**
- Construction
  - Potential for an on-site concrete batching plant;
  - Potentially dusty material (e.g. concrete)
  - The dust emission magnitude was therefore defined as **Large.**
- Trackout

- There are expected to be less than 10 HGV outward movements in one day;
- The dust emission magnitude was therefore defined as **Small.**

5.19 To summarise the dust emission magnitudes are in **Table 5.2**.

Activity	Dust Emission Magnitude
Demolition	N/A
Earthworks	Large
Construction	Large
Trackout	Small

Table 5.2: Summary of Risk Impacts

Step 2B – Define the Sensitivity of the Area

5.20 Step 2b also requires a definition of the sensitivity of the area. For the purpose of this assessment, receptors have been classified using the dust magnitude criteria set out previously within this section. This will include:

- The specific sensitivities of the receptors in the area;
- The proximity and number of those receptors;
- In the case of PM_{10} the local background concentration; and
- Site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

5.21 The criteria for determining the sensitivity of receptors is detailed in **Table 5.3** for dust soiling effects and health effects of PM_{10}.

Sensitivity of Receptor	Criteria for Determining Sensitivity	
	Dust Soiling Effects	**Health Effects of PM_{10}**
High	• Dwellings • Museums • Long/Medium-term car park	• Dwellings • Hospitals • Schools • Care Homes
Medium	• Place of work • Parks	• Office and shop works not occupationally exposed to PM_{10}
Low	• Playing fields • Farmland • Footpaths • Short term car park	• Playing fields • Farmland • Footpaths • Shopping streets

Table 5.3: Criteria for Determining Sensitivity of Receptors

5.22 Once identified, the relative receptor sensitivities have been applied to **Tables 5.4** and **5.5.**

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10 – 100	High	Medium	Low	Low
	1 – 10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table 5.4: Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
High	>32 µg/m^3	>100	High	High	High	Medium	Low
		10 – 100	High	High	Medium	Low	Low
		1 – 10	High	Medium	Low	Low	Low
	28 - 32 µg/m^3	>100	High	High	Medium	Low	Low
		10 – 100	High	Medium	Low	Low	Low
		1 – 10	High	Medium	Low	Low	Low
	24 - 28 µg/m^3	>100	High	Medium	Low	Low	Low
		10 – 100	High	Medium	Low	Low	Low
		1 – 10	Medium,	Low	Low	Low	Low
	<24 µg/m^3	>100	Medium	Low	Low	Low	Low
		10 – 100	Low	Low	Low	Low	Low
		1 – 10	Low	Low	Low	Low	Low
Medium	-	>10	High	Medium	Low	Low	Low
	-	1-10	Medium	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

Table 5.5: Sensitivity of the Area to Human Health Impacts

Sensitivity to Dust Soiling

5.23 *Construction, earthworks and trackout*: There are between 10 - 100 'High' sensitive residential receptors within approximately 20m of the site boundary. Therefore, based upon **Table 5.4** this would put the site within a '**High**' sensitivity.

Sensitivity to Human Health Effects

5.24 *Construction, earthworks and trackout*: There are between 10 - 100 'High' sensitive residential receptors within approximately 20m of the site boundary. The DEFRA background mapping indicates background PM_{10} concentrations are 13.75 µg/m^3. Therefore, based upon **Table 5.5** this would put the site within a '**Low**' sensitivity.

Sensitivity to Ecological Effects

5.25 There are no ecological sites within the surrounding area of the Application Site, and therefore has been scoped out of the dust assessment in Paragraph 5.11.

Step 2C – Define the Risk of Impacts

5.26 The dust emission magnitude and sensitivity of the area are combined and the risk of impacts from each activity (demolition, earthworks, construction and trackout), before mitigation is applied, was determined. The risks of dust soiling and human health impacts, before mitigation, are summarised in **Table 5.6**.

Potential Impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	N/A	High Risk	High Risk	Low Risk
Human Health	N/A	Low Risk	Low Risk	Negligible

Table 5.6: Summary of Dust Risk to Define Site-specific Mitigation

Step 3 – Identify the need for Site Specific Mitigation

5.27 The results of these steps will allow an assessment of the overall dust risk and will enable the identification of site specific mitigation. These measures will be related to whether the site is Low, Medium or High risk site.

Step 4 – Define Effects and their Significance

5.28 The significance of any effect is best determined upon professional judgement, taking into account the sensitivity of the surrounding area and overall consideration of potential risks.

5.29 The preferred preference within the IAQM guidance is to assign the significance to the impact with mitigation in place. **Table 5.7** below, therefore, indicates that, with the implementation of a Construction Environmental Management Plan, the residual effects for the majority of sites are anticipated to be negligible

Sensitivity of Surrounding Area	Risk of Site Giving Rise of Dust Effects		
	High	Medium	Low
High	**Slight Adverse**	**Slight Adverse**	Negligible
Medium	Negligible	Negligible	Negligible
Low	Negligible	Negligible	Negligible

Table 5.7: Significance of Effects of Each Activity with Mitigation

5.30 The dust emission magnitude described in the sections above is combined with the sensitivity of the area and the significance criteria (with mitigation measures in **Table 5.7**), to determine the significance risk of dust impacts for each construction activity as detailed in **Table 5.8**.

Potential Impact	Risk Significance			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	N/A	Slight Adverse	Slight Adverse	Negligible
Human Health	N/A	Negligible	Negligible	Negligible

Table 5.8: Significance of Risk Effect

5.31 To note, the background PM_{10} concentrations are below 50% of the (40 µg/m^3) annual mean objective. With the mitigation measures proposed within the CEMP and the existing low background concentrations it is not considered that any activity/process during the construction process would be of an order which would lead to an exceedance. Therefore, the impact in respect of the construction phase upon human health is considered to be negligible.

Operational Road Traffic Assessment

5.32 Mayer Brown Ltd Environmental team have been advised that the proposed development will generate 430 two-way vehicular movements per day.

5.33 Therefore, based upon the EPUK & IAQM (2015) criteria (and the Application Site not being in an AQMA) it is not considered that a further assessment is required. Therefore, the impact is considered negligible.

6 Mitigation Measures and Residual Impacts

Construction

6.1 Potentially likely significant impacts are associated with air polluting activities in close proximity to potentially sensitive receptors. By employing appropriate site management practices, the potential for adverse air quality impacts from construction vehicles and plant during the works will be minimised to an acceptable level. A range of measures are suggested, which will form part of a site specific Construction Environmental Management Plan (CEMP) within which all contractor activities will be undertaken.

6.2 The CEMP will also contain environmental risk assessments for all dust or pollution generating activities. Designers and contractors should liaise to identify the hazards and risks likely to occur for each activity taking place on the construction site and find ways of avoiding or reducing them within the design. A comprehensive method statement detailing the methods to be used should be drawn up and communicated to all relevant personnel.

6.3 The following measures may form part of CEMP to be agreed with the local authority:

- Routine monitoring of dust at the site boundary;
- Use of water spraying, especially on access roads, in order to reduce dust generation, as and when conditions dictate;
- Effective wheel/body washing facilities to be provided and used as necessary;
- A road sweeper to be readily available whenever the need for road cleaning arises;
- Dampening of exposed soil and material stockpiles, where necessary;
- Consider wind speed and direction prior to conducting dust generating activities to determine the potential for dust nuisance to occur and avoid such activities during periods of high or gusty winds;
- Stockpiles of soil and materials should be located as far as possible from local receptors , taking account of prevailing wind directions;
- Windbreak netting should be positioned, where possible, around material stockpiles and vehicle loading /unloading areas;
- Completed earthworks should be covered or vegetated as soon as possible;
- Ensure that all construction plant and equipment is maintained in good working order;
- Vehicles carrying waste material off-site to be sheeted; and

- Under no circumstances should fires be allowed on site.

Residual Effects

6.4 No significant residual effects are expected to occur as a consequence of construction activities assuming that appropriate mitigation measures to prevent and control dust emissions are maintained by the construction contractor

Operations

Development Traffic

6.5 This screening has demonstrated that the development will have no residual impact on the traffic flows; there will be a negligible impact upon the local air quality concentrations due development traffic. Therefore, it is not anticipated that mitigation measures will be required for this aspect.

7 Conclusions

Demolition and Construction

7.1 Subject to the implementation of good practice within a site specific Construction Environmental Management Plan, which incorporates all of the measures proposed within a construction statement, the any residual construction impacts are anticipated to be, local, temporary but of a slight adverse to negligible significance.

Completed Development

7.2 The proposed development results in a negligible increase in daily traffic flows. Therefore, it is concluded that the development traffic will have a negligible impact upon existing air quality concentrations.