
Marson Property Limited

**25-27 Perrymount Road, Haywards
Heath**

Air Quality Assessment

14th July 2022

AIR QUALITY ASSESSMENT

temple

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Document Control

Version Number	Date	Author	Reviewed	Approved	Log of changes
0.1	27.06.2022	Aastha Dhingra	Matthew Barnes	Xiangyu Sheng	First review
0.2	05.07.2022	Aastha Dhingra	Daniel Mullick	Xiangyu Sheng	Internal comments
1.1	14.07.2022	Aastha Dhingra	Jessica Parnwell	James Sanders	

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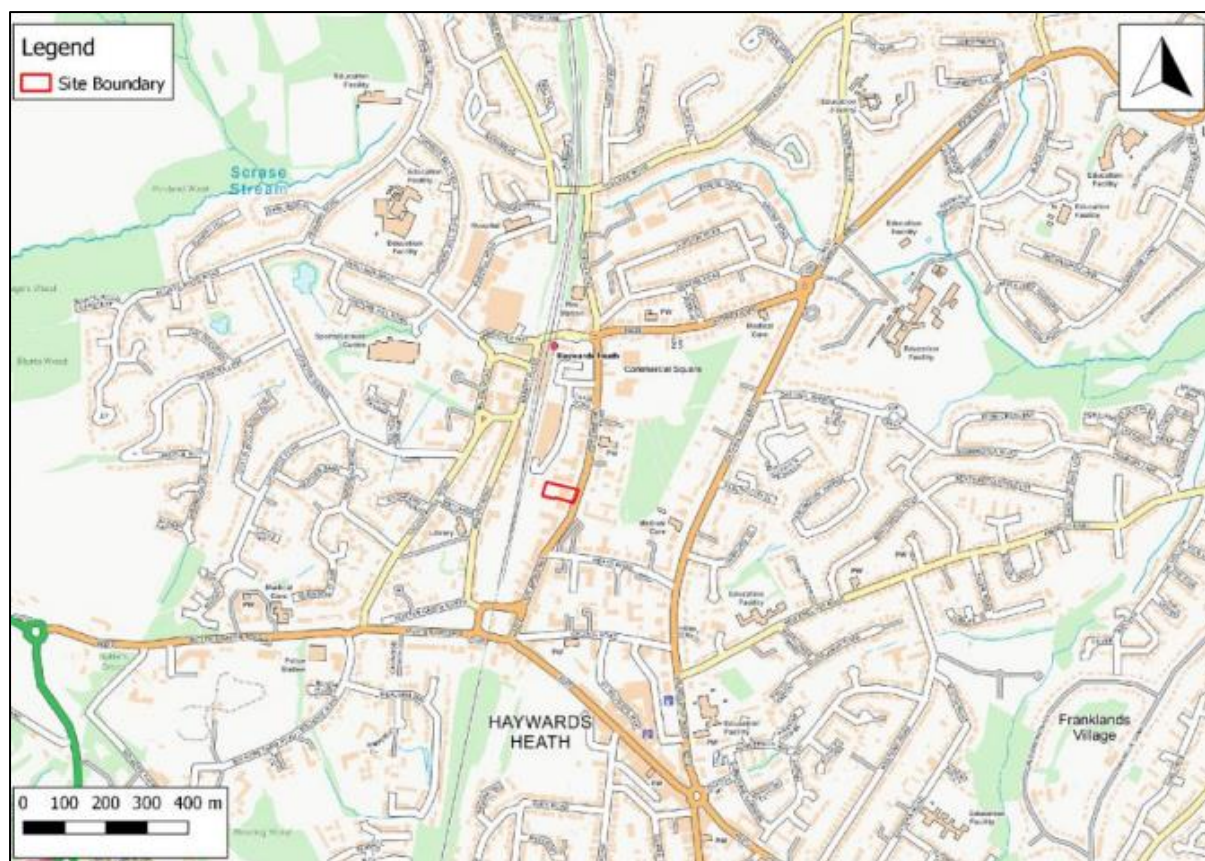
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1.0 Introduction

- 1.1.1 Temple Group Ltd (Temple) has been commissioned to undertake an air quality assessment to support planning application for the proposed development of 28 residential units with no commercial space. The coordinates for the centre of the site are approximately 533085, 124255. The proposed development is not located in an air quality management area (AQMA).
- 1.1.2 Previously, Temple undertook an Air Quality Assessment for a wider site area which consisted of 42 residential units and 3,569 m² commercial space. This air quality assessment has been undertaken to assess a revised application for the rear portion of the originally assessed site which is to consist of 28 residential units with no commercial space.
- 1.1.3 The Proposed Development is within the jurisdiction of Mid Sussex District Council (MSDC) and has the potential to impact upon local air quality due to increased traffic arising from the Proposed Development. In addition, the Proposed Development will be impacted upon by the existing local air quality, including road traffic emissions.
- 1.1.4 The Proposed Development does not include centralised heat and energy plant. Heating will be provided by domestic boilers. The primary pollutants of interest for this assessment are nitrogen dioxide (NO₂) and particulate matter (PM₁₀), as well as dust from the construction phase.
- 1.1.5 The location plan is shown in **Figure 1**.
- 1.1.6 This assessment details the likely receptors and potential effects of the Proposed Development on air quality. A baseline assessment of local air quality was undertaken to establish existing and historic air quality conditions at the Proposed Development and in the local area.
- 1.1.7 The assessment also details the construction dust risk assessment and recommended mitigation measures, in line with Institute of Air Quality Management (IAQM) Guidance on the assessment of dust from demolition and construction.

Figure 1 Site Location Plan



2.0 Legislation and policy

2.1 National Policy

- 2.1.1 The Air Quality Strategy for England, Scotland, Wales and Northern Ireland¹ (AQS) sets the framework for government policy on air quality in the UK. The AQS sets out ambient air quality standards and objectives (AQOs) to be achieved (shown in Error! Reference source not found.) and introduces a policy framework for tackling fine particles. In setting AQOs, due account was taken of health and socio-economic cost-benefit factors, together with consideration of the practicalities of achieving such targets. Ambient air quality objective levels are set out in legislation in the Air Quality (England) Regulations 2000², as amended³.
- 2.1.2 Although achievement of ambient AQOs is not a statutory requirement, they reflect statutory limits outlined in The Air Quality Standards Regulations 2010⁴ as amended⁵, which require the Secretary of State to achieve EU limit values set out in EU Ambient Air Quality Directives^{6 7}.

Table 1 UK ambient air quality objectives relevant to the assessment

Pollutant	Air quality objective levels	Measured as	Dates to be achieved and maintained thereafter
Nitrogen dioxide (NO ₂)	200 µg/m ³ , not to be exceeded more than 18 times per year	1-hour mean	31 December 2005
	40 µg/m ³	Annual mean	31 December 2005
Particles (PM ₁₀)	50 µg/m ³ , not to be exceeded more than 35 times per year	24-hour mean	31 December 2004
	40 µg/m ³	Annual mean	31 December 2004
Particles (PM _{2.5})	25 µg/m ³	Annual mean	2020

¹ Department of the Environment, Food and Rural Affairs, et al, 2007, The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. Volume 1

² The Air Quality (England) Regulations 2000 (2000 No. 928)

³ The Air Quality (England) (Amendment) Regulations 2002 (2002 No. 3043)

⁴ The Air Quality Standards Regulations 2010, (2010 No. 1001). London: HMSO.

⁵ The Air Quality Standards (Amendment) Regulations 2016 (2016 No. 1184)

⁶ The European Parliament and the Council of the European Union, 2008, Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe. Official Journal of the European Union L152/1 11.6.2008.

⁷ The European Parliament and the Council of the European Union, 2004, Directive 2004/107/EC of the European Parliament and of the Council of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air. (Fourth Daughter Directive). Official Journal of the European Union L23/3 26.1.2005.

The Environment Act 1995

- 2.1.3 The Environment Act 1995⁸, specifically Sections 82-84, requires all local authorities to carry out periodic reviews of air quality within their administrative areas. This review and assessment process now follows a phased approach, whereby local authorities only undertake a level of assessment that is commensurate with the risk of an AQO being exceeded. The aim of this review process is to assess whether the AQOs are likely to be achieved. Areas where objectives are likely to be exceeded are to be declared air quality management areas (AQMAs) by the local authorities.

National Planning Policy Framework and Planning Practice Guidance

- 2.1.4 A revised version of the National Planning Policy Framework (NPPF) was published during July 2021⁹. The NPPF establishes a framework under the Town and Country Planning Act which should be used by local authorities to make local plans and determine planning applications.

- 2.1.5 Paragraph 174 states:

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

“e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions....”

- 2.1.6 Paragraph 186 states:

“Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan”.

⁸ Environment Act 1995, Part IV Air Quality.

⁹ National Planning Policy Framework, 2021. Ministry of Housing, Communities and Local Government.

2.1.7 The 2019 Air Quality Planning Practice Guidance¹⁰ supports the NPPF, by including recommendations on the scope of an air quality assessment.

2.2 Regional and local policy

Mid Sussex Council District Plan

2.2.1 MSDC's District Plan was adopted in March 2018¹¹. It replaces the Mid Sussex Local Plan (2004). Policies included in the plan relating to air quality include DP10: Strategic allocation to the east of Pease Pottage, which states:

"Identify and respond to issues relating to noise pollution and air quality in relation to the site's proximity to the M23 motorway to ensure that proposed land uses are appropriately located to protect health and amenities and to maximise the efficient use of the site"

"Provide improved public transport and safe pedestrian/cycling connectivity with surrounding settlements, in particular Pease Pottage and Crawley. The development should include mitigation measures that address the issue of pedestrian/cycling connectivity over the M23 motorway and onwards to Crawley."

2.2.2 DP11: Strategic allocation to the north of Clayton Mills, Hassock:

"Identify and respond to issues relating to air quality in relation to the site's proximity to the Stonepound Crossroads Air Quality Management Area (AQMA)."

"Make provision for charging electric vehicles by installing a dedicated electrical socket suitable for charging electric vehicles at each residential unit"

2.2.3 DP21: Transport:

"Appropriate opportunities to facilitate and promote the increased use of alternative means of transport to the private car, such as the provision of, and access to, safe and convenient routes for walking, cycling and public transport, including suitable facilities for secure and safe cycle parking, have been fully explored and taken up."

2.2.4 DP29: Noise, Air and Light Pollution

Air Pollution:

"It does not cause unacceptable levels of air pollution;

Development on land adjacent to an existing use which generates air pollution or odour would not cause any adverse effects on the proposed development or can be mitigated to reduce exposure to poor air quality to recognised and acceptable levels;

Development proposals (where appropriate) are consistent with Air Quality Management Plans."

¹⁰ Ministry of Housing, Communities & Local Government, 2019. Planning Practice Guidance: Air Quality.

¹¹ Mid Sussex District Council (2018) District Plan 2014-2031.

Mid Sussex Air Quality Action Plan

2.2.5 Following the designation of the land at the junction of Stonepound Crossroads, with Hurst Road, Keymer Road, Brighton Road and London Road, Hassocks as an AQMA, the Council published an air quality action plan (AQAP)¹² in 2012 to promote better air quality conditions. The current AQAP was published in 2018 and it details initiatives that Local Council will deliver to improve air quality.

2.2.6 The key principles/objectives of the AQAP include the following:

- *"Ensuring traffic light sequencing is operating at optimum efficiency*
- *Signage and advertising to encourage use of the A2300 as an alternative route*
- *Future widening of the A2300 as part of major development to the North of Burgess Hill*
- *Cut engine, cut pollution' signs erected approaching each arm of the crossroads*
- *Travel wise schemes to promote sustainable transport - to include more car share schemes and alternatives to the car. Promotion of school and work travel plans. Development and promotion of cycle routes*
- *Education and raising awareness - increasing the availability of air quality information and incentivising people to change their travel behaviour*
- *Working with Planners to ensure appropriate mitigation measures are implemented for new development affecting the AQMA"*

2.3 Technical standards and guidance

Land-Use Planning & Development Control: Planning for Air Quality (the EPUK-IAQM guidance')

2.3.1 Environmental Protection UK (EPUK) and the IAQM have developed a procedure for assessing the significance of changes in traffic volume on local air quality in their guidance document, 'Land-Use Planning & Development Control: Planning for Air Quality'¹³ (the EPUK-IAQM guidance'). The procedure is designed to assess potential impacts resulting from changes in road use, including realignment, expansion and increased traffic flow. It can also be used to assess the potential air quality impacts of future combined heat and power (CHP) plant or boilers.

¹² Mid Sussex Council (2018) Air Quality Action Plan.

¹³ Moorcroft and Barrowcliffe. et al. (2017). Land-use Planning & Development Control: Planning for Air Quality. V1.2. Environmental Protection UK and the Institute of Air Quality Management, London

Guidance on the Assessment of Dust from Construction and Demolition

- 2.3.2 The IAQM has produced guidance on the assessment of air quality impacts from construction activities ('the IAQM 2014 guidance'). This guidance provides a framework for assessing the risk of dust effects that may arise and suggests appropriate dust and air emissions mitigation measures for sites according to the level of risk.

Local Air Quality Management: Technical Guidance ('TG16')

- 2.3.3 TG16¹⁴ include guidance for local authorities to assess and, where required, deliver improvements in air quality within their jurisdiction. TG16 also recommends where the AQOs should be applied, as outlined in **Error! Reference source not found..**

Table 2 Examples of where the air quality objectives should apply, as per TG16

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

¹⁴ Department for Environment, Food and Rural Affairs, 2016. Part IV of the Environment Act 1995: Local Air Quality Management: Technical Guidance LAQM.TG (16), London: Crown.

Averaging Period Objectives	Objectives should apply at	Objectives should generally not apply at
	reasonably expect to spend one hour or longer.	

3.0 Air Quality Assessment Method

3.1 General

3.1.1 The Proposed Development has the potential to impact on local air quality due to increased traffic that it may create. In addition, the Proposed Development will be impacted upon by the existing local air quality, including road traffic emissions. Consequently, this assessment has been prepared in accordance with the following scope:

- baseline characterisation of local air quality;
- qualitative impact assessment of construction and operational phase of the Proposed Development;
- recommendation of mitigation measures, where appropriate, to ensure any adverse effects on air quality are minimised; and,
- identification of residual impacts resulting from the Proposed Development.

Pollutants

3.1.2 The main pollutants for consideration in this assessment are:

- Fugitive PM₁₀, PM_{2.5} and dust emissions from construction related activities; and
- NO₂, PM₁₀ and PM_{2.5} emissions from existing baseline traffic and additional traffic attributable to the Proposed Development.

3.1.3 According to the proposed energy strategy, no combustion sources are likely to be used, which emits pollutants. Therefore, on-site sources of combustion do not require assessment.

Study area

3.1.4 The site location is shown in **Figure 1**. The Proposed Development is not located within an AQMA.

3.1.5 Information from appropriate local monitoring sites were considered (sites where monitored air quality is likely to be representative of that within the study area for this assessment).

3.1.6 For construction dust, the area considered was in line with the IAQM guidance documents¹⁵, which specifies human receptors up to 350 m from the site boundary, or within 50 m of the route used by construction vehicles on a public

¹⁵ Moorcroft and Barrowcliffe. et al. (2017). Land-use Planning & Development Control: Planning for Air Quality. V1.2. Environmental Protection UK and the Institute of Air Quality Management, London

highway, up to 500 m from the site entrance to be included, depending on the nature and scale of the construction activities.

3.2 Baseline Assessment

- 3.2.1 Existing or baseline air quality refers to the concentrations of relevant substances that are already present in ambient air, including road traffic and industrial sources.
- 3.2.2 MSDC publish a series of Annual Status Reports (ASR) for air quality, in accordance with the local air quality management (LAQM) process. The MSDC 2021 ASR (the latest available report at the time of this assessment), and 2017-2020 NO₂ monitoring results were obtained and reviewed to establish the existing conditions at, and in proximity to, the site.
- 3.2.3 Background air pollution concentrations corresponding to the 1km x 1km grid squares covering Proposed Development site and identified receptor locations were obtained from the LAQM support tools provided by Defra for use in air quality assessment. Background concentrations for all years considered in this assessment were obtained to establish baseline air quality conditions within the study area.

3.3 Construction Phase Assessment

Dust

- 3.3.1 Potential air emissions from demolition and construction activities, particularly in the form of dust, have the potential to cause a loss of amenity (due to dust soiling). The finer fraction of dust, in the form of PM₁₀ and particulates of finer fractions, have the potential to affect human health.
- 3.3.2 Key sources of air pollution from construction sites include:
 - earth-moving and remediation activities;
 - general construction activities, which may include, concrete mixing, cutting, grinding etc.; and
 - dust and exhaust emissions from haulage vehicles on site and on local roads.
- 3.3.3 Given the variability of construction sites and the range of activities undertaken, making an accurate assessment of the dust and air pollutants generated is rarely feasible or practicable. Instead, a more qualitative assessment is undertaken to examine potential areas of concern and identify the best practicable means for eliminating, minimising and mitigating potential emissions.
- 3.3.4 The IAQM's 2014 guidance document 'Guidance on the assessment of dust from demolition and construction' provide useful information on managing and

mitigating construction dust emissions. This document was used as the basis for assessing potential impacts from the Proposed Development. The method recommended by this guidance is outlined in **Appendix A**.

- 3.3.5 This assessment identifies potential works that may generate dust and incorporates a list of appropriate mitigation measures to control them.

Vehicle exhaust emissions

- 3.3.6 A screening assessment was undertaken, following the methodology detailed in EPUK guidance¹³, outlined in **Section 3.7** to determine whether significant air quality effects associated with vehicle exhaust emissions during the construction phase of the Proposed Development would be likely.

3.4 Assessment of emissions from operational phase of development

- 3.4.1 Road traffic is a primary source of emissions to air. The combustion of fuel in vehicles leads to several harmful by-products which can affect air quality in the vicinity of roads. Areas with high traffic volumes or near to major roads often experience elevated pollutant levels, particularly in the form of NO₂, PM₁₀ and PM_{2.5}. Fixed sources, such as boilers and CHP plant, can also be important emissions sources.
- 3.4.2 The preliminary scoping stage of the EPUK-IAQM guidance^{Error! Bookmark not defined.} involves the identification of impacts of the local area on a development. This considers any potential exposure that future residents or users may experience as a result of emissions from the locality. Background and future baseline air quality are considered and the presence/ proximity of AQMAs, major roads and/ or any other sources are used as indicators of exceedances.
- 3.4.3 The impact of a development on the local area is also identified. This is undertaken in two stages. The first stage details simple criteria to scope out the potential impacts of the Proposed Development on the local area if the Proposed Development is small, or where impacts can be considered to have insignificant effects.

Stage 1 criteria:

- 3.4.4 A) If any of the following apply:
- 10 or more residential units or a site area of more than 0.5 ha;
 - more than 1,000 m² of floor space for all other uses or a site area greater than 1 ha;
- 3.4.5 B) coupled with any of the following:
- the development has more than 10 parking spaces;

- the development will have a centralised energy facility or other centralised combustion process.

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

3.4.6 Criteria under both A) and B) must be met for the assessment to proceed to the second stage. If the criteria are not met then there is no requirement to carry out an air quality assessment for the impact of the development on the local area, and the impacts can be considered to have insignificant effects.

3.4.7 The second stage requires consideration of road traffic and combustion processes in order to determine whether further assessment of the likely impacts of the development is necessary.

3.4.8 **Stage 2 criteria:**

- a change in road alignment of five metres or more, within an AQMA;
- light-duty-vehicle (LDV) annual average daily traffic (AADT) flows changing by 100 AADT or more, within or adjacent to an AQMA, or 500 AADT or more elsewhere;
- heavy-duty-vehicle (HDV) flows changing by 25 AADT or more, within or adjacent to an AQMA, or 100 AADT elsewhere;
- inclusion of one or more substantial combustion processes, where there is a risk of impacts at relevant receptors (typically, any combustion plant where the single or combined NO_x emission rate is more than 5 mg/s (provided pollutants are adequately dispersed) will need to be assessed);

3.4.9 If the above criteria are triggered, a detailed assessment of impacts of the development is required. If none of the criteria in the second stage are triggered there is no requirement to carry out a further air quality assessment for the impact of the development on the local area, and the impacts can be considered to have insignificant effects.

3.5 Emissions Mitigation Assessment

3.5.1 The purpose of this assessment is to quantify the monetised health damage value associated with transport emissions from the proposed development. The full assessment method and results are shown in **Section 8**.

4.0 Baseline conditions

- 4.1.1 Baseline air quality has been characterised following a review of the following sources of data:
- Continuous and passive (diffusion tube) monitoring undertaken by MSDC; and
 - Estimated background concentrations for the 1km² grid in which the site is located, based on background maps published by Defra.

4.2 Site description

- 4.2.1 The Proposed Development is in Haywards Heath, Mid Sussex. It is not within or adjacent to an AQMA, the nearest being approximately 9 km to the southwest in Hassocks. It is adjacent to the B2028 Perrymount Road to the east, which connects to the B2272 in the south and Mill Green Road in the north. The Brighton Main Line railway line from Brighton to London Bridge (and associated banking) borders the site to the west. To the immediate north and south of the Proposed Development are other commercial use developments. Further to the east there is a park and residential area with associated access roads. These roads are the main sources of air pollution in the immediate vicinity of the Proposed Development.

4.3 Local monitoring

- 4.3.1 During 2017 to 2020 (the latest years for which monitoring data are available), MSDC have undertaken passive air quality monitoring at 4 locations within 3 miles of the Proposed Development site, using diffusion tubes measuring NO₂ concentrations.
- 4.3.2 The results of NO₂ diffusion tube monitoring at locations nearest to the Proposed Development site are shown in **Table 3**. The results indicate that NO₂ concentrations in recent years have been within NO₂ annual mean objective. All these locations have seen a general decline in concentrations between 2017 and 2020. The diffusion tube at South Road Haywards Heath (MSAQ1) is closest to the site and can be considered representative.

Table 3: MSDC Annual mean NO₂ concentrations at diffusion tube monitoring positions within 1.5km of the proposed development site (µg/m³)

Site Name	Site Type	Distance from site (km)	2017	2018	2019	2020
MSAQ1	Roadside	0.7	20.8	20.1	19.3	12.7
MSAQ22	Roadside	4.3	27.9	27.0	26.0	20.1
MSAQ28	Suburban	1.7		24.7	25.3	22.2
MSAQ32	Roadside	4.6			13.7	11.2
Objective			40			

Source: MSDC ASR for 2021.

- 4.3.3 MSDC currently does not undertake automatic continuous monitoring in the district but have installed non-automatic diffusion tubes at 33 locations. There is only one diffusion tube near the proposed development MSAQ1 where the NO₂ concentration is well below the air quality objective.

4.4 Pollutant background concentrations

- 4.4.1 Estimated background concentrations of NO₂, PM₁₀ and PM_{2.5} were obtained from the UK-AIR website maintained by Defra for the 1km x 1km grid squares centred on OS co-ordinates 533085, 124255, corresponding to the 1km² grids containing the Proposed Development site. These background maps are available for each year up to 2030. Background NO₂, PM₁₀ and PM_{2.5} concentrations for 2022 - 2025 are shown in **Table 4** below. The annual mean NO₂, PM₁₀ and PM_{2.5} AQs are not predicted to be exceeded at the grid square containing the Proposed Development site in the next three years. It is expected the development will be completed well within this time frame, and so background concentrations are expected to be acceptable once the development becomes operational.

Table 4 Estimated background annual mean NO₂, PM₁₀ and PM_{2.5} concentrations at the Proposed Development site from the UK-AIR background maps published by Defra (µg/m³)

Year	NO ₂	PM ₁₀	PM _{2.5}
2022	9.41	13.72	9.45
2023	9.16	13.54	9.31
2024	8.81	13.37	9.17
2025	8.52	13.19	9.03
Objective	40	40	25

Notes: Concentrations presented for 2018 base year background maps for grid square's centred at 533500, 124500. The approximate centre of the site is located at 533085, 124255.

4.5 Overall baseline

- 4.5.1 Local monitoring and Defra background mapping indicate that concentrations of NO₂ and PM₁₀ are likely to be below the AQOs in the vicinity of the Proposed Development. Therefore, future site users are not expected to be introduced into an area of poor ambient air quality.

5.0 Construction phase assessment

5.1 Construction dust

Step 1: Identify need for detailed assessment

- 5.1.1 An assessment of construction dust effects is normally required if there are:
- human receptors within 350 m of the site boundary, or within 50 m of the route used by construction vehicles on a public highway, up to 500 m from the site entrance; or
 - ecological receptors within 50 m of the site boundary; or within 50 m of the route used by construction vehicles on a public highway, up to 500 m from the site entrance.
- 5.1.2 If these criteria are not met, it can be assumed that the level of risk from dust amenity will be negligible and any effects will not be significant.
- 5.1.3 As human receptors are within 350 m of the site boundary of the Proposed Development, a detailed dust risk assessment was undertaken. Ecological receptors are not present within 50 m of the site boundary or likely track-out route. As such, ecological impacts have been screened out of this assessment.

Step 2A: Define potential dust emission magnitudes

- 5.1.4 Potential dust emission magnitudes from construction activities associated with the Proposed Development were determined using the IAQM guidance and are detailed in **Appendix A** and summarised in **Table 5**. Even though there is a reduction in number of residential units and no commercial space has been proposed, we have still used the construction information same for previous proposed larger development in some instances for a conservative assessment.

Table 5: Dust Emission Magnitudes

Construction Activity	Dust Emission Magnitude
Earthworks	Small
Construction	Medium
Trackout	Small

Step 2B: Define sensitivity of the area

- 5.1.5 Using the IAQM guidance, the sensitivity of the surrounding area was determined for dust soiling effects and health effects. This is shown in **Table 6**.

Table 6 Sensitivity of the surrounding area

Potential impact	Sensitivity of the surrounding area		
	Earthworks	Construction	Trackout
Dust soiling	High	High	High
Human health	Low	Low	Low

Step 2C: Define the risk of dust impacts

- 5.1.6 The construction dust risks shown in **Table 7** were assigned based on the dust emission magnitude associated with each on-site activity and consideration of the sensitivity of the surrounding area.

Table 7: Summary of the dust risk from site activities

Potential Impact	Dust Risk Summary		
	Earthworks	Construction	Trackout
Dust Soiling	Low Risk	Medium Risk	Low Risk
Health Effects	Negligible	Low Risk	Negligible

- 5.1.7 The overall dust risk from the Proposed Development is predicted to be medium for dust soiling effects in relation to construction, and low or negligible for the remaining risk impact categories.
- 5.1.8 Earthworks and construction have the greatest amount of risk, with the potential to give rise to disamenity dust and health effects. Common disamenity dust effects may include the soiling of neighbouring windows, cars and street furniture.
- 5.1.9 Mitigation measures will help to negate some of the potential negative air quality impacts resulting from the construction phase of the Proposed Development and will avoid significant dust effects. This is further discussed in **Section 9.1**.

5.2 Construction road traffic emissions Screening assessment

- 5.2.1 It has been estimated that the maximum number of HDVs accessing the site in any given day during the construction period will be less than 10, and less than 100 LDVs. As such, there is not anticipated to be a change in vehicle movements during the construction phase that would exceed the above criteria.

6.0 Assessment of Operational Phase Effects

6.1 Impacts of the Development on Local Air Quality Stage 1 Screening Criteria

- 6.1.1 For the Proposed Development, there is more than 1,000m² of floorspace and there will be more than ten parking spaces. Therefore, further screening has been undertaken.

Stage 2 Scoping Criteria

- 6.1.2 **Table 8** below outlines the criteria in the EPUK-IAQM guidance which can be used to determine when an air quality assessment is required and identifies whether any would be exceeded in relation to the Proposed Development.

Table 8: Comparison of the proposed development to screening criteria replicated from the EPUK-IAQM guidance

Criterion from EPUK-IAQM guidance	Is criterion exceeded (Y/N), including explanation
A change in road alignment of five metres or more, within an AQMA.	No: The site is not expected to result in realignments to the existing road network.
Introduce a new junction or remove an existing junction near to relevant receptors which cause traffic to significantly accelerate or decelerate, such as traffic lights or roundabouts.	No: The Proposed Development would not introduce a roundabout or signalised junction.
Have an underground car park with extraction system.	No: No underground car parking is proposed. Also, only 6 parking spaces are proposed for the development.
Light-duty-vehicle (LDV) annual average daily traffic (AADT) flows changing by 100 AADT or more, within or adjacent to an AQMA, or 500 AADT or more elsewhere.	No: The transport consultant has confirmed that the proposed development will be traffic reducing (c. -156 AADT) when considering all vehicle movements.
Heavy-duty-vehicle (HDV) flows or bus flows (at a bus station) changing by 25 AADT or more, within or adjacent to an AQMA, or 100 AADT elsewhere.	No: It is not anticipated that there will be any significant HDV flows.
Inclusion of one or more substantial combustion processes, where there is a risk of impacts at relevant receptors.	No: No centralised energy/heating provision is expected within the Proposed Development. All heating to be provided by photo voltaic panels.

6.1.3 As shown in **Table 8**, none of the screening criteria are to be exceeded at the Proposed Development. This highlights that detailed modelling of the developments impact on the local area is not necessary, following the EPUK-IAQM guidance.

7.0 Evaluation of assessment results

7.1 Construction impacts Construction dust

- 7.1.1 Mitigation measures will help to negate some of the potentially adverse dust and PM₁₀ impacts resulting from the construction phase of the Proposed Development. The implementation of appropriate mitigation measures such as those in **Section 9.1** will avoid significant dust effects.

Traffic emissions

- 7.1.2 As outlined in **Section 5.1**, the screening assessment found that impacts relating to construction traffic associated with the Proposed Development is likely to be acceptable.
- 7.1.3 The effects from the construction phase traffic can therefore be considered not significant. Implementing an appropriate selection of the mitigation measures identified in Section 8 could be undertaken to minimise any residual effects.

7.2 Operational impacts Impacts of the development

- 7.2.1 As outlined in Section 6, the screening assessment found that impacts relating to operational traffic associated with the Proposed Development are expected to be acceptable. As such, impacts of the Proposed Development on local air quality can therefore be considered not significant. Implementing an appropriate selection of the mitigation measures identified in **Section 8** could be undertaken to minimise any residual effects.

Impacts on future receptors

- 7.2.2 New receptors introduced by the Proposed Development are not expected to be exposed to concentrations that breach ambient air quality objectives. Therefore, the impact of ambient air quality on existing receptors can be considered acceptable in the absence of mitigation.

8.0 Emissions Mitigation Assessment

- 8.1.1 An emissions mitigation assessment was undertaken to:
- 1) calculate the additional transport emissions associated with the development; and
 - 2) determine the appropriate level of mitigation required to help avoid, minimise and/or off-set the impact on air quality.
- 8.1.2 The calculation uses the Defra's Emissions Factor Toolkit¹⁶ to estimate the transport emissions from a proposed development, which is then used to estimate the associated health damage cost.
- 8.1.3 Damage costs for NO_x and PM_{2.5} for 5 years of scheme operation were calculated and summarised in **Table 10** using mitigation guidance for Sussex¹⁷. The total damage costs for road transport for the proposed development for 5 years was £7,396.45.
- 8.1.4 The emissions factor toolkit was run using the trips/annum generated by the proposed development, an average distance travelled of 10 km/trip and an average speed of 50 km/h. The emission outputs for NO_x and PM_{2.5} of the emissions factor toolkit are shown in **Table 9**.

Table 9 Outputs of DEFRA's Emissions Factor Toolkit for the Annual Emissions from Proposed Development

Road Type	AADT	HDV%	Speed(kph)	Link Length (km)	Annual emissions (NO _x kg/year)	Annual emissions (PM _{2.5} kg/year)
Urban (not London)	156	0	50	10	106.55	10.00

- 8.1.5 The total damage costs for NO_x and PM_{2.5} were calculated for 5 years of scheme operation using Defra's air quality damage and cost guidance¹⁸ as shown in **Table 8**. 2024 damage cost values of £811.27 per tonne of NO_x and £668.02 per tonne of PM_{2.5} were used.

¹⁶ DEFRA Emissions Factor Toolkit (<https://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html>)

¹⁷ Sussex-air partnership 2019, Air quality and emissions mitigation guidance for Sussex (2019)

¹⁸ DEFRA, Air quality damage cost guidance (January 2019) <https://www.gov.uk/guidance/air-quality-economic-analysis#damage-costs-approach>

Table 8 Calculated Damage Costs (£) from NOx and PM_{2.5}

Category	Pollutant	Central damage cost (£/t)	Annual emission t/y	Damage cost	Damage cost for 5 years	Total damage cost (£)
PM _{2.5} Road transport urban medium	PM _{2.5}	66,797	0.01	668.02	3340.10	7396.45
NOx Road transport urban medium	NOx	7,614	0.11	811.27	4056.35	

- 8.1.6 It is recommended that at least £7,396.45 is spent on measures designed to improve air quality in connection with the proposed development. The damage cost calculated in the previous assessment was £8,386. The decrease in cost could be attributed to revision of the proposal leading to decrease in number of residential units and hence reduced traffic and also no commercial space is proposed now. An Emissions Mitigation Statement will be provided by the Applicant following agreement with MSDC on appropriate mitigation measures for the site. However, the damage cost calculated can be met on mechanical ventilation and PV panels.

9.0 Mitigation

9.1 Mitigation during the construction phase

- 9.1.1 Under best practice guidance, the Proposed Development will constitute a maximum of medium risk for earthworks and construction dust impacts. The use of appropriate mitigation measures throughout the construction period will ensure that impacts to sensitive receptors are minimised or removed.
- 9.1.2 The following is a set of best-practice measures from the IAQM guidance that should be incorporated into the specification for the works. These measures should ideally be written into a Dust Management Plan (DMP), Construction Environmental Management Plan (CEMP) or similar. Some of the measures may only be necessary during specific phases of work, or during activities with a high potential to produce dust, and the list should be refined and expanded upon in liaison with the construction contractor when producing the DMP. Provided these measures (or suitable alternatives agreed via the DMP or with the local authority) are put in place, emissions from the site during construction are not expected to have a significant effect on receptors. The measures in italics are classified as in the IAQM 2014 guidance, the others being highly recommended.

Communications

- 9.1.3 Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- 9.1.4 Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
- 9.1.5 Display the head or regional office contact information.
- 9.1.6 Develop and implement a DMP, which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site.

Site Management

- 9.1.7 Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- 9.1.8 Make the complaints log available to the local authority when asked.
- 9.1.9 Record any exceptional incidents that cause dust and/or air emissions, either on- or off- site, and the action taken to resolve the situation in the log book.

Monitoring

- 9.1.10 *Undertake daily on-site and regular off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, where site activities are suspected to affect off-site dust as opposed to activities generated from other sources, with cleaning to be provided if necessary.*
- 9.1.11 Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.
- 9.1.12 Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- 9.1.13 Agree dust deposition, dust flux, or real-time PM₁₀ continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.

Preparing and maintaining the site

- 9.1.14 Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- 9.1.15 Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- 9.1.16 Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- 9.1.17 Avoid site runoff of water or mud.
- 9.1.18 Keep site fencing, barriers and scaffolding clean using wet methods.
- 9.1.19 Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
- 9.1.20 Cover, seed or fence stockpiles to prevent wind whipping, unless alternative practices are undertaken as described in the 'Measures Specific to Earthworks' below.

Operating vehicle/ machinery and sustainable travel

- 9.1.21 Ensure all vehicles switch off engines when stationary – no idling vehicles.

- 9.1.22 Avoid the use of diesel- or petrol- powered generators and use mains electricity or battery powered equipment where practicable.
- 9.1.23 *Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un- surfaced haul roads and work areas.*

Operations

- 9.1.24 Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- 9.1.25 Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- 9.1.26 Use enclosed chutes and conveyors and covered skips.
- 9.1.27 Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- 9.1.28 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.

Waste Management

- 9.1.29 Avoid bonfires and burning of waste materials.

Measures Specific to Construction

- 9.1.30 *Avoid scabbling (roughening of concrete surfaces) if possible.*
- 9.1.31 Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- 9.1.32 *Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.*
- 9.1.33 *For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.*

Measures Specific to Trackout

- 9.1.34 *Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.*
- 9.1.35 *Avoid dry sweeping of large areas.*

- 9.1.36 *Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.*
- 9.1.37 *Record all inspections of haul routes and any subsequent action in a site log book.*
- 9.1.38 *Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).*

9.2 Mitigation measures for the operational phase

- 9.2.1 This assessment has shown that the Proposed Development is unlikely to impact local air quality once operational and concentrations of NO₂ and PM₁₀ are anticipated to be below their respective AQO in the opening year at the façade of the development.
- 9.2.2 The Proposed Development is not expected to have significant adverse effects on air quality. Moreover, the proposed development is expected to be mechanically ventilated.
- 9.2.3 As such, no mitigation is required for the operational phase of the Proposed Development in terms of impact on existing receptors and exposure of future residents, beyond the good practice measures recommended above. However, it is proposed that the development will be mechanically ventilated and have PV panels for energy provision.

10.0 Conclusions

10.1.1 The air quality assessment has determined the following:

- Baseline air quality conditions across the Proposed Development site are likely to meet the NO₂ annual mean, NO₂ one-hour mean, PM₁₀ and PM_{2.5} annual mean and PM₁₀ 24-hour mean air quality objectives once operational.
- The screening of traffic during the construction phase in relation to air quality has determined that construction traffic impacts are unlikely to be significant.
- The risk of health impacts and ecological impacts arising from construction activities associated with the Proposed Development have been assessed as negligible/low for all works.
- The dust risk assessment has identified that earthworks and construction activities pose a medium risk with regards to dust soiling. However, with the implementation of the mitigation measures detailed or suitable, agreed alternatives, the impact of the construction phase is expected to be negligible.
- The screening of traffic during the operational phase in relation to air quality has determined that operational traffic impacts are unlikely to be significant. A detailed dispersion modelling assessment is therefore not required.
- Some measures to reduce any residual effects of the Proposed Development on air quality from vehicle movements whilst construction works take place or once operational are also recommended.
- It is recommended that at least £7,396.45 is spent on measures designed to improve air quality in connection with the proposed development. This will be met through mechanical ventilation and PV panels.
- The Proposed Development is considered to comply with national and local air quality policy.

Appendix A Construction Phase Assessment

A.1 Construction Phase Dust Assessment Methodology

The qualitative construction dust and PM₁₀ risk assessment method outlined in the IAQM 2014 guidance is summarised below.

Step 1: Identify the need for a detailed assessment

An assessment would normally be required where there is:

- A human receptor within 350 metres of the proposed scheme; and/or within 50 metres of the access route(s) used by the construction vehicles on the public highway up to 500 metres from the study area site entrance(s); and/or
- An ecological receptor within 50 metres of the proposed scheme and/or within 50 metres of the access route(s) used by construction vehicles on the public highway up to 500 metres from the entrance(s).

A human receptor refers to any location where a person or property may experience the adverse effects of airborne dust or dust-soiling, or exposure to PM₁₀ over a period relevant to the ambient AQOs.

An ecological receptor refers to any sensitive habitat affected by dust soiling. For locations with a statutory designation, such as a National Nature Reserve, Ramsar site, Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC) or Special Protection Areas (SPA), consideration should be given as to whether the particular site is sensitive to dust. Some non-statutory sites may also be considered if appropriate, such as a Site of Importance for Nature Conservation.

Where the need for a more detailed assessment is screened out, it can be concluded that the level of risk is 'negligible' and any effects would be 'not significant'.

Step 2: Assess the risk of dust impacts

A site is allocated 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 are combined in Step 2C to determine the risk of dust impacts before the allocation of mitigation measures. Risks are described as low, medium or high for each of the four separate activities (demolition, construction, earthworks and trackout). Site-specific mitigation is required, proportionate to the level of risk.

Step 2A: Define the potential dust emission magnitude

The potential dust emission magnitude is based on the scale of the anticipated works and should be classified as small, medium or large. **Table A-1** presents the dust emission criteria outlined for each construction activity.

Table A.1: Potential dust emission magnitude criteria

Construction activity	Large	Medium	Small
Demolition	Total building volume >50,000 m ³ , potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >20 m above ground level.	Total building volume 20,000 m ³ – 50,000 m ³ , potentially dusty construction material, demolition activities 10-20 m above ground level.	Total building volume <20,000 m ³ , construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <10 m above ground, demolition during wetter months.
Earthworks	Total site area >10,000 m ² , potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >8 m in height, total material moved >100,000 tonnes.	Total site area 2,500 m ² – 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 m – 8 m in height, total material moved 20,000 tonnes – 100,000 tonnes.	Total site area <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 <20,000 tonnes, earthworks during wetter months.
Construction	Total building volume >100,000 m ³ , on site concrete batching, sandblasting.	Total building volume 25,000 m ³ – 100,000 m ³ , potentially dusty construction material (e.g. concrete), on site concrete batching.	Total building volume <25,000 m ³ , construction material with low potential for dust release (e.g. metal cladding or timber).
Trackout	>50 HDV (>3.5 t) outward movements ^a in any one day ^b , potentially dusty surface material (e.g. high clay content), unpaved road length >100 m.	10-50 HDV (>3.5 t) outward movements ^a in any one day ^b , moderately dusty surface material (e.g. high clay content), unpaved road length 50 m – 100 m.	<10 HDV (>3.5 t) outward movements ^a in any one day ^b , surface material with low potential for dust release, unpaved road length <50 m.

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

Step 2B Define the sensitivity of the area

The sensitivity of the area is described as low, medium or high. It takes into account a number of factors:

- The specific sensitivities of receptors in the area;
- The proximity and number of those receptors;
- The local background PM₁₀ concentrations; and
- Site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

Table A-2 presents indicative examples of classification groups for the varying sensitivities of people to dust soiling effects and to the health effects of PM₁₀; and the sensitivities of receptors to ecological effects. A judgement is made at the site-specific level where sensitivities may be higher or lower, for example a soft fruit business may be more sensitive to soiling than an alternative industry in the same location. Box 6, Box 7 and Box 8 within the IAQM 2014 guidance outlines more detailed information on defining sensitivity.

Table A.2: Indicative examples of the sensitivity of different types of receptors

Sensitivity of receptor	Sensitivities of people and ecological receptors		
	Dust soiling effects ^a	Health effects of PM ₁₀ ^b	Ecological effects ^c
High	Dwellings, museums and other culturally important collections, medium and long-term car parks and car showrooms.	Residential properties, hospitals, schools and residential care homes.	Locations with an international or national designation and the designated features may be affected by dust soiling (e.g. SAC/SPA/Ramsar). Locations where there is a community of a species particularly sensitive to dust such as vascular species included in the Red Data list for Great Britain.
Medium	Parks, places of work.	Office and shop workers not occupationally exposed to PM ₁₀ .	Locations where there is a particularly important plant species, where dust sensitivity is uncertain or unknown. Locations with a national designation where the features may be affected by dust deposition (e.g. SSSIs).

Low	Playing fields, farmland, footpaths, short-term car parks and roads.	Public footpaths, playing fields, parks and shopping streets.	Locations with a local designation where the features may be affected by dust deposition (e.g. Local Nature Reserves).
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- People's expectations would vary depending on the existing dust deposition in the area.
- This follows the Department for Environment, Food and Rural Affairs (Defra, 2016) guidance as set out in Local Air Quality Management Technical Guidance (LAQM.TG (16)). Notwithstanding the fact that the ambient AQOs and limit values do not apply to people in the workplace, such people can be affected to exposure of PM₁₀. However, they are considered to be less sensitive than the general public as a whole because those most sensitive to the effects of air pollution, such as young children are not normally workers. For this reason workers have been included in the medium sensitivity category.
- Only if there are habitats that might be sensitive to dust. A Habitat Regulation Assessment of the site may be required as part of the planning process if the site lies close to an internationally designated site i.e. SACs, SPAs and Ramsar sites.

The IAQM 2014 guidance and MOL SPG advise consideration of the risk associated with the nearest receptors to construction activities.

The sensitivity and distance of receptors from the source of dust (i.e. demolition activities, earthworks, etc.) are then used to determine the potential dust risk for each dust effect for each construction activity as shown in Table A-3, Table A-4 and Table A-5. It is noted that distances are to the dust source and so a different area may be affected by trackout than by on-site works.

For trackout, the distances should be measured from the side of the roads used by construction HDVs. Without site specific mitigation, trackout may occur from roads up to 500 metres from large sites, 200 metres from medium sites and 50 metres from small sites, as measured from the site exit. The impact declines with distance from the site. It is only necessary to consider trackout impacts up to 50 metres from the edge of the road.

Table A.3: Sensitivity of the area to dust soiling effects on people and property ^a

Receptor area sensitivity	Number of Receptors ^b	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

a. Estimate the total number of receptors within the stated distance. Only the highest level of area sensitivity from the table needs to be considered. For example, if there are 7 high sensitivity receptors <20 metres of the source

and 95 high sensitivity receptors between 20 and 50 m, then the total of number of receptors <50 metres is 102. The sensitivity of the area in this case would be high.

b. Exact counting of number of human receptors not required. It is instead recommended that judgement is used to determine the approximate number of receptors within each distance band. For example, a residential unit is one receptor. For receptors which are not dwellings, professional judgement should be used to determine the number of human receptors. For example a school or hospital is likely to be within the >100 receptor category.

Table A. 4: Sensitivity of the area to human health impacts ^{a b c}

Receptor sensitivity	Annual Mean PM ₁₀ Concentrations	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	>32 µg/m ³	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32 µg/m ³	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28 µg/m ³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24 µg/m ³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low	Low

a. Estimate the total within the stated distance (e.g. the total within 350 metres and not the number between 200 and 350 m), noting that only the highest level of area sensitivity from the table needs to be considered. For example, if there are 7 high

sensitivity receptors <20 metres of the source and 95 high sensitivity receptors between 20 and 50 m, then the total of number of receptors <50 metres is 102. If the annual mean PM₁₀ concentration is 29 µg/m³, the sensitivity of the area would be high.

- b. Annual mean PM₁₀ concentrations are most straightforwardly taken from the national background maps but should also take account of local sources. The values are based on 32 µg/m³ being the annual mean concentration at which an exceedance of the 24-hour objective is likely in England, Wales and Northern Ireland.
- c. In the case of high sensitivity receptors with high occupancy (such as schools or hospitals) approximate the number of people likely to be present. In the case of residential dwellings, simply include the number of properties.

Table A. 5: Sensitivity of the area to ecological impacts

Receptor Sensitivity	Distance from the Source (m) ^a	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

a. Only the highest level of area sensitivity from the table needs to be considered.

Step 2C Define the risk of impacts

The dust emission magnitude is then combined with the sensitivity of the area to determine the overall risk of impacts with no mitigation measures applied. The matrices in Table A-6 provide a method of assigning the level of risk for each activity. These can then be used to determine the level of mitigation that is required.

Table A.6: Risks of dust impacts

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
Demolition			
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible
Earthworks			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible
Construction			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk

Low	Low risk	Low risk	Negligible
Trackout			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Low risk	Negligible
Low	Low risk	Low risk	Negligible

Step 3 Site-specific mitigation

Step three of the IAQM guidance identifies appropriate site-specific mitigation. These measures are related to whether the site is a low-, medium- or high-risk site. The highest risk category of a site (of all activities being undertaken) is recommended when considering appropriate mitigation measures for the site. Where risk is assigned as 'negligible', no mitigation measures beyond those required by legislation are required. However, additional mitigation measures may be applied as good practice.

A selection of these measures is specified as suitable to mitigate dust emissions from activities, based on professional judgement.

Step 4 Determine significant effects

Following Step 2 (definition of the proposed scheme and the surroundings and identification of the risk of dust effects occurring for each activity), and Step 3 (identification of appropriate site-specific mitigation), the significance of the potential dust effects can be determined. The recommended mitigation measures should normally be sufficient to reduce construction dust impacts to a not significant effect.

The approach in Step 4 of the IAQM dust assessment guidance has been adopted to determine the significance of effects with regard to dust emissions. The guidance states the following:

'For almost all construction activity, the aim should be to prevent significant effects on receptors through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be 'not significant'.'

IAQM guidance also states that:

'Even with a rigorous DMP [Dust Management Plan] in place, it is not possible to guarantee that the dust mitigation measures will be effective all the time, and if, for example, dust emissions occur under adverse weather conditions, or there is an interruption to the water supply used for dust suppression, the local community may experience occasional, short-term dust annoyance. The likely scale of this would not normally be considered sufficient to change the conclusion that with mitigation the effects will be 'not significant'.'

Step 4 of IAQM guidance recognises that the key to the above approach is that it assumes that the regulators ensure that the proposed mitigation measures are implemented. The management plan would include the necessary systems and procedures to facilitate on-going checking by the regulators to ensure that mitigation is being delivered, and that it is effective in reducing any residual effect to 'not significant' in line with the guidance.

A.2 Construction Phase Assessment

Step 1: Identify the Need for Detailed Assessment

The IAQM guidance states that a Detailed Assessment is required if there are human receptors located within 350 m and ecological receptors within 50 m of the site boundary, or within 50 m of the route used by construction vehicles on a public highway, up to 500 m from the site entrance.

As there are human receptors within 350 m of the site boundary of the Proposed Development, a dust risk assessment was undertaken.

Ecological receptors are not present within 50 m of the site boundary or likely track-out route and ecological impacts were therefore screened out of this assessment.

Step 2A: Define Potential Dust Emission Magnitude

Potential dust emission magnitudes from construction activities associated with the Proposed Development were determined in accordance with IAQM guidance and are detailed below.

Demolition

The dust emission class for demolition has been determined through consideration of the total building volume and type of building material to be demolished.

As the building is proposed to be constructed on the car park to the rear of Central House, no demolition works have been proposed. The requirement for demolition works have therefore been screened out of further assessment.

Earthworks

The area of the Site in which earthworks are expected to occur is <1,600m². It is anticipated that the Site is underlain by made ground. According to the British Geological Survey¹⁹ the soil material found at the Proposed Development is sandstone and siltstone. Stockpiles and NRMM may be used on site, although these are assumed to be relatively small and few in number respectively. The potential dust emission magnitude from earthworks is considered small, for a conservative assessment.

¹⁹ British Geological Survey – Geology of Britain viewer. Available at: <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>

Construction

The total building volume to be constructed will be $<10,000\text{m}^3$. Materials with a high potential for dust release, such as concrete and brickwork, may be used on site. On-site concrete batching and sandblasting may take place. Based on this, the potential dust emission magnitude for this activity is medium, for a conservative assessment.

Trackout

Site access and egress is expected to take place to the east of the Proposed Development. The likely track-out route from the Proposed Development will be Perrymount Road. There will be an estimated maximum of less than 10 one-way vehicle movements from the Proposed Development per day, putting the potential dust emission magnitude as small.

Step 2B: Define the Sensitivity of the Area

The surrounding area has a high density of residential properties, which have a high sensitivity to dust soiling and health effects. Ten to 100 residential properties are located within 20m of the Proposed Development (it is assumed the Change of Use application from office to residential at Central House will be complete while construction related activities take place at the Site).

The sensitivity to dust soiling has been found to be high due to the close proximity of residential properties to the Proposed Development. The sensitivity to health effects has been found to be low for demolition, earthworks and construction operations due to the proximity of residential properties, combined with the predicted 2019 Defra PM_{10} background concentration of $11.3\mu\text{g}/\text{m}^3$.

In order to determine the dust soiling and health effects from track-out, 50 m of the length of the likely site exit route along the public highway has been assessed, in line with the IAQM guidance corresponding to small sites. The number of high-sensitivity receptors within 50 m of the route was considered to be ten to 100. The sensitivity to dust soiling and health effects are therefore likely to be high and low respectively.

Using the IAQM guidance, the sensitivity of the surrounding area was determined for dust soiling effects and health effects. This is shown in **Table A-7**.

Table A-7 Sensitivity of the surrounding area

Potential impact	Sensitivity of the surrounding area		
	Earthworks	Construction	Trackout
Dust soiling	High	High	High
Human health	Low	Low	Low

Step 2C: Define the Risk of Impacts

The construction dust risks were assigned based on the IAQM assessment process, which assigns risks against the nature and scale of each construction activity, taking into consideration the above-mentioned receptor sensitivity. The risk of dust impacts derived from the different on-site activities is shown in **Table A-8**.

Table A-8 Summary of the Dust Risk from Site Activities

Potential Impact	Dust Risk Summary		
	Earthworks	Construction	Trackout
Dust Soiling	Low Risk	Medium Risk	Low Risk
Health Effects	Negligible	Low Risk	Negligible

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