Economic Development Regeneration and Tourism Service (EDRTS), North Yorkshire Council

Scarborough Harbour West Pier Regeneration

24th October 2023

AIR QUALITY SCREENING ASSESSMENT

temple

Prepared for:

Economic Development Regeneration and Tourism Service (EDRTS), North Yorkshire Council

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Executive Summary

Temple Group Limited (Temple) has been commissioned to prepare an air quality assessment to support the planning application for the proposed regeneration of Scarborough Harbour West Pier. The site consists of the majority of the West Pier, which is located at the northern end of South Bay approximately 400m from Scarborough Town Centre.

The air quality assessment has determined the following:

- Baseline air quality conditions at the Proposed Development site are likely to meet prevailing air quality objectives once the site is operational. Therefore, future site users are unlikely to be exposed to poor ambient air quality;
- The type and volume of traffic expected to be generated by construction activities was screened out of further assessment and thus considered to have a 'not significant' effect on air quality. Mitigation measures to further reduce the effects of construction vehicles and non-road mobile machinery have been recommended. Residual effects would remain negligible and 'not significant';
- The risk of health impacts and ecological impacts arising from fugitive dust and particulate matter connected with construction related activities has been assessed as a maximum of low. Mitigation measures to reduce the effects of fugitive dust and emissions have been recommended. Residual effects would be negligible and 'not significant';
- The development is unlikely to have a significant effect on air quality once operational. Mitigation measures have been suggested to further reduce any residual impacts on air quality connected with vehicle movements attributable to the Proposed Development; and
- The Proposed Development is considered to comply with national and local air quality policy.

Glossary

AADT	Annual Average Daily Traffic (flow)
AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
AQN	Air Quality Neutral
AQO	Air Quality Objective
AQS	Air Quality Standard
CHP	Combined Heat and Power
CEMP	Construction Environmental Management Plan
DMP	Dust Management Plan
DEFRA	Department for Environment, Food and Rural Affairs
EC	European Commission
EU	European Union
EPUK	Environmental Protection UK
EU	European Union
HDV	Heavy Duty Vehicle
IAQM	Institute of Air Quality Management
LAEI	London Atmospheric Emissions Inventory
LAQM	Local Air Quality Management
LDV	Light duty vehicle
MOL SPG	Mayor of London Supplementary Planning Guidance (on Controlling Dust and Emissions from Demolition and Construction)
NO_2	Nitrogen dioxide
NOx	Oxides of nitrogen
NPPF	National Planning Policy Framework
NRMM	Non-Road Mobile Machinery
PM_{10}	Particulate matter of size fraction approximating to <10mm diameter
$PM_{2.5}$	Particulate matter of size fraction approximating to <2.5mm diameter
PPG	Planning Practice Guidance
SPG	Supplementary Planning Guidance
SSSI	Site of Special Scientific Interest
SAC	Special Area of Conservation
SPA	Special Protection Area
SINC	Site of Importance for Nature Conservation
RDC	Rother District Council
Temple	Temple Group Limited
TG	Technical Guidance
UK-AIR	UK Air Information Resource

1. Introduction

Temple Group Limited (Temple) has undertaken an air quality assessment in support of a planning application for the proposed regeneration of Scarborough Harbour West Pier, located approximately 400m from Scarborough Town Centre, on behalf of the Economic Development Regeneration and Tourism Service (EDRTS), North Yorkshire Council. The site location plan is shown in Figure A.1 in Appendix A. The Site is located in the former Scarborough Borough Council area of NYC.

This report includes a baseline assessment of local air quality, a construction phase assessment and an operational phase assessment. Mitigation measures and/or further work have been recommended where appropriate.

2. Legislation and Policy

2.1 National Legislation, Regulations and Policy

The Air Quality Strategy for England, Scotland, Wales and Northern Ireland[1] and the Clean Air Strategy[2] collectively include ambient air quality objectives (AQOs) to be achieved and a strategy to achieve compliance with the AQOs. The ambient AQOs are established in the Air Quality (England) Regulations 2000[3], as amended[4].

The Environment Act 1995[5] requires all local authorities to carry out periodic reviews of air quality within their administrative areas. Where air quality is known or expected to exceed one or more of the AQOs, they must declare an air quality management area (AQMA) and implement an air quality action plan (AQAP) to work toward meeting the AQOs. The LAQM regime has been refined by the Environment Act 2021[6].

Moreover, the European Union emissions limit values derived from the Ambient Air Quality Directive (2008/50/EC)[7] were transposed into English and Welsh law as air quality standards (AQSs) via the Air Quality Standards Regulations 2010[8], as amended[9]. Air quality assessments should consider whether the Proposed Development would hinder compliance with the AQOs or European limit values, according to the Planning Practice Guidance[10] (see Section 2.2 below).

This air quality assessment has focussed on achieving compliance with those established for those AQOs and AQSs which continue to be breached in local hotspots and which are considered relevant based on the nature of the Proposed Development. The AQOs and AQSs shown in Table 2.1 below have been considered within this assessment and are herein collectively referred to as AQOs, as the AQSs are the same.

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[1] Department for Environment, Food and Rural Affairs, 2007. The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volume 1). London, Her Majesty's Stationary Office.

[2] Clean Air Strategy 2019, Department for Environment, Food and Rural Affairs.

[3] The Air Quality (England) Regulations 2000.

[4] The Air Quality (England) (Amendment) Regulations 2000.

[5] Environment Act 1995.

[6] Environment Act 2021.

[7] 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. European Commission.

[8] The Air Quality Standards Regulations 2010.

[9] The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020.

[10] Ministry of Housing, Communities and Local Government, 2019. Planning Practice Guidance– Air Quality.

Table 2.1 Ambient AQOs relevant to the assessment

Pollutant	AQOs	Measured as	Dates to be achieved and maintained thereafter
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
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
$PM_{2.5}$	25 µg/m^3	Annual mean	01 January 2020

2.2 National Planning Policy

The land use planning process is a key means of improving air quality, particularly in the long term, through the careful location and design of new developments. Any air quality concern that relates to land use and its development can be a material consideration in the determination of planning applications.

National Planning Policy Framework and Planning Practice Guidance

A revised version of the National Planning Policy Framework (NPPF) was published during July 2021[11]. 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.

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…"

Paragraph 186 states:

[11] National Planning Policy Framework, 2021. Ministry of Housing, Communities and Local Government.

"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".

The 2019 Air Quality Planning Practice Guidance[12] supports the NPPF, by including recommendations on the scope of an air quality assessment.

2.3 Local Planning Policy

Scarborough Borough Local Plan (2017)

Policy ENV 3, 'Environmental Risk', of the 'Scarborough Borough Local Plan[13] (2017), states that:

"Proposals will be expected to mitigate against the implications of environmental risk and the effects of climate change. This will be achieved by.

... i) monitoring and seeking to maintain good ambient air quality standards.."

..":Development should not result in unsatisfactory air quality for the locality or wider area. The Borough Council will continue to monitor the designation of Air Quality Management Areas. Local Authorities monitor air quality and determine whether the national air quality objectives as determined by DEFRA are being met and are expected to continue to be met, where this is not the case, they are identified as Air Quality Management Areas and are subject to a Local Air Quality Action Plan. When considering proposals, the Local Planning Authority will ensure that they do not lead either to an individual or cumulative contribution to unsatisfactory levels in these areas, in accordance with any air quality action plan."

North Yorkshire County Council Air Quality Strategy

North Yorkshire County Council published the latest version of their Air Quality Strategy, the 'Protecting North Yorkshire's Air Quality 2020-2045' [14], during 2021.

The AQS indicates sets the council's overall strategic direction in the areas where it can influence a reduction in air pollution, including setting out the approach to ultra-low

[12] Ministry of Housing, Communities & Local Government, 2019. *Planning Practice Guidance: Air Quality.*

[13] North Yorkshire Council, 2017. *Scarborough Borough Local Plan*

[14] North Yorkshire Council, 2021. *North Yorkshire's Air Quality Strategy 2020-2045*

emission vehicles, whilst recognising that electric vehicles are complementary to the wider sustainable transport agenda.

To achieve the overall ambition of maintaining and achieving good air quality, the council have adopted four key objectives:

Raise the profile of improving air quality in the context of North Yorkshire;

Work in partnership with borough and district councils and other organisations to protect and, where appropriate, improve air quality;

Ensure that improving or maintaining good air quality is a key consideration when planning and delivering County Council services; and

Support the use of Ultra Low Emission Vehicles (ULEVs) in North Yorkshire.

2.4 Technical Standards and Guidance

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

Published by Environmental Protection UK (EPUK) and the IAQM, this guidance[15] includes a method for screening the requirement for an air quality assessment and determining the significance of any air quality impacts associated with a development proposal. It also identifies mitigation measures which can be implemented to reduce air quality effects attributable to the scheme.

Guidance on the Assessment of Dust from Construction and Demolition

The IAQM has produced guidance on the assessment of air quality impacts from construction activities entitled the 'Guidance on the Assessment of Dust from Construction and Demolition' ('the IAQM 2014 guidance')[16]. 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.

[15] Environmental Protection UK & the Institute of Air Quality Management, 2017. *Land-Use Planning & Development Control: Planning for Air Quality.*

[16] Institute of Air Quality Management, 2014, incorporating 2016 updates. *Guidance on the assessment of dust from demolition and construction.* Institute of Air Quality Management.

Local Air Quality Management Technical Guidance ('TG22')

TG22[17] includes guidance for local authorities to assess and, where required, deliver improvements in air quality within their jurisdiction. TG22 also recommends where the AQOs should be applied, as outlined in Table 2.2 .

Table 2.2 Examples of where the air quality objectives should apply, as per TG22

Averaging Period Objectives	Objectives should apply at	Objectives should generally not apply at
Annual mean	All locations where members of the publi might be regularly exposed. Building façac of residential properties, schools, hospita 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 a their permanent residence. Gardens of residential properties Kerbside sites (as opposed to locations at the building façade), or any other location where pub 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 hote 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 pub exposure is expected to be short term.
1-hour mean	All locations where the annual mean and: and 8-hour mean objectives apply. Kerbsid sites (for example, pavements of busy shopping streets). Those parts of car parks, bus stations and railway stations etc. whic are not fully enclosed, where members of the public might reasonably be expected t spend one hour or more. Any outdoor locations where members of the public might reasonably expect to spend one hour or longer.	Kerbside sites where the public would not be expected to have regular access.

[17] Department for Environment, Food and Rural Affairs, 2022. Part IV of the Environment Act 1995: Local Air Quality Management: Technical Guidance LAQM.TG (22), London: Crown.

3. Air Quality Assessment Method

3.1 Overall Assessment Approach

The approach taken for assessing the potential air quality impacts of the Proposed Development is as follows:

- baseline characterisation of local air quality;
- qualitative impact assessment of dust and emissions generated by construction related activities;
- qualitative assessment of air quality once the Proposed Development is operational;
- 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

The main pollutants for consideration in this assessment are:

- Fugitive PM_{10}, $PM_{2.5}$ and dust emissions from construction related activities; and,
- NO_2, PM_{10} and $PM_{2.5}$ emissions from existing baseline traffic and additional traffic attributable to the Proposed Development.

According to the mechanical engineers for the Proposed Development site, Ridings Consulting Engineers Ltd, there are no on-site sources of combustion proposed at the site, therefore this does not require assessment.

3.2 Baseline Assessment

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.

A desk-based study has been undertaken using data obtained from continuous and diffusion tube monitoring stations maintained by Scarborough Borough Council (SBC) and estimated background from the United Kingdom Air Information Resource (UK-AIR) website maintained by the Defra.

In Section 4 of this assessment, these data have been described and the potential for future site users to be introduced into an area of poor ambient air quality assessed. A development would be considered as having a potentially significant effect (requiring further assessment) where it introduced receptors into an area where ambient AQOs could be exceeded when the proposed development becomes operational.

3.3 Construction Phase Dust Assessment

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 PM_{10} and particulates of finer fractions, have the potential to affect human health. 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 qualitative assessment has been undertaken to examine potential areas of concern and identify the best practicable means for eliminating, minimising and mitigating potential emissions.

The IAQM 2014 guidance has been used to undertake the risk assessment. The method recommended by this guidance is outlined in Section 5.

3.4 Assessment of Vehicle Movements (Construction and Operational phases)

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 NO_2 and fine particles (PM_{10} and $PM_{2.5}$). Fixed sources, such as boilers or large plant, can also contribute to local air pollution.

A screening assessment has been undertaken, following the methodology detailed in EPUK-IAQM guidance to determine whether significant air quality effects associated with the introduction of vehicles or plant attributable to the development could be screened out.

The guidance identifies two sets of screening criteria. The 'Stage 1' screening criteria indicate that further screening should be undertaken where the Proposed Development:

- Comprises 10 or more residential units or the site area is greater than 0.5ha; or comprises more than 1,000m^2 of floor space for all other uses or a site area greater than 1ha; and
- The development has more than 10 parking spaces or will have a centralised energy facility or other centralised combustion process.

The development comprises more than 10 parking spaces and over 1,000m^2 of floor space.

Therefore, the development should be screened in accordance with the 'Stage 2' screening criteria, in Section 6. If none of the criteria 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.

4. Baseline Conditions

4.1 Proposed Development Site Description

The Proposed Development is located at the northern end of South Bay approximately 400m from Scarborough Town Centre. The Proposed Development is not situated within or near an AQMA, however, it is located adjacent to the Eastborough/ Sandside/ Foreshore Road junction, which has the potential to generate pollutants associated with road traffic; NO_2, PM_{10} and $PM_{2.5}$.

4.2 Local Authority review and assessment information

The site is not currently located in the vicinity of any declared AQMAs.

Each year, SBC historically produced an Air Quality Annual Status Report (ASR)[18] summarising the results of monitoring undertaken in the area, progress made on improving air quality within its jurisdiction, and consequently on whether an AQMA should be declared. The most recent ASR available at the time of this assessment (the 2021 report, reviewing 2020) did not suggest that an AQMA is expected to be declared, suggesting that no AQMA is expected to be in place when the Proposed Development site is anticipated to be operational during 2025.

4.3 SBC air quality monitoring

SBC undertook monitoring at 5 locations within 1.5km of the Proposed Development site during 2019, the latest year for which monitoring data unaffected by the Covid-19 pandemic are available. Table 4.1 below outlines the annual mean NO_2 monitoring locations monitored at these sites from 2015 to 2019.

The results indicate that the annual mean NO_2 AQO has typically been met at all monitoring locations within 1.5 km of the Proposed Development, including Eastborough, the nearest major road to the Proposed Development site at which monitoring has taken place. At each of the monitoring sites presented for which multiple years of data are available, it is apparent that annual mean NO_2 concentrations have reduced with time.

[18] Scarborough Borough Council, 2021. LAQM Annual Status Report 2021

Table 4.1 Annual mean NO_2 concentrations monitored by SBC at locations within 1.5km of the Proposed Development site

Site ID	Site Name	Site Type	Distance from Proposed Devt. site (km)	Annual mean NO_2 concentration (µg/m^3)				
				2015	2016	2017	2018	2019
DT26	Eastborough	Kerbside	60 m	-	-	-	-	21.6
DT27	St Nicholas Street	Kerbside	410 m	-	-	-	-	18.0
DT1	Odeon	Roadside	870 m	-	31.3	33.1	31.3	31.3
DT2	Ramshill 1	Roadside	1.11 km	-	30.6	29.4	29.0	28.2
DT3	Ramshill 2	Roadside	1.37 km	-	30.5	29.6	30.1	27.3
Objective				**40**				

SBC did not undertake automatic (continuous) monitoring to determine compliance with the annual mean PM_{10} and $PM_{2.5}$ AQOs, hourly mean NO_2 AQO and 24-hour mean PM_{10} AQO.

4.4 Pollutant Background Concentrations

Background concentrations of NO_2, PM_{10} and $PM_{2.5}$ were obtained from maps downloaded from the UK-AIR website[19] maintained by Defra. The maps present annual mean pollutant concentrations on a 1km^2 basis for the years 2018 (the base mapping year) to 2030. The concentrations for the 1km x 1km grid square centred on OS coordinates 504500, 488500, corresponding to the location of the Proposed Development, for 2019, 2023 (the year in which construction activities are expected to commence) and 2025 (the year the Proposed Development is expected to be operational) are shown in Table 4.2. The data show that annual mean pollutant concentrations are not expected to exceed the annual mean NO_2, PM_{10} or $PM_{2.5}$ AQOs in any of the presented years.

Table 4.2: Background pollutant concentrations at the Proposed Development from the UK-AIR website

Pollutant	2019 (µg/m^3)	2023 (µg/m^3)	2025 (µg/m^3)	Objective
NO_2	10.70	9.41	8.85	40.0
PM_{10}	11.52	10.88	10.63	40.0

[19] Department for Environment, Food and Rural Affairs, 2020. UK Air Information Resource. [online] Available at: http://uk-air.defra.gov.uk

$PM_{2.5}$	7.37	6.88	6.68	25.0

4.5 Current Baseline

Based on the monitored and estimated background data presented above, it is considered that the Proposed Development site is located in an area where the PM_{10} and $PM_{2.5}$ AQOs are unlikely to be exceeded.

Data collected by SBC indicate that annual mean NO_2 concentrations are unlikely exceed in the vicinity of A roads local to the Proposed Development site, including A165 Valley Bridge Road and A64 Westborough. The closest diffusion tube to the Proposed Development, DT 26, located north of the Eastborough/Sandside/Foreshore Road junction, was 21.6µg/m^3 during 2019, the latest year for which representative monitoring data are available. The monitoring location is in relatively close proximity to the Proposed Development site (60m). As pollutant concentrations tend to disperse and dilute with distance from the road, it is considered likely that annual mean NO_2 concentrations are lower than this at the Proposed Development site.

5. Construction Phase Assessment

5.1 Construction Dust

The dust emission magnitudes for each of the four construction related activities (demolition, earthworks, construction and trackout) are informed by the types of construction related activities expected to take place at the Proposed Development site. These comprise:

Demolition; Three buildings to be demolished, of which one to be replaced by a new bait shed building which will accommodate 31 units;

Earthworks; Preparation of site for the demolition activity, the conversion of existing buildings and the erection of new structures;

Construction; Two new buildings are being constructed; one bait shed building and on one comprising of replacement kiosks as well as public conveniences;

Trackout: According to the IAQM 2014 guidance, trackout is defined as '*The transport of dust and dirt from the construction/ demolition site when HDVs leave the site (having travelled over muddy ground) onto the public road network, where it may be deposited and then re-suspended by vehicles using the network.'*

Potential dust emission magnitudes from each of the construction related activities has been assessed using the IAQM 2014 guidance criteria (described in **Appendix B**) and are detailed in Table 5.1 . The information provided has been based on professional judgement, using our understanding of activities taking place at Site.

Table 5.1 Dust Emission Magnitudes

Type of work	Description of site characteristics with reference to IAQM 2014 guidance	Dust emissions magnitude
Demolition	<20,000m^3 building being demolished Demolition works to take place less than 10m above grou level Building currently comprises brick, therefore anticipated tha demolition work may involve potentially dusty materials	Small
Earthworks	The site area where earthworks will take place will cover 2,500 - 10,000m^2. <20,000 tonnes material to be excavated Anticipated <5 heavy earth moving vehicles will be active a any one time Earthworks may be expected at all times of the year.	Small
Construction	Total building volume being constructed <25,000m^3	Small
Trackout	<10 HDV outward movements from site expected on any day	Small

Type of work	Description of site characteristics with reference to IAQM 2014 guidance	Dust emissions magnitude
	HGVs will travel on <50m of unpaved ground on site, West Peir entrance and Foreshore road are paved	

Step 2B: Define sensitivity of the area

Using the IAQM 2014 guidance process outlined in Appendix A**, the sensitivity** of the surrounding area was determined. This is shown in Table 5.2 .

Table 5.2 Sensitivity of the surrounding area

Type of work	Demolition	Earthworks	Construction	Trackout
Dust soiling	**Medium:** >1 medium sensitivity receptor within 20m of building 4, which will be demolished.	**Medium:** >1 medium sensitivity receptor within 20m of building 4, which will be demolished.	**Medium:** >1 medium sensitivity receptor near the proposed Building 9.	**High:** 10-100 high sensitivity receptors within 50m of routes along which trackout could occur
Human health impacts	**Low:** >1 receptor within 20m of building 4, which is being demolished.	**Low:** >1 receptor within 20m of building 4, which i being demolished.	**Low:** >1 receptor within 20m of building 9, which is being constructed.	**Low:** Less than 100 high sensitivity receptors within 50m of the roads used by construction traffic.
Ecological	**Negligible:** According to the MAGIC Maps website, there are no SACs, SPAs, Ramsar sites, SSSIs, National Nature Reserves or Ancient Woodlands within 50m of the Proposed Development site or routes along which trackout could arise. It is th assumed that there are no species sensitive to the impacts of dust deposition wi the vicinity of the Proposed Development site.			

Note: PM_{10} concentrations are likely to be below 24µg/m^3 the vicinity of the Application Site.

Step 2C: Define the risk of dust impacts

Using the IAQM 2014 guidance process outlined in **Appendix A**, the risk of dust impacts derived from the different on-site activities is shown in Table 5.3 .

Table 5.3 Summary of the dust risk from site activities

Potential Impact	Dust Risk Summary			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Low risk	Low risk	Low risk	Low risk
Health Effects	Negligible risk	Negligible risk	Negligible risk	Negligible risk
Ecological	Negligible Risk – none expected			

The overall dust risk from the Proposed Development site is predicted to be a maximum of low, in connection with dust soiling risks attributable to all four activities. Mitigation measures will help to negate some of the potential negative air quality impacts resulting from fugitive dust attributable to construction related activities and will avoid significant dust effects. This is further discussed in the mitigation section.

5.2 Construction road traffic emissions

Screening assessment

Construction traffic will comprise haulage/construction vehicles and vehicles used for workers' trips and from the site.

The EPUK-IAQM guidance indicates that an air quality assessment is required when one or more of a series of screening criteria are not met. The two (secondary screening) criteria considered most relevant to construction related vehicle movements are:

- A change in light duty vehicle (LDV) movements of 100 or more (within or adjacent to an AQMA); or
- A change in heavy duty vehicle (HDV) movements of 25 or more (within or adjacent an AQMA).

The operation of vehicles and equipment powered by internal combustion engines results in the emission of NOx, PM_{10} and $PM_{2.5}$. Based on information provided by the Construction Manager for proposed redevelopment works from William Birch & Sons, it is understood that, at the peak during the six-month construction programme, 15 vans, 15-20 cars and 7 known heavy goods vehicle movements per week (potentially more if non-standard deliveries are required). Construction traffic is thus not expected to result in an exceedance of the above EPUK-IAQM guidance screening criteria to have a materially deleterious effect on air quality.

6. Operational Phase Assessment

6.1 Impacts of the Development

Table 6.1 below outlines the secondary screening criteria from the EPUK-IAQM guidance and identifies whether any would be exceeded in relation to the Proposed Development.

Table 6.1 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 nea to relevant receptors which cau 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, where the ventilation extract is within 20m of a relevant receptor and the total daily vehicle movemer in and out is >100.	**No:** No underground car parking is proposed.
Light-duty-vehicle (LDV) annual average daily traffic (AADT) flow changing by 100 AADT or more, within or adjacent to an AQMA, or 500 AADT or more elsewhere	**No:** According to the transport assessment prepared by the Transport consultants (Pulsar Transport Ltd), vehicular movement to and from the site would be expected to remain similar in numbe and distribution over the day to the existing uses, with a reduction in vehicle trips possibly resulting overall.
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:** The development is not expected to generate a perceptible number of HDV vehicle movements and is not introducing a bus station.
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.

6.2 Impacts on future receptors introduced by the Proposed Development

The development is not expected to introduce future site users into an area where ambient air quality will be poor once it is operational. Therefore, the impact of ambient air quality on future site users has been assessed as not significant.

7. Mitigation

7.1 Mitigation of Construction Dust

Under best practice guidance, the Proposed Development will constitute a maximum of medium risk for construction dust. The use of appropriate mitigation measures throughout the construction period will ensure that impacts to sensitive receptors are minimised.

The following is a set of best-practice measures in accordance with the IAQM 2014 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, which can be done at the post-consent stage. 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 desirable in the IAQM 2014 guidance, the others being highly recommended.

Site Management

Display the name and contact details of person(s) accountable for air quality and dust issues on the Proposed Development site boundary;

Display the head or regional office contact information;

Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. 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. The DMP may include monitoring of dust deposition, dust flux, real time PM_{10} continuous monitoring and/or visual inspections;

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;

Make the complaints log available to the local authority when asked;

Carry out regular inspections at the Proposed Development site to monitor compliance with air quality and dust control procedures, record inspection results, and make an inspection log available to the local authority when asked;

Increase the frequency of inspections at the Proposed Development site by those accountable for dust and air quality pollutant emissions issues when activities with a high potential to produce dust and emissions and dust are being carried out, and during prolonged dry or windy conditions; and

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 logbook.

Preparing and Maintaining the Proposed Development Site

Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible;

Erect solid screens or barriers around dusty activities or the Proposed Development site boundary that are at least as high as any stockpiles on site;

Avoid runoff of water or mud from the Proposed Development site;

Fully enclose the Proposed Development site or specific operations where there is a high potential for dust production and the site is active for an extensive period;

Keep fencing, barriers and scaffolding clean using wet methods at the Proposed Development site;

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; and

Cover, seed, or fence stockpiles to prevent wind whipping [unless alternative practices are undertaken as described in the 'Measures Specific to Earthworks' below.

Operating vehicles/ machinery and sustainable travel

Ensure all NRMM comply with the standards set within the MOL SPG (as discussed below);

Ensure all vehicles switch off engines when stationary – no idling vehicles;

Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where possible; and

Impose and signpost a maximum-speed-limit of 10mph on surfaced haul routes and work areas.

Operations

Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems;

Ensure an adequate water supply for effective dust/particulate matter suppression/ mitigation, using non-potable water where possible and appropriate;

Use enclosed chutes, conveyors and covered skips;

Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate; and

Ensure equipment is readily available at the Proposed Development site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

Avoid bonfires and burning of waste materials; and

Reduce and recycle wate to reduce dust from waste materials.

Measures Specific to Demolition

Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust);

Ensure effective water suppression is used during demolition operations. Handheld sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground;

Avoid explosive blasting, using appropriate manual or mechanical alternatives; and

Bag and remove any biological debris or damp down such material before demolition.

Measures Specific to Earthworks

Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable [not required if other measures used to secure stockpiles];

Use hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable [not required if other measures used to secure stockpiles]; and

Only remove the cover from small areas during work, not all at once.

Measures Specific to Construction

Avoid scabbling (roughening of concrete surfaces) if possible;

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;

For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust;

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; and

With the proposed construction activities mitigation measures as described in place, the likely residual impact of works undertaken during the construction phase on local air quality can be considered as ‘not significant’.

Measures Specific to Trackout

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;

Avoid dry sweeping of large areas;

Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport;

Record all inspections of haul routes and any subsequent action in a site log book; and

Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

7.2 Mitigating emissions attributable to operational phase vehicle movements and plant

This assessment has shown that the Proposed Development is unlikely to impact local air quality once operational and future site users are unlikely to be exposed to poor ambient air quality once the scheme is operational.

As such, no mitigation is required for the operational phase of the Propc Development.

7.3 Mitigating effects of air quality on future site users

The Proposed Development is not expected to introduce receptors into an area of poor ambient air quality and as such no mitigation has been recommended.

8. Conclusions

The AQA has determined the following:

The assessment of air quality in relation to roads during the construction stage has determined that there will be a negligible impact on air quality as a result of construction traffic and therefore its effect will not be significant;

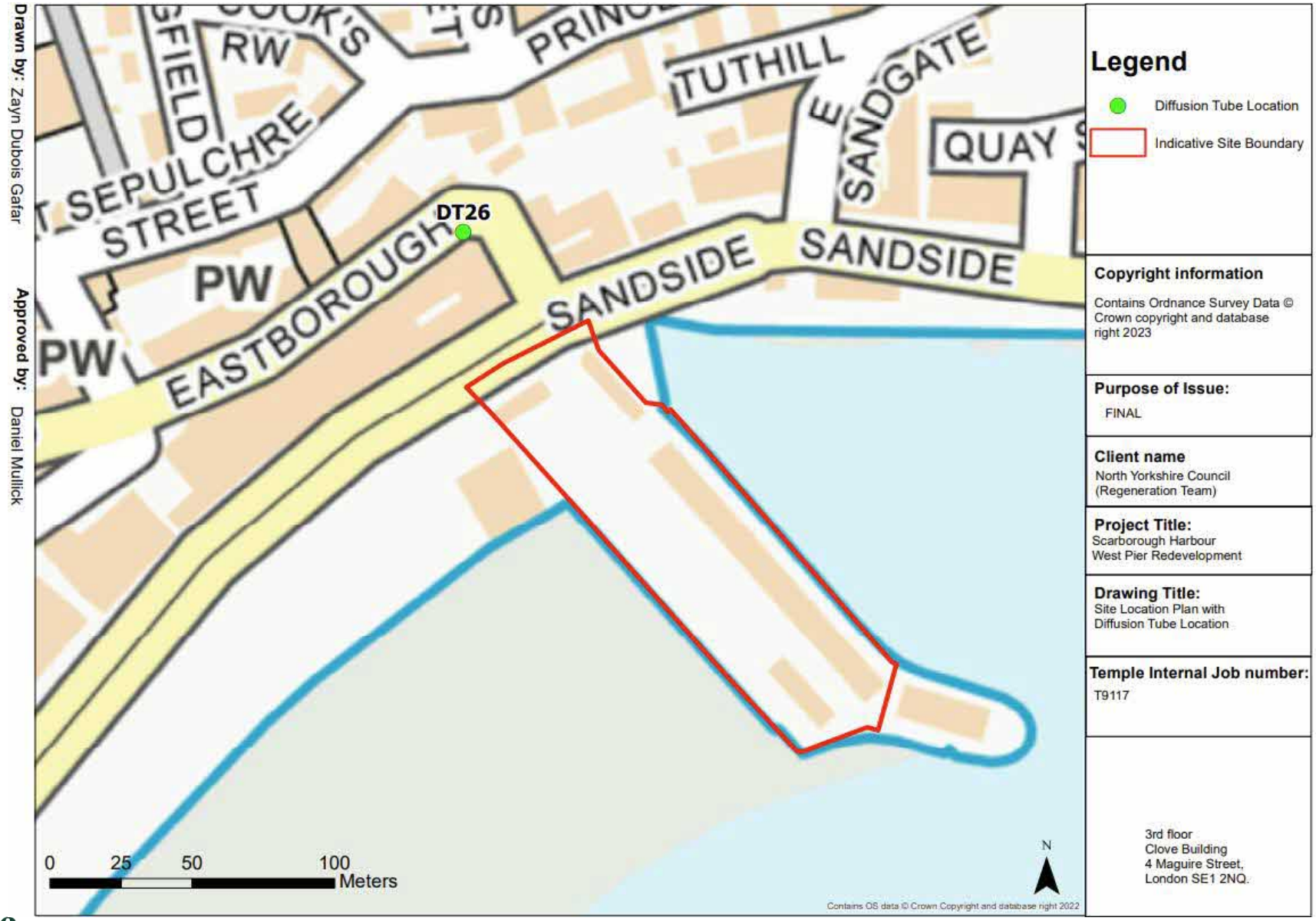
The dust risk assessment has identified that construction activities pose a low dust risk. However, with the implementation of the mitigation measures detailed in the relevant section of this report, the activities are not anticipated to result in significant effects on local receptors;

The assessment of air quality in relation to roads during the operational stage has determined that there will be a negligible impact on air quality at nearby existing sensitive receptors and therefore its effect will not be significant; and

The assessment in relation to the road traffic has determined that future receptors within the Proposed Development are unlikely to be exposed to concentrations in excess of the annual mean objective for NO_2, PM_{10} and $PM_{2.5}$.

Appendix A Figures

A.1 Site Location Plan and Local Monitoring



Appendix B Construction Phase Assessment

Construction Phase Dust Assessment Methodology

The qualitative construction dust and PM_{10} 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 PM_{10} 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 B-1 presents the dust emission criteria outlined for each construction activity.

Table B.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 c 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 c 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 PM_{10} concentrations; and

Site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

Table B-2 presents indicative examples of classification groups for the varying sensitivities of people to dust soiling effects and to the health effects of PM_{10}; 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 B.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 ca showrooms.	Residential properties, hospitals, schools and residential care homes.	Locations with an international or national designation and the designated features may be affecte 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 lis for Great Britain.
Medium	Parks, places of work.	Office and shop worke not occupationally exposed to PM_{10}.	Locations where there is a particularly important plant species where dust sensitivity is uncertain unknown. Locations with a national designation where the features ma 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 affecte by dust deposition (e.g. Local Natu Reserves).

a. People's expectations would vary depending on the existing dust deposition in the area.
b. This follows the Department for Environment, Food and Rural Affairs (Defra, 2022) guidance as set out in Local Air Quality Management Technical Guidance (LAQM.TG (22)). 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 PM_{10}. 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.

c. 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 B-3, Table B-4 and Table B-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 B.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 B. 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 PM_{10} concentration is 29 µg/m^3, the sensitivity of the area would be high.

b. Annual mean PM_{10} 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/m^3 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 B. 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 B-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 B.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.

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