



Air Quality Assessment:

Tower Wharf, Lower Road, Northfleet

Gill Aggregates Limited

5th November 2024



Report Details:

Report Title	Air Quality Assessment
Site	Tower Wharf, Lower Road, Northfleet
Client	Gill Aggregates Limited
Report No.	H4270 – AQ – v1

Version History:

Version	Date	Notes	Author	Checked
V1	5 th November 2024	Original Issue	Will Totty MSc AMIEnvSc	Nick Hawkins MSc MIOA MIAQM

This report has been prepared by Hawkins Environmental Limited for the sole purpose of assisting in gaining planning consent for the proposed development described in the introduction of this report.

This report has been prepared by Hawkins Environmental Limited with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

This assessment takes into account the prevailing conditions at the time of the report and assesses the impact of the development (if applicable) using data provided to Hawkins Environmental Limited by third parties. The report is designed to assist the developer in refining the designs for the proposed development and to demonstrate to agents of the Local Planning Authority that the proposed development is suited to its location. This should be viewed as a risk assessment and does not infer any guarantee that the site will remain suitable in future, nor that there will not be any complaints either from users of the development or from impacts emanating from the development site itself.

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1. INTRODUCTION

1.1. Overview

Hawkins Environmental Limited has been instructed by Gill Aggregates Limited to undertake an Air Quality Assessment for the proposed redevelopment of Tower Wharf, situated in the Northfleet area of the Borough of Gravesham in the non-metropolitan county of Kent.

During the planning process, it has been identified that the site may require an air quality assessment to determine whether the site is suitable for use, and to determine whether the proposed development would have an adverse impact on the surrounding environment. Consequently, this assessment has been completed in order to determine whether the proposed development achieves compliance with the National Air Quality Objectives, as well as national, regional and local planning policy.

This assessment has been undertaken in accordance with the Department of Environment, Food and Rural Affairs' (Defra) current *Technical Guidance on Local Air Quality Management (LAQM) (TG22)* (April 2021) and the Institute for Air Quality Management and Environmental Protection UK's *Land-Use Planning & Development Control: Planning for Air Quality* (January 2017).

The assessment addresses the effects of air pollutant emissions from traffic using the adjacent roads and emissions associated with the development of the site. In addition, a risk-based assessment of the likely impact of construction on the air quality of the local environment has been conducted in accordance with the Institute of Air Quality Management's 2024 edition of the *Guidance on the assessment of dust from demolition and construction*.

This report assesses the overall levels of nitrogen dioxide (NO₂) and particulates (PM₁₀ and PM_{2.5}) in the vicinity of the site. A glossary of terms is detailed in **Appendix 1**. The constraints which existing air quality may have on the proposed development have been considered and forms part of this assessment. However, the impacts of the development on the air quality of surrounding properties have also been considered.

1.2. Site Description

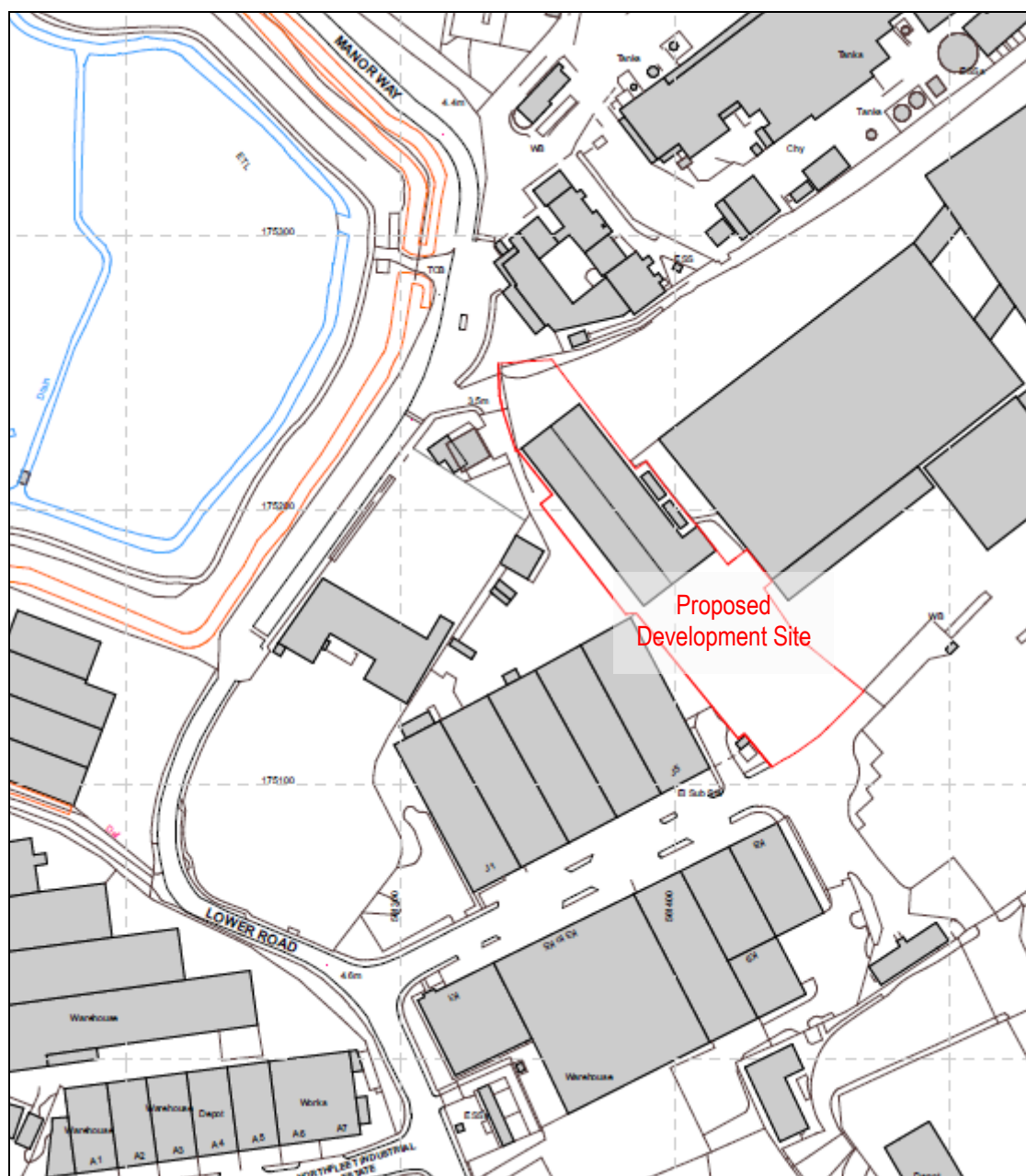
The proposed development site is situated off Lower Road in Northfleet in an industrial area adjacent to the Seacon Port Terminal.

The site is currently industrial in use with a large warehouse building occupying much of the northern extent of the site with an area of hardstanding/open storage to the south.

The proposed development will see extensions to the existing storage warehouse to provide a state of the art fully automated aggregate bagging facility. The existing building will have extensions to both sides, a new warehouse section to the south and silos to the side.

A location plan of the proposed site can be seen in **Figure 1.1**.

Figure 1.1: Site Location Plan



2. LEGISLATION, PLANNING POLICY & GUIDANCE

2.1. National Legislation

Part IV of the Environment Act (1995), requires the UK government to produce a national Air Quality Strategy which contains standards, objectives and measures for improving ambient air quality. The National Air Quality Strategy sets out National Air Quality Objectives (NAQOs) that are maximum ambient pollutant concentrations that are not to be exceeded either without exception or with a permitted number of exceedances over a specified timescale.

The Clean Air for Europe (CAFE) programme revisited the management of Air Quality within the EU and replaced the EU Framework Directive 96/62/EC, its associated Daughter Directives 1999/30/EC, 2000/69/EC, 2002/3/EC, and the Council Decision 97/101/EC, with a single legal act, the Ambient Air Quality and Cleaner Air for Europe Directive 2008/50/EC.

Directive 2008/50/EC is currently transcribed into UK legislation by the Air Quality Standards Regulations 2010, which came into force on 11th June 2010. These limit values are binding on the UK and have been set with the aim of avoiding, preventing or reducing harmful effects on human health and on the environment as a whole. These limit values are the basis of the NAQOs.

The National Air Quality Objectives (NAQOs) and their Limit Values will form the basis of this air quality assessment of the proposed development. The NAQOs are based on an assessment of the effects of each pollutant on public health. Therefore, they are a good indicator in assessing whether, under normal circumstances, the air quality in the vicinity of a development is likely to be detrimental to human health. In determining whether air pollutant levels may constrain development, the results of studies are compared against the acceptability criteria. The Air Quality Standards are displayed in **Table 2.1**.

Table 2.1: Air Quality Standards

Pollutant	Average Period	NAQO Limit Value
Sulphur Dioxide	One Hour	350 µg/m ³ Not to be exceeded more than 24 times per calendar year
	One Day	150 µg/m ³ Not to be exceeded more than 3 times per calendar year
Nitrogen Dioxide	One Hour	200 µg/m ³ Not to be exceeded more than 18 times per calendar year
	Calendar Year	40 µg/m ³
Benzene	Calendar Year	5 µg/m ³



Pollutant	Average Period	NAQO Limit Value
Lead	Calendar Year	0.5 µg/m ³
PM ₁₀	One Day	50 µg/m ³ Not to be exceeded more than 35 times per calendar year
	Calendar Year	40 µg/m ³
PM _{2.5}	Calendar Year	20 µg/m ³
Carbon Monoxide	Maximum daily running 8-hour mean	10 mg/m ³

2.2. Clean Air Strategy (2019)

The Government's Clean Air Strategy was launched on the 14th January 2019 and sets out a range of initiatives that will help reduce air pollution, providing healthier air to breathe, enhancing the economy and protecting nature.

The Clean Air Strategy highlights action to be taken to reduce emissions across all sectors, including transport, the home, farming, and industrial sources. This includes actions to reduce particulate matter from domestic emissions, by introducing new legislation to prohibit the sales of the most polluting fuels and ensuring only the cleanest stoves are available for sale by 2022.

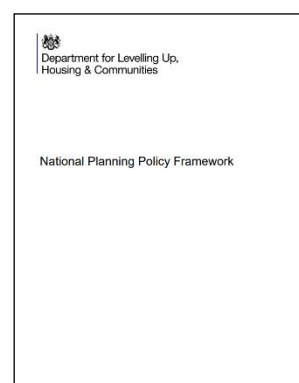
In addition, the Clean Air Strategy sets out proposals to halve the population living in areas with concentrations of fine particulate matter (PM_{2.5}) above the World Health Organisation (WHO) guideline levels of 10 µg/m³ by 2025. Since the publication of the Clean Air Strategy, the WHO has further reduced its guideline level for PM_{2.5} to 5 µg/m³.



2.3. National Planning Policy Framework (2023)

The National Planning Policy Framework (NPPF) was first published on the 27th March 2012 and revised July 2018, February 2019, July 2021 and September 2023, with the latest version published in December 2023 in response to the Levelling-up and Regeneration Bill.

The NPPF outlines the Government's planning policies for England and determines how they should be applied. It provides a framework within which Local Planning Authorities are required to prepare their own locally-prepared plans, where both the policies within the NPPF and the local plan are material planning considerations against which planning decisions are determined. These distinctive local and neighbourhood plans should be interpreted and applied in order to meet the needs and priorities of their communities.



The NPPF notes *“The purpose of the planning system is to contribute to the achievement of sustainable development, including the provision of homes, commercial development, and supporting infrastructure in a sustainable manner”* (Paragraph 7). The NPPF notes sustainable development should be delivered with three main dimensions: economic; social and environmental (Paragraph 8).

The NPPF supports a presumption in favour of development, unless the adverse impacts of that development outweighs the benefits it notes *“that sustainable development is pursued in a positive way, at the heart of the Framework is a presumption in favour of sustainable development”* (Paragraph 10).

The NPPF states that in the planning system *“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 such as air and water quality, taking into account relevant information such as river basin management plans”* (Paragraph 180).

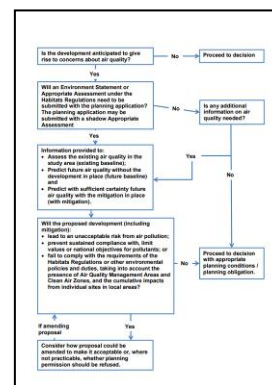
The NPPF also states that *“Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual 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”* (Paragraph 192).

2.4. Planning Practice Guidance (2019)

The Planning Practice Guidance (PPG) was launched on 6th March 2014 and has undergone regular revision, with the most recent changes to Air Quality in November 2019. It provides additional guidance and interpretation to the Government's strategic policies, outlined within the NPPF, in a web-based resource. This is updated regularly.

Matters of relevance to the air quality assessment include:

- The provision of *“guidance on how planning can take account of the impact of new development on air quality”*. The PPG provides signposts as to how to address air quality in planning applications and highlights the importance of local plans.
- The statement that *“The Department for Environment, Food and Rural Affairs carries out an annual national assessment of air quality using modelling and monitoring to determine compliance with relevant Limit Values”* and *“It is important that the potential impact of new development on air quality is taken into account where the national assessment indicates that relevant limits have been exceeded or are near the limit”* (Reference ID: 32-001-20191101). The PPG goes on to say that *“Whether air quality is relevant to a planning decision will depend on the proposed development and its location.”*



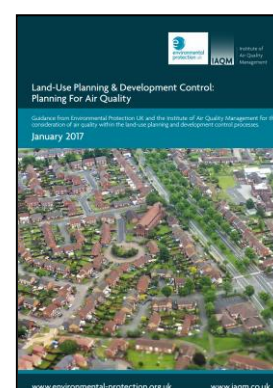
Concerns could arise if the development is likely to have an adverse effect on air quality in areas where it is already known to be poor, particularly if it could affect the implementation of air quality strategies and action plans and/or breach legal obligations (including those relating to the conservation of habitats and species)" (Reference ID: 32-005-20191101).

- The identification of the content of an air quality assessment, stating clearly that "Assessments need to be proportionate to the nature and scale of development proposed and the potential impacts (taking into account existing air quality conditions), and because of this are likely to be locationally specific" (Reference ID: 32-007-20191101).

2.5. Land-Use Planning & Development Control: Planning for Air Quality (2017)

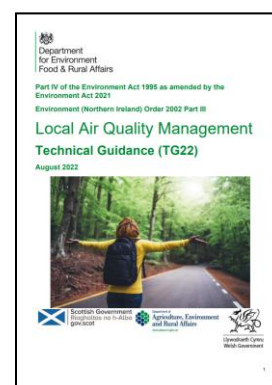
Land-Use Planning & Development Control: Planning for Air Quality, jointly published by the Institute of Air Quality Management (IAQM) and Environmental Protection UK (EPUK) in May 2015 and updated in January 2017, provides general guidance on air quality and planning.

Specifically, the guidance provides details on the scoping of effects, how to assess the impacts in relation to air quality, as well as details on how to assess the significance of impacts.



2.6. Local Air Quality Management Technical Guidance TG22 (2022)

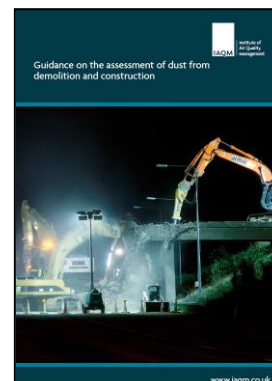
Specifically designed to provide technical guidance to Local Planning Authorities (LPAs) in relation to their review and assessment of air quality, TG(22) provides useful guidance in relation to the appropriate methods of air quality modelling and monitoring, which can be as equally useful to the assessment of air quality impacts.



2.7. Guidance on the Assessment of Dust from Demolition and Construction (2024)

Published in 2014 and most recently amended in 2024, the IAQM's Guidance on the Assessment of Dust from Demolition and Construction provides guidance on preparing an Air Quality Statement for construction and demolition activities, specifically in relation to dust risk assessments, as well as providing details on how best to mitigate the impacts of construction dust.

Much of the detail within the IAQM's Guidance was adopted within the Control of Dust and Emissions from Construction and Demolition SPG.



2.8. Guidance on the Assessment of Mineral Dust Impacts for Planning (2016)

The Institute of Air Quality Management (IAQM) has published *Guidance on the Assessment of Mineral Dust Impacts for Planning* (IAQM, 2016).

The guidance has been prepared to assist practitioners in undertaking dust assessments for the operational phases of minerals developments.

Although the proposed development is not a minerals development, it is considered that dust generating activities at the site would be similar to some minerals operations and the source-pathway-receptor approach underlying the IAQM dust assessment method is appropriate for assessing the impacts of the operation of the proposed development.



2.9. World Health Organization Air Quality Guidelines (2021)

The WHO Air Quality Guidelines propose threshold limits for key air pollutants that pose health risks. The guidelines cover a range of pollutants and suggest threshold levels at which health effects are unlikely to occur, based on the latest scientific evidence. For a number of pollutants, the WHO levels are equivalent to the levels determined by the EU, which were then exacted into the National Air Quality Objectives in the UK; however, the guidelines offer recommended exposure levels for particulate matter (PM₁₀ and PM_{2.5}) which are lower than the National Air Quality Objectives as set out in the Air Quality Standards Regulations 2010. The WHO Guidelines also provides interim targets for areas of high air pollution.

Since WHO's last 2005 global update, there has been a marked increase of evidence that shows how air pollution affects different aspects of health. For that reason, and after a systematic review of the accumulated evidence, WHO has adjusted almost all the AQGs levels downwards in 2021.

Table 2.2 summarises the WHO Guideline values.



Table 2.2: WHO Air Quality Guidelines

Pollutant	Average Period	WHO Guideline Value
Nitrogen Dioxide	One Day	25 µg/m ³
	Calendar Year	10 µg/m ³
PM ₁₀	One Day	45 µg/m ³ (99 th Percentile)
	Calendar Year	15 µg/m ³
PM _{2.5}	One Day	15 µg/m ³ (99 th Percentile)
	Calendar Year	5 µg/m ³

3. ASSESSMENT METHODOLOGY

3.1. Methodology Overview

The assessment of air quality considers several different areas, specifically:

1. Establishing the baseline conditions at the proposed development site. This firstly entails an exploration of historic air quality data in the local area, the most recent published years' worth of which is then used to verify an air quality model that can then be used to predict onsite baseline pollutant concentrations at present. See **Section 3.3**.
2. Potential constraints that existing air quality may have on the proposed development. This determines the suitability of the site for its intended use. The verified baseline model is updated to represent the opening year of the proposed development to create a "future baseline" model including the use of projected future traffic growth, future changes in emissions factors, and future estimated background concentrations as appropriate. Modelled onsite concentrations in the opening year are then compared to the relevant air quality objectives.
3. Potential air quality impacts of the proposed development at local sensitive receptors, both by means of emissions associated with increased traffic flows or those associated with the energy strategy of the proposed development. The "future baseline" model is updated to give the "proposed development" model, including development-related traffic generation and any other sources associated with the proposed development. Impacts are assessed against the future baseline as a product of both the change caused by the proposed development and the level of existing air quality at a receptor. It is then determined whether any impacts would lead to significant effects, i.e. to health. See **Section 3.4**.
4. Potential impacts of construction and demolition activities at nearby sensitive receptors. The impacts of dust generated during the demolition and construction of the proposed development site are assessed in accordance with IAQM Guidance. The guidance considers the risk of impacts within certain distance criteria from the site, and their potential to cause effects in terms of disamenity, human health or ecology. In some cases, levels of construction traffic may be sufficient to assess their impacts in the same way as for operational impacts as described above. See **Section 3.5**.
5. Compliance with any local air quality policies as appropriate, for example emissions benchmarking or damage cost analysis.
6. Consideration of ecological impacts. This is usually a screening assessment to identify the risk of significant adverse effects on a European designated site (Special Protection Area, Special Area of Conservation, or Ramsar site) which could undermine the achievement of its conservation objectives and which therefore would require further detailed examination through an "Appropriate Assessment" under the Habitats Regulations.

The site-specific scoping assessment in **Section 4.4** determines which areas of assessment are relevant to the proposed development. The main methodologies are discussed in the subsections below, along with a description of the identification of receptors and the determination of effect significance.

3.2. Identification of Receptors

Land-Use Planning & Development Control: Planning for Air Quality states with respect to the identification of local receptors, they should include *“residential and other properties close to and within the proposed development, as well as alongside roads significantly affected by the development, even if well away from the development site, and especially if within AQMAs. These receptors will represent locations where people are likely to be exposed for the appropriate averaging time (dependent on the air quality objective being assessed against)”*.

The last point above is critical as this identifies that sensitivity in relation to air quality is directly related to the amount of time one spends in a location. For example, when considering annual mean objectives (such as that of NO₂), any area where one might spend large parts of the year might be considered a sensitive receptor. An example could be a dwelling, where one might expect to spend at least half of their time during one day.

Health centres, hospitals, schools and nurseries could all expect to be considered high sensitivity receptors, partially due to the length of exposure spent in these locations, but also due to vulnerable members of society (e.g. the very young, the very old, or the ill) spending significant amounts of time at these locations.

Offices would not normally be considered to be a high sensitivity receptor since most visitors would be healthy adults and would only spend around 8 hours per day, 5 days per week there (i.e. less than 25% of the year), whereas people could spend over 50% of their time within a dwelling. Hotels would not be considered sensitive receptors in terms of the annual mean since residents would only normally expect to spend a small number of nights in that location; however, hostels, sheltered accommodation and student accommodation would be considered as sensitive as dwellings, as residents could be expected to stay for several months.

3.3. Baseline Assessment

The baseline scenario will consider two separate sets of site conditions, specifically the existing 2022 baseline conditions (the latest date for which data is available) and the future 2026 baseline site conditions, which represents the opening year of the proposed development. The consideration of a future baseline for air quality is important as it takes into account future changes in both traffic flow, but also pollutant concentrations, which could vary.

To determine the baseline conditions, the following was undertaken:

- A review of the most recent progress reports on air quality carried out by the local planning authority, as submitted to the Department for the Environment, Food and Rural Affairs (Defra);
- Determination of whether the site is situated within a designated Air Quality Management Area (AQMA);
- A review of local air quality monitoring within the area of the site;
- A review of the Environment Agency's register of industrial sites under the EC Integrated Pollution Prevention and Control Directive (IPPC) to determine whether industrial sources of air pollution could be affecting the site;
- Review of the list of registered Part A2 and Part B permitted premises under the PPC Regulations to determine whether any other sources of air pollution could be affecting the site;

- Using the methodology described in the ADMS-Roads Detailed Dispersion Model (details of which can be seen in **Appendix 2**, utilising data described in **Appendix 3**), predict concentrations of air pollutants on-site within the current baseline year and the future baseline year.

3.4. Methodology for Determining Operational Effects

To determine the operational effects of the Proposed Development, the change in traffic flow at sensitive receptors in the future opening year of the proposed development, both with and without development related traffic, was modelled using the methodology described in the ADMS-Roads Detailed Dispersion Model (details of which can be seen in **Appendix 2**, utilising data described in **Appendix 3**).

To determine the impact of the proposed development on surrounding local sensitive receptors, the impact magnitude has been derived from Land-Use Planning & Development Control: Planning for Air Quality, jointly published by the IAQM and EPUK. **Table 3.1** identifies the advice given in the IAQM / EPUK Guidance regarding impact descriptors upon individual receptors.

Table 3.1: Impact Descriptors for Individual Receptors

Long-Term Average Concentration at Receptor in Assessment Year	% Change in Concentrations Relative to Air Quality Assessment Level (AQAL)			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

Source: Table 6.3 of the IAQM Guidance

The guidance goes on to offer the following explanation (taken from the footnotes of Table 6.3 of the IAQM Guidance):

“AQAL = Air Quality Assessment Level, which may be an air quality objective, EU limit or target value, or an Environment Agency ‘Environmental Assessment Level (EAL)’.

The Table is intended to be used by rounding the change in percentage pollutant concentration to whole numbers, which then makes it clearer which cell the impact falls within. The user is encouraged to treat the numbers with recognition of their likely accuracy and not assume a false level of precision. Changes of 0%, i.e. less than 0.5% will be described as Negligible.

The Table is only designed to be used with annual mean concentrations.

Descriptors for individual receptors only; the overall significance is determined using professional judgement (see Chapter 7). For example, a 'moderate' adverse impact at one receptor may not mean that the overall impact has a significant effect. Other factors need to be considered.

When defining the concentration as a percentage of the AQAL, use the 'without scheme' concentration where there is a decrease in pollutant concentration and the 'with scheme;' concentration for an increase.

The total concentration categories reflect the degree of potential harm by reference to the AQAL value. At exposure less than 75% of this value, i.e. well below, the degree of harm is likely to be small. As the exposure approaches and exceeds the AQAL, the degree of harm increases. This change naturally becomes more important when the result is an exposure that is approximately equal to, or greater than the AQAL.

It is unwise to ascribe too much accuracy to incremental changes or background concentrations, and this is especially important when total concentrations are close to the AQAL. For a given year in the future, it is impossible to define the new total concentration without recognising the inherent uncertainty, which is why there is a category that has a range around the AQAL, rather than being exactly equal to it."

3.5. Methodology for Determining Demolition and Construction Effects

The determination of demolition and construction effects of the Proposed Development was based on the IAQM's Guidance on the Assessment of Dust from Demolition and Construction, which provides a risk-based assessment methodology to determine the significance of an air quality impact arising from the construction of a new development, based on the magnitude of change. The methodology provides a five-step approach to determining the significance:

"STEP 1 is to screen the requirement for a more detailed assessment. No further assessment is required if there are no receptors within a certain distance of the works.

STEP 2 is to assess the risk of dust impacts. This is done separately for each of the four activities (demolition; earthworks; construction; and trackout) and takes account of:

the scale and nature of the works, which determines the potential dust emission magnitude (STEP 2A); and the sensitivity of the area (STEP 2B).

These factors are combined in STEP 2C to give the risk of dust impacts.

Risks are described in terms of there being a low, medium or high risk of dust impacts for each of the four separate potential activities. Where there are low, medium or high risks of an impact, then site-specific mitigation will be required, proportionate to the level of risk.

Based on the threshold criteria and professional judgement one or more of the groups of activities may be assigned a 'negligible' risk. Such cases could arise, for example, because the scale is very small and there are no receptors near to the activity.

STEP 3 is to determine the site-specific mitigation for each of the four potential activities in STEP 2. This will be based on the risk of dust impacts identified in STEP 2. Where a local authority has issued guidance on measures to be adopted at demolition/construction sites, these should also be taken into account.

STEP 4 is to examine the residual effects and to determine whether or not these are significant.

STEP 5 is to prepare the dust assessment report.”

3.6. Significance Criteria

Land-Use Planning & Development Control: Planning for Air Quality provides a framework to assess significance in air quality assessments. As described in the guidance, the *"assessment framework for describing impacts can be used as a starting point to make a judgement on significance of effect, but there will be other influences that might need to be accounted for. The impact descriptors set out in Table 6.3 [Replicated in Table 3.1 of this chapter] are not, of themselves, a clear and unambiguous guide to reaching a conclusion on significance. These impact descriptors are intended for application at a series of individual receptors. Whilst it may be that there are 'slight', 'moderate' or 'substantial' impacts at one or more receptors, the overall effect may not necessarily be judged as being significant in some circumstances (Paragraph 7.4)".*

The Land-Use Planning & Development Control guidance goes on to state that any significance needs to be assessed using a certain amount of professional judgement and should take into account *"the existing and future air quality in the absence of the development; the extent of current and future population exposure to the impacts; and the influence and validity of any assumptions adopted when undertaking the prediction of impacts"* (Paragraph 7.7). For example, for a large development, a major adverse impact on a single dwelling might be considered insignificant; however, a minor impact to 100,000 dwellings might be considered to be highly significant. Furthermore, the absolute level of pollutant concentrations are also important in determining significance; for example, a moderate impact to a small group of dwellings might be considered highly significant if the concentrations of NO₂ were well in excess of the NAQO level, however, that same moderate impact might be considered insignificant if concentrations were well below the NAQO.

4. SCOPING

4.1. Overview

The National Planning Practice Guidance on Air Quality is explicit in stating that *"Assessments need to be proportionate to the nature and scale of development proposed and the potential impacts (taking into account existing air quality conditions), and because of this are likely to be locationally specific"* (Reference ID: 32-007-20191101). This is reiterated in *Land-Use Planning & Development Control: Planning for Air Quality*, jointly published by the Institute of Air Quality Management (IAQM) and Environmental Protection UK (EPUK) in May 2015 and updated in January 2017, which provided guidance on screening as to whether an air quality assessment is required and what needs to be assessed.

4.2. Impacts of the Local Area on the Development

The IAQM/EPUK Guidance suggests that whether an assessment of the impacts of the local area on the proposed development is required is a matter of judgement, but should take into account:

- *"the background and future baseline air quality and whether this will be likely to approach or exceed the values set by air quality objectives;*
- *the presence and location of Air Quality Management Areas as an indicator of local hotspots where the air quality objectives may be exceeded;*
- *the presence of a heavily trafficked road, with emissions that could give rise to sufficiently high concentrations of pollutants (in particular NO₂), that would cause unacceptably high exposure for users of the new development; and*
- *the presence of a source of odour and/or dust that may affect amenity for future occupants of the development."*

4.3. Impacts of the Development on the Local Area

To determine whether an assessment of the impacts of the development on the local environment is required, the IAQM/EPUK Guidance suggests a two-stage approach. The guidance states that *"The **first stage** is intended to screen out smaller development and/or developments where impacts can be considered to have insignificant effects. The **second stage** relates to specific details regarding the proposed development and the likelihood of air quality impacts."*

Figure 4.1 reproduces Stage 1 of the IAQM/EPUK Guidance' two-stage approach. In order to proceed to Stage 2, development needs to meet both one of the criteria in "A", and one of the criteria in "B". If the development fails to meet these criteria, then an air quality assessment looking at the impacts of the development on the local area will not be required.

Figure 4.2 reproduces Stage 2 of the IAQM/EPUK Guidance' two-stage approach. If the development meets the criteria contained within Stage 1, *"more specific guidance as to when an air quality assessment is likely to be required to assess the impacts of the proposed development on the local area."* If the development then meets any of the eight criteria in Stage 2, an assessment of the impacts of the proposed development on the surrounding environment will be required.

Figure 4.1: IAQM/EPUK Guidance – Stage 1 Criteria

Criteria to Proceed to Stage 2
A. If any of the following apply: 10 or more residential units or a site area of more than 0.5ha - more than 1,000 m² of floor space for all other uses or a site area greater than 1ha
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.

Figure 4.2: IAQM/EPUK Guidance – Stage 2 Criteria

The development will:	Indicative Criteria to Proceed to an Air Quality Assessment ^a
1. Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV = cars and small vans <3.5t gross vehicle weight).	A change of LDV flows of: - more than 100 AADT within or adjacent to an AQMA - more than 500 AADT elsewhere.
2. Cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors. (HDV = goods vehicles + buses >3.5t gross vehicle weight).	A change of HDV flows of: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere.
3. Realign roads, i.e. changing the proximity of receptors to traffic lanes.	Where the change is 5m or more and the road is within an AQMA.
4. Introduce a new junction or remove an existing junction near to relevant receptors.	Applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate, e.g. traffic lights, or roundabouts.
5. Introduce or change a bus station.	Where bus flows will change by: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere.
6. Have an underground car park with extraction system.	The ventilation extract for the car park will be within 20 m of a relevant receptor. Coupled with the car park having more than 100 movements per day (total in and out).
7. Have one or more substantial combustion processes, where there is a risk of impacts at relevant receptors. NB, this includes combustion plant associated with standby emergency generators (typically associated with centralised energy centres) and shipping.	Typically, any combustion plant where the single or combined NO _x emission rate is less than 5 mg/sec ^a is unlikely to give rise to impacts, provided that the emissions are released from a vent or stack in a location and at a height that provides adequate dispersion. In situations where the emissions are released close to buildings with relevant receptors, or where the dispersion of the plume may be adversely affected by the size and/or height of adjacent buildings (including situations where the stack height is lower than the receptor) then consideration will need to be given to potential impacts at much lower emission rates. Conversely, where existing nitrogen dioxide concentrations are low, and where the dispersion conditions are favourable, a much higher emission rate may be acceptable.

^a As a guide, the 5 mg/s criterion equates to a 450 kW ultra low NO_x gas boiler or a 30kW CHP unit operating at <95mg/Nm³. Users of this guidance should quantify the NO_x mass emission rate from the proposed plant, based on manufacturers' specifications and operational conditions.

4.4. Site Specific Scoping Assessment

4.4.1. Site Suitability

The EPUK/IAQM Guidance (see **Section 2.5**) states “*Local receptors should be identified [that] represent locations where people are likely to be exposed for the appropriate averaging time (dependent on the air quality objective being assessed against).*”.

It is therefore considered that the proposed development should be assessed against the short-term NAQOs of concern (i.e. hourly NO₂ concentrations and daily PM₁₀ concentrations), as these are averaged over the lengths of time that people would be expected to spend using the development.

Compliance with the short-term NAQOs can be demonstrated without detailed dispersion modelling, therefore a modelled **assessment of the impacts of the local area on the proposed development is not required**.

4.4.2. Impact Assessment

The proposed development meets the Stage 1A criteria for floor space, although with no parking provision and centralised energy processes, no Stage 1B criteria are met. Additionally, the proposed development does not meet any of the Stage 2 criteria. Trip generation data supplied by the client indicates that the following can be expected as a consequence of the proposed development:

- 18 HGV movements per day (nine inwards and nine outwards) associated with the onward delivery of products.
- 8 LGV movements per day (four inwards and four outwards) associated with the level of staffing required to operate the facility.
- 300 shunt tractor movements approximately every two months (150 inwards and 150 outwards). These would all be for the ~350 m journey from the adjacent Seacon Port Terminal to the proposed development site, and all contained within the port area.

No polluting plant is proposed as part of the energy strategy for the proposed development. Given these factors, it is considered that an **assessment of the impacts of the proposed development on the local area is not required**.

4.4.3. Demolition and Construction Phase

As standard for all new developments, **a construction dust risk assessment has been carried out** in line with the IAQM *Guidance on the Assessment of Dust from Demolition and Construction (January 2024)* to assess impacts during the demolition and construction phase of the proposed development.

4.4.4. Operational Dust Risk

Although the proposed development is not a minerals development, it is considered that dust generating activities at the site would be similar to some minerals operations, and the source-pathway-receptor approach underlying the method described in the IAQM *Guidance on the Assessment of Mineral Dust Impacts for Planning (2016)* is appropriate for **assessing the impacts of the dust generating activities of the proposed development**.

5. BASELINE CONDITIONS

5.1. Air Quality Review and Assessment

Local Authorities have been required to carry out a review of local air quality within their boundaries to assess areas that may fail to achieve the NAQOs. Where these objectives are unlikely to be achieved, local authorities must designate these areas as Air Quality Management Areas (AQMAs) and prepare a written action plan to achieve the NAQOs.

The review of air quality takes on several prescribed stages, of which each stage is reported. The review of historic Air Quality Annual Status Reports published by Gravesham Borough Council indicates that exceedances of the annual mean objective for NO₂ and the annual mean objective for PM₁₀ have been experienced across the Borough, primarily centred on the main roads, and these exceedances are predicted to continue.

As a consequence of the exceedances of the NAQOs, Gravesham Borough Council currently have three declared Air Quality Management Areas (AQMAs) – one covering a large stretch of the A2 east-west through the Borough, one covering the one-way system through Gravesend town centre, and a third covering a small junction between Old Road West and the A227.

Gravesham Borough Council previously had declared four other AQMAs, with three being revoked in 2018 and the fourth, declared for annual PM₁₀ exceedances at the Northfleet Industrial Area itself, revoked in January 2024 following several years of compliance with the NAQOs.

In addition to these, the closely neighbouring Borough of Dartford have declared an AQMA encompassing much of London Road from the junction with Lower Road south of the proposed development site to the Dartford Crossing junction to the west.

Concentrations of SO₂, Benzene, Lead and CO are not considered to be significant within the Borough. Consequently, no further consideration is given to these pollutants as it is highly unlikely that they would be of concern on the proposed development site.

5.2. Local Air Quality Monitoring

Gravesham Borough Council conducts a broad programme of air quality monitoring, including two automatic continuous monitoring stations that continuously monitor NO₂ and PM₁₀ concentrations. Additionally, a diffusion tube network that monitors monthly average NO₂ concentrations covers another 66 locations within the Borough.

The Air Quality Annual Status Report published by Gravesham Borough Council in June 2023 (the most recently publicly accessible report online) presents data from the monitoring network up until the end of 2022. The Report indicates that during 2022, only a single monitoring location out of 68 monitored an annual average NO₂ concentration in excess of the NAQO of 40 µg/m³.

The data going back over five years shows a trend of decreasing pollutant concentrations at all locations, with many locations continuing to decrease further beyond what were considered suppressed pollutant concentrations resulting from the COVID-19 pandemic and the effect of lockdowns on traffic flows.

The two automatic monitoring stations also monitored hourly NO₂ concentrations throughout the year. Neither site monitored a single hourly exceedance of 200 µg/m³ each, and both were therefore below the 18 hourly exceedances that are allowed before it is considered a breach of the NAQO.

The two automatic monitoring stations also monitored annual average PM₁₀ concentrations in 2022, with annual average concentrations of 15.3 µg/m³ PM₁₀ monitored at ZG2 and 22.5 µg/m³ PM₁₀ monitored at ZG3; both well below the annual average NAQO of 40 µg/m³.

Each of these two stations also reported daily mean PM₁₀ concentrations in 2022, with each reporting 0 daily exceedances of 50 µg/m³ PM₁₀, and both were therefore below the 35 daily exceedance that are allowed before it is considered a breach of the NAQO.

Gravesham Borough Council has conducted air quality monitoring, including at two sites in the vicinity of the proposed development site. **Table 5.1** summarises the air quality monitoring data which is displayed graphically in **Figure 5.1**.

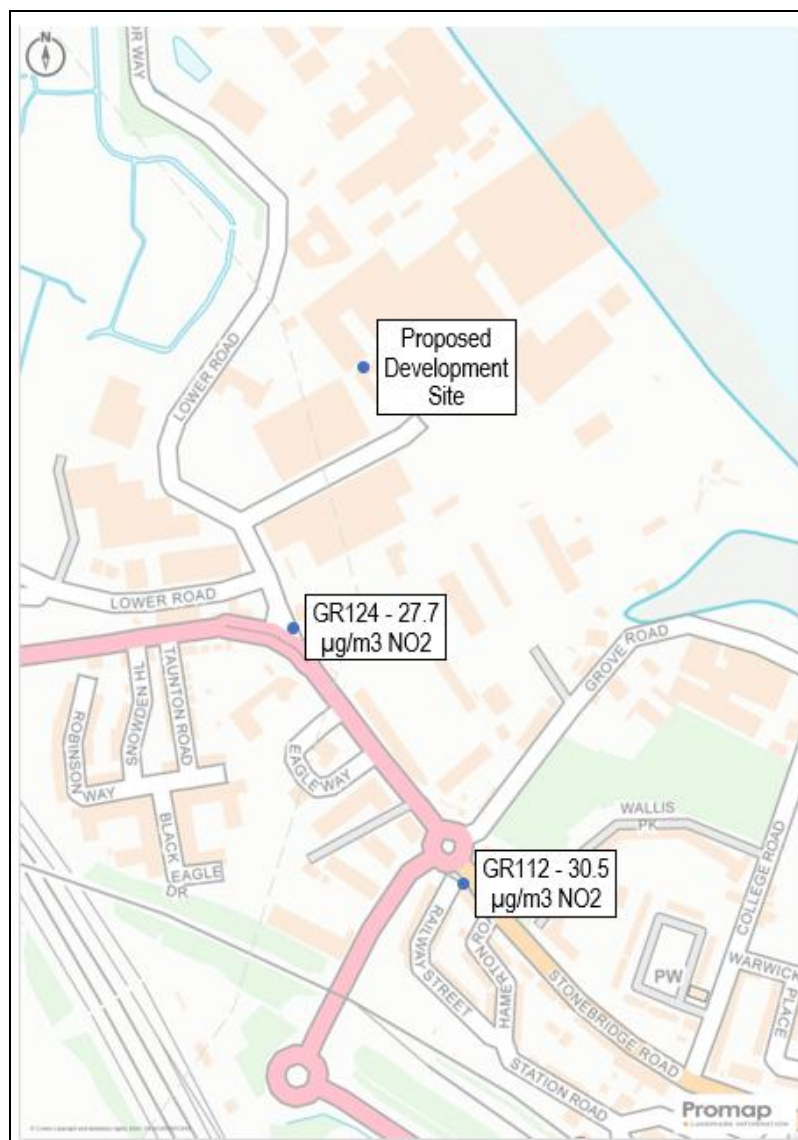
Table 5.1: Air Quality Monitoring

Location	Site Type	Annual Mean Concentrations of NO ₂ (µg/m ³)				
		20187	2019	2020	2021	2022
GR112 – 50 Stonebridge Rd, Northfleet	Roadside	34.8	35.7	30.1	31.1	<u>30.5</u>
GR124 – 67 Stonebridge Rd, Northfleet	Roadside	30.4	31.0	29.0	27.6	<u>27.7</u>

5.3. Predicted Background Pollutant Concentrations

The Defra LAQM toolkit contains the Defra background mapping data, which includes estimated background concentrations of NO_x, NO₂, PM₁₀ and PM_{2.5} at 1 km² resolution across the whole of the UK. The estimated background concentrations for 2024 for the grid square centred at 561500 175500 (containing the proposed development site) are 20.6 µg/m³ NO₂ (c.f. 40 µg/m³), 14.5 µg/m³ PM₁₀ (c.f. 40 µg/m³), and 9.7 µg/m³ PM_{2.5} (c.f. 20 µg/m³); each well below the respective annual average NAQO.

Figure 5.1: Monitoring Locations



5.4. Industrial Emissions

The Environment Agency register of Part A1 industrial processes indicates two permitted processes within 1 km of the proposed development site:

- Permission number EPR/BM495IW – Britannia Refined Metals Limited. Activity description “Non-Ferrous Metals; Melting Capacity >4T/D Lead/Cadmium Or 20T/D Others And For Alloys A Vessel With A Design Holding Capacity Of 5 Tonnes Or More.”.
- Permissions number EPR/AP3800LK – Urban Reserve (Assetco) Limited. Activity description “New Medium Combustion Plant before 20th December 2018.”.

6. IMPACTS OF THE LOCAL AREA ON THE DEVELOPMENT

As discussed in **Section 4.4.1**, due to the nature of the proposed development, the NAQOs of relevance are the short-term objectives for NO₂ (one-hour averaging time) and PM₁₀ (24-hour averaging time).

6.1. NO₂ 1-hour Exposure

In order to meet the hourly NAQO for NO₂, the average hourly concentration of NO₂ must not exceed the objective level of 200 µg/m³ more than 18 times in one calendar year. If this standard is not met, there would be concern that even short duration exposure to pollutant concentrations could be prejudicial to health, which could be a concern for both visitors and staff of the proposed development.

According to research conducted in 2003¹, there is only a risk that the NO₂ 1-hour objective (200 µg/m³) could be exceeded 18 times or more if the annual mean NO₂ concentration is greater than 60 µg/m³. It is discussed in **Section 5** that across the whole of Gravesham Borough Council's air quality monitoring network of two automatic monitoring stations and 66 diffusion tube locations in 2022, that not only were all reported annual concentrations of NO₂ lower than this 60 µg/m³ threshold, but all but one was also lower than the 40 µg/m³ annual objective. Consequently, local short duration NO₂ concentrations would not be considered to have a significant impact on future users of the proposed development.

6.2. PM₁₀ 24-hour Exposure

In order to meet the daily NAQO for PM₁₀, the average daily concentration of PM₁₀ must not exceed the objective level of 50 µg/m³ more than 35 times in one calendar year. If this standard is not met, there would be concern that even short duration exposure to pollutant concentrations could be prejudicial to health, which could be a concern for both guests and staff of the proposed development.

Unlike the short-term NO₂ objective discussed above, there is no proxy for estimating the likelihood of hourly exceedances from the annual mean concentration. However, certain conclusions can be drawn from the monitoring data elsewhere in the Borough, as well as the local background concentrations predicted by Defra.

Both PM₁₀ monitoring stations in the Borough monitored annual average concentrations well below the annual average NAQO (40 µg/m³) with 0 (out of a permitted 35) exceedances of the daily NAQO (50 µg/m³). It is considered that annual PM₁₀ concentrations at the proposed development site would therefore be commensurate with those monitored at the three monitoring stations, if not lower, based on distances from the main A-roads. It therefore follows that there would be a broadly similar number of hourly exceedances, i.e. a number well below the 35 permitted exceedances per year.

¹ Analysis of Relationship between 1-Hour and Annual Mean Nitrogen Dioxide at UK Roadside and Kerbside Monitoring Sites, Laxen and Marnier, 2003.

7. IMPACTS OF THE DEVELOPMENT ON THE LOCAL AREA

The scoping assessment contained within **Section 4** of this report identifies that the impact of the proposed development on the local environment is likely to be insignificant and therefore no further assessment is required.

8. CONSTRUCTION DUST IMPACT ASSESSMENT

8.1. Overview

The main air quality impacts that may arise during construction activities are:

- Dust deposition, resulting in the soiling of surfaces;
- Visible dust plumes; and
- An increase in concentrations of airborne particles (e.g. PM₁₀, PM_{2.5}) and nitrogen dioxide due to exhaust emissions from site plant and traffic that can impact adversely on human health.

The most common impacts are dust soiling and increased ambient PM₁₀ concentrations due to dust arising from the site. Most of this PM₁₀ is likely to be in the PM_{2.5-10} fraction, known as coarse particles.

It is very difficult to quantify emissions of dust from construction activities. It is, therefore, common practice to provide a qualitative assessment of potential impacts. The Institute of Air Quality Management's *Guidance on the assessment of dust from demolition and construction (January 2024)* contains a complex methodology for determining the significance of construction impacts on air quality. The following sections outline the steps outlined in the IAQM methodology.

8.2. Step 1 – Screening the Need for a Detailed Assessment

The IAQM guidance states that:

“An assessment will normally be required where there is:

- *a ‘human receptor’ within:*
 - *350 m of the boundary of the site; or*
 - *50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s).*
- *an ‘ecological receptor’ within:*
 - *50 m of the boundary of the site; or*
 - *50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s).”*

There are existing receptors within 350m of the boundary of the development site and within 50m of the route used by construction vehicles on the public highway. Therefore, a detailed assessment is required to determine potential dust impacts.

Step 1 Summary:

A detailed assessment is required to determine potential dust impacts.

8.3. Step 2 – Assess the Risks of Dust Impacts

The IAQM guidance states that:

“The risk of dust arising in sufficient quantities to cause annoyance and/or health and/or ecological impacts should be determined using four risk categories: negligible, low, medium and high risk.

A site is allocated to a risk category based on two factors:

- *the scale and nature of the works, which determines the potential dust emission magnitude as small, medium or large (STEP 2A); and*
- *the sensitivity of the area to dust impacts (STEP 2B), which is defined as low, medium or high sensitivity.*

These two factors are combined in STEP 2C to determine the risk of dust impacts with no mitigation applied. The risk category assigned to the site can be different for each of the four potential activities (demolition, earthworks, construction and trackout). More than one of these activities may occur on a site at any one time.”

8.3.1. Step 2a – Dust Emission Magnitude

The first step (Step 2a) is therefore to assess the magnitude of the anticipated works. **Table 9.1** summarises the dust emission magnitude for each activity.

Table 8.1: Dust Emission Magnitude

Activity	Dust Emission Magnitude	Justification
Demolition	N/A	None required.
Earthworks	Medium	Small site area however soil clay content identified.
Construction	Small	Small building volume, lower risk materials.
Trackout	Small	Less than 10 outward HGV movements per day are expected and the sections of unpaved roads will be less than 50 m.

8.3.2. Step 2b – Sensitivity of the Area

The next step (Step 2b) is therefore to assess the sensitivity of the area that could be affected by the anticipated works. **Figure 9.1** shows the distance bands into which receptors fall as described in the guidance, both from the site (20, 50, 100 and 350 metres) and **Figure 9.2** shows the relevant bands for the associated haul routes (20 and 50 metres).

Figure 8.1: Receptor distance bands from proposed development site

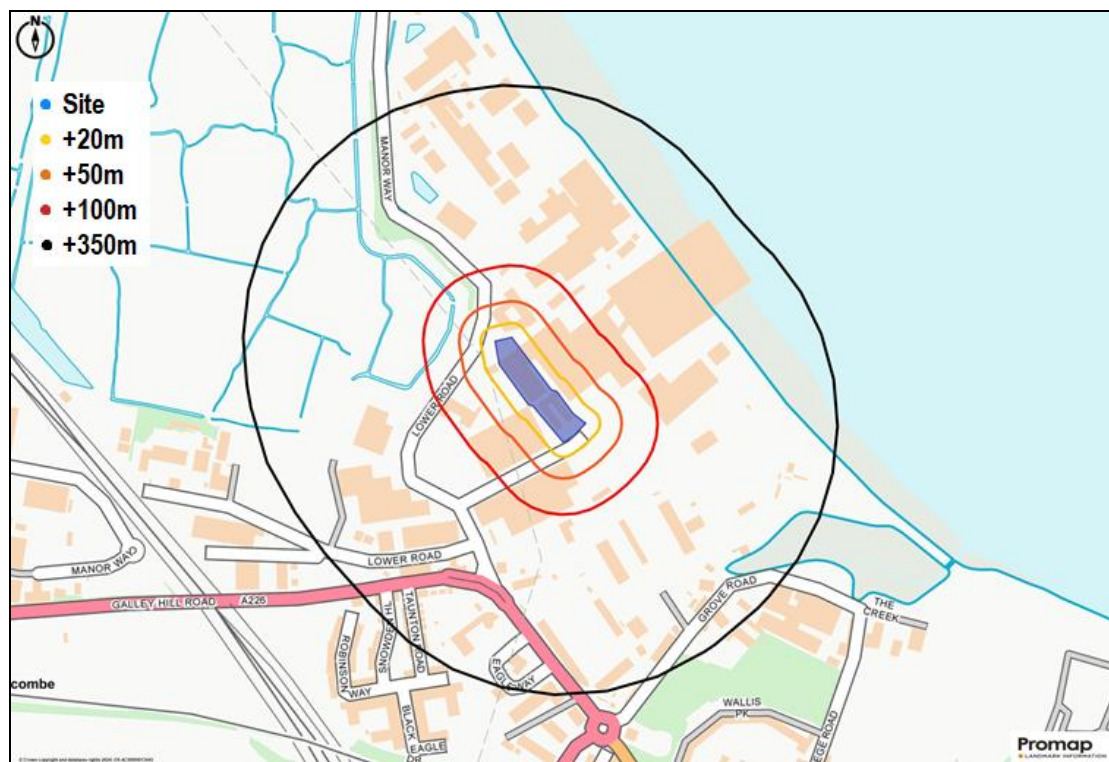
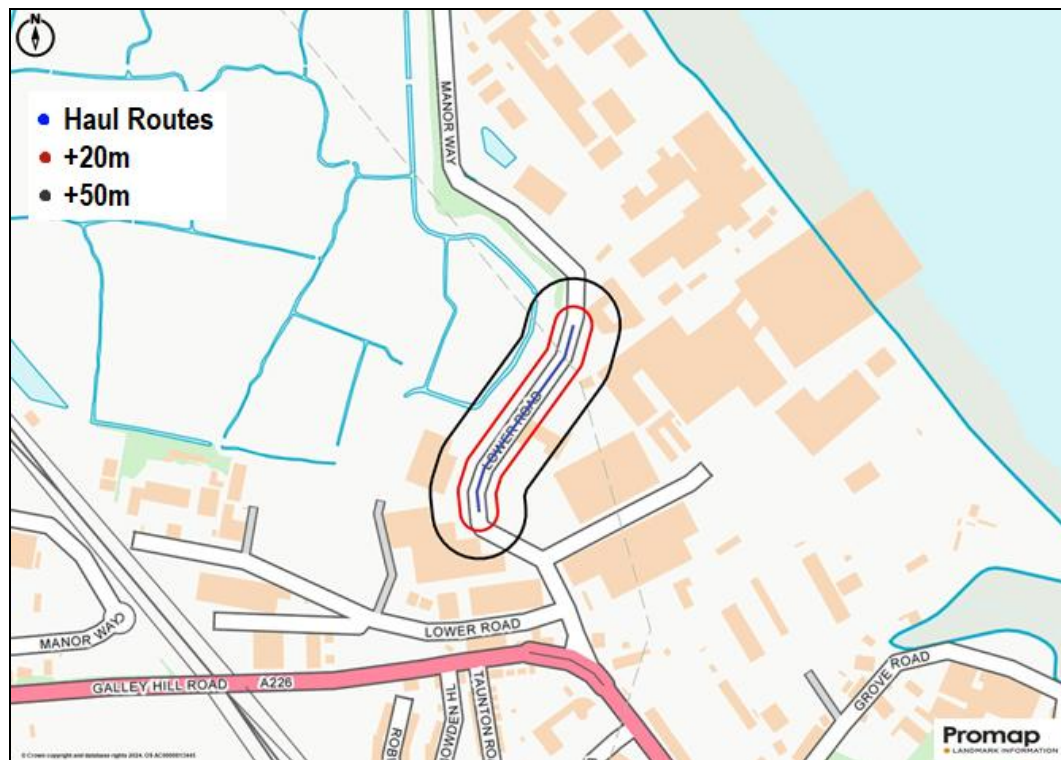


Figure 8.2: Receptor distance bands from proposed haul routes



There are a number of existing dwellings in the area that are considered to be high sensitivity receptors. There are no high sensitivity receptors within 100 m of the site boundary or within 50 m of its haul routes up to 100 m from the site access; therefore, the sensitivity to dust soiling effects on people and property is “low” for all activities.

The annual mean concentration of PM₁₀ is less than 24 µg/m³; despite the number of high sensitivity receptors outlined above, this results in a “low” sensitivity of the area to human health impacts for all activities.

There are no ecological receptors that are considered to be anything greater than low sensitivity receptors within 50 m of the site; this results in a “low” sensitivity of the area to ecological impacts for all activities.

Table 9.2 summarises the sensitivity of the area for each activity.

Table 8.2: Outcome of Defining the Sensitivity of the Area

Potential Impact	Sensitivity of Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Low	Low	Low	Low
Human Health	Low	Low	Low	Low
Ecological	Low	Low	Low	Low

8.3.3. Step 2c – Define the Risks

The next step (Step 2c) is to assign the level of risk for each activity, based on the receptor sensitivity and the dust emission magnitude. **Table 9.3** summarises the dust risk for each activity.

Table 8.3: Summary Dust Risk Table to Define Site-Specific Mitigation

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

Step 2 Summary:

- Dust Emission Magnitude is “Medium” for earthworks and “Small” for construction and trackout.
- The Sensitivity of the area of is “Low” for with regards to all of dust soiling, human health, and ecological impacts.
- The site is considered a “Low Risk Site” in respect of earthworks with negligible risk from the other

three activities. The site is therefore considered to be a “Low Risk Site” overall..

8.4. Step 3 – Site Specific Mitigation

Stage 2 determines that the site is considered a “*Low Risk Site*” in respect of earthworks with negligible risk from the other activities. It is therefore considered a “*Low Risk Site*” overall.

The IAQM guidance provides a list of potential mitigation measures and suggests where these measures are highly recommended, desirable or not required based upon the risk of the site. For all sites that are a “*Medium Risk Site*” or higher, a Dust Management Plan is highly recommended and should incorporate the mitigation measures recommended based on the site risk.

The IAQM's Guidance states that the following measures are highly recommended or desirable as mitigation for all Low risk sites:

- Communications: Display the name and contact details of person(s) accountable for air quality and dust issues on the Site boundary – *Highly Recommended*.
- Communications: Display the head or regional office contact information – *Highly Recommended*.
- Communications: Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the LPA. 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. In London, additional measures may be required to ensure compliance with the Mayor of London's guidance. The DMP may include monitoring of dust deposition, dust flux, real-time PM₁₀ continuous monitoring and/or visual inspections – *Desirable*.
- Site management: Record all dust and air quality complaints, identify the cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken – *Highly Recommended*.
- Site management: Make the complaints log available to the local authority when asked – *Highly Recommended*.
- Site management: 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 – *Highly Recommended*.
- Monitoring: Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the LPA when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of Site boundary, with cleaning to be provided if necessary - *Desirable*.
- Monitoring: 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– *Highly Recommended*.

- Monitoring: 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 – *Highly Recommended*.
- Preparing and maintaining the Site: Plan Site layout so that machinery and dust causing activities are located away from receptors, as far as is possible – *Highly Recommended*.
- Preparing and maintaining the Site: Erect solid screens or barriers around dusty activities (or the Site boundary) that are at least as high as any stockpiles on-site – *Highly Recommended*.
- Preparing and maintaining the Site: Fully enclose Site or specific operations where there is a high potential for dust production and the Site is active for an extensive period – *Desirable*.
- Preparing and maintaining the Site: Avoid Site runoff of water or mud – *Highly Recommended*.
- Preparing and maintaining the Site: Keep Site fencing, barriers and scaffolding clean using wet methods – *Desirable*.
- Preparing and maintaining the 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 – *Desirable*.
- Preparing and maintaining the Site: Cover, seed or fence stockpiles to prevent wind whipping – *Desirable*.
- Operating vehicle/machinery and sustainable travel: Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable – *Highly Recommended*.
- Operating vehicle/machinery and sustainable travel: Ensure all vehicles switch off engines when stationary - no idling vehicles – *Highly Recommended*.
- Operating vehicle/machinery and sustainable travel: Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable – *Highly Recommended*.
- Operating vehicle / machinery and sustainable travel: Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long-haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate) - *Desirable*.
- 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 system – *Highly Recommended*.
- Operations: Ensure an adequate water supply on the Site for effective dust / particulate matter suppression/mitigation, using non-potable water where possible and appropriate – *Highly Recommended*.

- Operations: Use enclosed chutes and conveyors and covered skips – *Highly Recommended*.
- Operations: Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate – *Highly Recommended*.
- Operations: 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 - *Desirable* .
- Waste management: Avoid bonfires and burning of waste materials – *Highly Recommended*.

The IAQM's Guidance states that the following measures are highly recommended or desirable as mitigation for all Low risk sites in relation to earthworks:

- The IAQM's Guidance does not state any measures that are highly recommended or desirable as mitigation for low risk sites in relation to earthworks:

Step 3 Summary:

The site is considered a “Low Risk Site” overall and a Dust Management Plan is recommended incorporating a number of specific mitigation measures based on the site-specific risks.

8.5. Step 4 – Determining Significant Effects

The site is considered a “Low Risk Site” overall and if appropriate mitigation measures are put in place, as identified in Step 3, significant effects on receptors are unlikely to occur. Considering both the construction details and the specific characteristics of the site, it is anticipated that effective mitigation will be possible and residual effects will not be considered significant.

Step 4 Summary:

With risk appropriate mitigation, residual effects will not be considered significant.

8.6. Step 5 – Dust Assessment Report

Step 5 Summary:

Dust and other pollutant emissions from the construction, demolition, earthworks and trackout phases of the construction of the proposed development will see the site designated a “Low Risk Site”. However, with risk-appropriate mitigation, residual effects will not be considered significant.

9. OPERATIONAL DUST RISK ASSESSMENT

9.1. Overview

Although the proposed development is not a minerals development, it is considered that dust generating activities at the site would be similar to some minerals operations and the source-pathway-receptor approach underlying the IAQM dust assessment method is appropriate for assessing the impacts of the operation of the proposed development.

9.2. Screening the Need for a Detailed Assessment

Where there are no receptors near to a mineral site there will be no significant effect. Therefore it is possible to screen out the need for a detailed assessment based on the distance from a mineral site to potentially sensitive receptors.

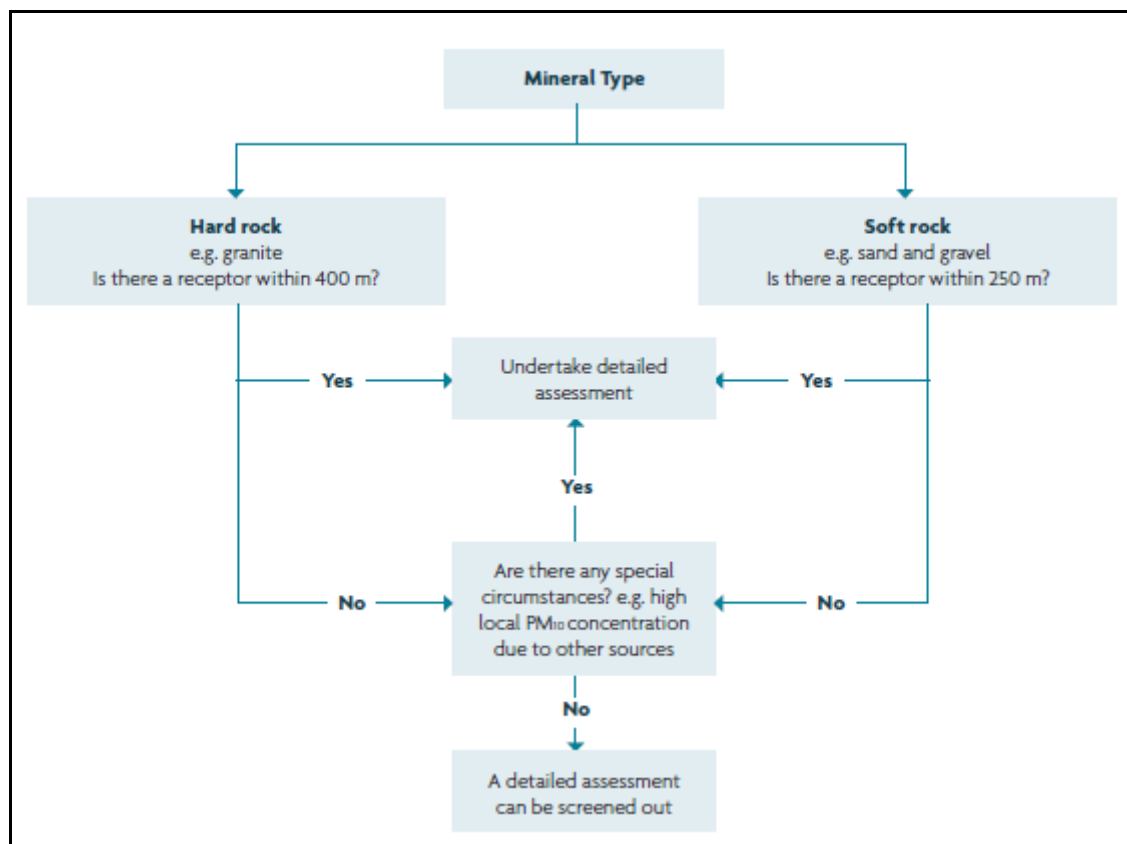
The experience of the Working Group together with published studies and anecdotal evidence on the change in both airborne concentrations and the rate of deposition with distance, suggests that dust impacts will occur mainly within 400 m of the operation, even at the dustiest of sites.

It should be noted that distances refer to 'dust generating activities' rather than the site boundary and this may refer to extraction and processing areas or haul roads, for example. For a large site, the operations may only be within the distances described below for a small proportion of the operational phase of the development, in which case separate assessment of two or more phases may be justified.

- If there are no relevant receptors within 1 km of the operations, then a detailed dust assessment can be screened out. In such a case, it is considered that irrespective of the nature, size and operation of the site, the risk of an impact is likely to be "negligible" and any resulting effects are likely to be 'not significant'.
- In cases whereby receptors are located between 400 m, or 250 m (depending on the rock type) and 1 km of operations, it would normally be assumed that a detailed disamenity dust impact assessment is not required. However, the decision on whether to assess should be made and justified on a site-specific basis by a suitably experienced air quality professional taking into account the factors in Chapter 6.
- If there are relevant human and/or ecological receptors within 250 m or 400 m (depending on the rock type) then a disamenity dust impact assessment will almost always be required. This step is deliberately chosen to be conservative (and will in practice result in assessments being required for most minerals development schemes).
- Where the potential dust impact of a mineral site cannot be 'screened out', a more detailed dust assessment will be required.

The above Screening steps are summarized in **Figure 9.1** below, replicated from the IAQM Guidance.

Figure 9.1: Mineral Dust Screening Flowchart



It has previously been discussed that the proposed development site is located in an industrial area, with the closest dwellings located on Stonebridge Road and Lower Road, 200-250 m from the southern end of the proposed development site. No high sensitivity ecological receptors within 1 km have been identified.

The methodology described within *Guidance on the Assessment of Mineral Dust Impacts for Planning* first determines the risk of dust impacts (as a product of the *residual source emissions* and the *pathway effectiveness*) from low to medium to high, and subsequently the magnitude of the effects of these impacts (as a product of this risk and the *receptor sensitivity*) from negligible to slight to moderate to substantial. Once this has been determined, a judgment can be made and the significance of any effects.

9.3. Dust Generating Activities

The following is a description of the activities that are understood to take place on site, as provided by the end user:

“The site will be used to bag/package aggregates and cementitious products into smaller palletised 20kg plastic bags. The material will be re-packaged in the raw form without any further processing. Aggregates and materials will only be stored internally and not in open air environment.”

Raw materials will arrive by barge at the adjacent Seacon Port Terminal, approximately every two months. The material will be loaded onto open back trailers and transported via shunter tractor units (owned and operated by Seacon). These tractors are smaller than a standard HGV tractor unit and the

shipment will be off loaded within a single day which is approximately 150 shunts. All of these vehicle movements would be using port vehicles and would all be contained within the port. The tractor shunts will enter the building through the doors on the northeast elevation of the building (in the southeastern corner of the site).

The shunter tractors take the aggregates into the warehouse, where an overhead gantry crane will be installed inside the warehouse. This crane will hook the bags using lifting loops and move them into the hopper. An automated cutting mechanism will then discharge the material into the hopper. The hopper will then feed the material using screw conveyors into the silos. The screw conveyors are fully enclosed (i.e. the material is not exposed to the air) and are virtually silent.

Once the material is in the silo it will be discharged towards the production line through screw conveyors or through pipes using air. Material will then be repackaged into smaller 20kg plastic bags on an enclosed, state of the art, fully automatic production line. The production line will be located fully within the warehouse and will be completely sealed enclosure which will not allow dust to escape. The production line would have a maximum output of 500x 20kg bags per hour. Therefore, over a 10 hour shift, there is a maximum possible output of 100,000kg (100t). The production line has a sound power level of <95 dB(A).

Once the product is in its final 20kg form, it will be stacked on a wooden pallet (appx 40 bags per pallet) and wrapped in plastic before being put into stock within the shed. Pallets will then be loaded onto lorries using a maximum of two forklifts. The majority of stock pallets will be loaded inside the shed however there will be some that may be loaded whilst waiting in the external yard. The lorries will exit through the doors on the northwest facade of the building. Any external loading will occur in the yard in front of the northwestern facade.

On average there will be 7 lorry loads of pallets leaving each day. The lorries would be 44t articulated lorries, which have a maximum payload of 14.5t. On average 5 loads would go towards Kent/Southeast (towards the A2 southbound), with 2 loads operating towards Dartford (A2 northbound and M25).

In addition, there could be up to 2 tanker collections per day. These would be loaded outside, directly from the silos. The lorries would park underneath and raw materials would empty via gravity from the silos directly into the tanker. The tankers would either go to Gill Aggregates manufacturing facility on the same industrial park, or via the Dartford Crossing to their facility in Dagenham.

Site operations will occur between 5 am and 7pm.

The proposed development will generate 18 HGV movements per day (9 in, 9 out). In addition, there will be 4 employees, so approximately LGV movements per day.”

The following activities identified in the IAQM mineral dust guidance based on the above are relevant to this assessment:

- Materials handling (e.g., loading onto haul trucks or conveyors).
- On-site transportation (e.g., forklift haul routes).
- Off-site transportation (e.g., trackout to external road network via trucks).

9.4. Receptor Sensitivity

The nearest high sensitivity receptors to the site have been selected and are marked in red on **Figure 9.2**, below. As the residual source emissions are deemed “small”, the impact at medium sensitivity commercial receptors within 100 m and highly sensitive receptors beyond 100 m of the site boundary would be negligible, regardless of the pathway effectiveness; and thus, such receptors have not been assessed.

Figure 9.2: Dust Assessment Receptor Locations



9.5. Residual Source Emissions

Residual source emissions, i.e., the emissions expected with the designed mitigation in place, have been estimate for each of the activities listed above and are discussed below.

9.5.1. Material Handling

The residual source emissions for material handling are considered to be “small”. As detailed above, the movement of all materials once inside the facility (from delivery bags to hopper, from hopper to silo, and silo to production line) will be carried out under covered conveyors.

9.5.2. On-Site Transportation

The residual source emissions for on-site transportation are considered to be “small”. This is based on the use of a two forklift trucks operating to load outgoing trucks. The movement of material from the port terminal to the proposed development can be considered on-site as it is conducted entirely within the confines of the port area and is carried out by Seacon shunt units, and given its predicted frequency of once every two months would also constitute a “small” source emission.

9.5.3. Off-Site Transportation

The residual source emissions for off-site transportation are considered to be “small”. The guidance suggests that total daily HDV movements of <25 daily HDV movements could constitute a “small” residual source emission. Other factors can be considered, such as the lengths of any unpaved site sections that the transport would have to travel over, and the presence of effective HGV cleaning facilities and procedures (i.e., wheel washers) and road sweepers.

9.5.4. Residual Source Emission Summary

A summary of the residual source emissions is shown in **Table 9.1** below.

Table 9.1: Residual Source Emissions Summary

Activity	Residual Source Emissions
Materials Handling	Small
On-Site Transportation	Small
Off-Site Transportation	Small

9.6. Pathway Effectiveness

Transportation of fugitive dust in the air is dependent on the prevailing meteorological conditions. Receptors downwind of the source, with regard to the prevailing wind, will be exposed to dust more frequently than those upwind. Analysis of meteorological data from the nearest stations (Southend, Manston and London City) all indicate a southeasterly prevailing wind.

There is a risk that dust could be entrained from the ground even when no dust generating activities are taking place. Wind speeds greater than 5 m/s are considered strong enough to initiate the suspension of dust from the ground, and the risk is increased on dry days, i.e., when less than 0.2 mm of rainfall are recorded over a 24-hour period. Data from the three nearest meteorological stations (Southend, Manston and London City) show that wind speeds are likely to be below 5 m/s for the majority of the time (71% Southend, 63% Manston, 72% London City).

Average rainfall data for the area shows that, over the 30-year period from 1981 to 2010, an average of 150-160 days per year will be wet days, i.e., rainfall will be greater than 0.2 mm (Met Office, 2021). Therefore, for approximately 42% of the time, daily rainfall will be greater than 0.2 mm, when there will be natural dust suppression.

As per the IAQM guidance, pathway effectiveness has been determined for the receptors shown in **Figure 7.1** by combining the categorisation of frequency of potentially dusty winds described above (Table 9 of the guidance) with the categorisation of receptor distance from source (Table 10 of the guidance). This is summarised in **Tables 9.2** and **9.3**, below.

Table 9.2: Wind Frequency Category by Receptor

Receptor ID	Receptor Name	Wind Sectors Affecting Receptor Area (°)	Frequency of Wind >5m/s Towards Receptor Area (%)	Frequency of Wind >5m/s Towards Receptor Area on Dry Days (%)	Wind Frequency Category
R1	Residential Receptors 64-67 Stonebridge Rd	20-40	4	4	Infrequent
R2	Residential Receptors Taunton Rd/Snowden Hill/Robinson Way	40-60	2	2	Infrequent

Table 9.3: Pathway Effectiveness by Receptor

Receptor	Frequency of Potentially Dusty Wind	Receptor Distance Category	Pathway Effectiveness
R1	Infrequent	Distant	Ineffective
R2	Infrequent	Distant	Ineffective

9.7. Amenity Dust Risk

Having determined the residual source emissions (**Section 9.5**) and the pathway effectiveness (**Section 9.6**) these are combined to determine the dust risk in **Table 9.4**, below.

Table 9.4: Amenity Dust Risk by Receptor

Receptor	Residual Source Emissions	Pathway Effectiveness	Dust Risk
R1	Small	Ineffective	Negligible
R2	Small	Ineffective	Negligible
R3	Small	Ineffective	Negligible

9.8. Magnitude of Dust Effect

Having determined the dust risk (**Section 7.5**) and the receptor sensitivity (**Section 7.1**), these are combined to determine the magnitude of dust effect in **Table 7.5**, below.

Table 9.5: Magnitude of Dust Effect by Receptor

Receptor	Receptor Sensitivity	Dust Risk	Magnitude of Dust Effect
R1	High	Negligible	Negligible
R2	High	Negligible	Negligible

9.9. Mitigation

The magnitude of dust effects has been shown to be negligible at all receptors. Although the receptors considered are of high sensitivity, the risk of dust impact and subsequent magnitude of the effect of such impacts is considered negligible. This is a result of both the low residual source emissions (because of the sealed nature the operations), and more so the extremely ineffective pathways involved (all receptors are >200 m from the proposed development and crucially are not in the prevailing wind direction).

The above conclusions of “negligible” risk of dust impacts and subsequent “negligible” magnitude of the effect of such impacts is therefore considered robust.

Guidance on the Assessment of Mineral Dust Impacts for Planning notes that for “negligible” sites, mitigation beyond basic good practice mitigation measures that form part of normal working practice is not required. Best practice measures are still suggested by the guidance with the suggestion that as many measures as practicable should be considered, although not all measures apply to every site.

9.10. Significance

It would be considered that the effects of any residual impacts arising from dust as a consequence of the operation of the proposed development would be considered not significant.

10. MITIGATION

As a consequence of the proposed development, there will not be a significant increase in pollutant concentrations and therefore mitigation is not seen to be necessary, other than those routinely used to control construction dust, as detailed in the previous section.

Similarly, concentrations of all pollutants are below the National Air Quality Objectives at the development site and therefore it is not necessary to implement mitigation to reduce the exposure from NO₂ or any other pollutant to future users of the proposed development.

11. CONCLUSIONS & SUMMARY

An air quality assessment has been undertaken in accordance with the Department of Environment, Food and Rural Affairs' (Defra) current *Technical Guidance on Local Air Quality Management (LAQM) (TG22)* and addresses the effects of air pollutant emissions from traffic using the adjacent roads, and emissions associated with the development of the site. In addition, a risk-based assessment of the likely impact of construction on the air quality of the local environment has been conducted in accordance with the Institute of Air Quality Management's 2014 edition of the *Guidance on the assessment of dust from demolition and construction*.

Baseline pollutant concentrations on site have been investigated using existing monitoring data from which it has been possible to draw conclusions that pollutant concentrations are currently compliant with the short-term NAQOs pertinent to a commercial development, as well as being compliant with the long-term NAQOs as well.

In order to assess the impact of the proposed development on local air quality, the IAQM/EPUK Guidance *Land-Use Planning & Development Control: Planning for Air Quality* has been utilised. The scoping stage has determined that due to the limited level of trip generation predicted, a full assessment of the impacts of the proposed development on local air quality is not required.

With regards to the impacts of construction on air quality, dust and other pollutant emissions from the construction and demolition phases of the construction of the proposed development, the site is designated as a "Low Risk Site". However, with risk-appropriate mitigation, residual effects will not be considered significant.

Since it has been shown that the proposed development meets the guidance contained within *Technical Guidance on Local Air Quality Management (LAQM) (TG22)*, IAQM/EPUK's *Land-Use Planning & Development Control: Planning for Air Quality* and IAQM's *Guidance on the assessment of dust from demolition and construction*, it is considered that the proposed development adheres to the principles of the National Planning Policy Framework since the new development will not be "put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution". Since it has been shown that in terms of air quality, the proposals adhere to local and national planning policy, it is considered that air pollution should not be a constraint on the proposed development.

Appendix 1

Glossary of Terms

Appendix 1: Glossary of Terms

National Air Quality Standard/National Air Quality Objective (NAQO): The concentrations of pollutants in the atmosphere, which can broadly be taken to achieve a certain level of environmental quality. The standards are based on an assessment of the effects of each pollutant on human health including the effects on sensitive subgroups.

Annual mean: The average of the concentrations measured for each pollutant for one year. In the case of the Air Quality Objectives, this is for a calendar year.

Air Quality Management Area (AQMA): An area that a local authority has designated for action, based upon predicted exceedances of Air Quality Objectives.

Concentration: The amount of a (polluting) substance in a volume (of air), typically expressed as a mass of pollutant per unit volume of air (for example, microgrammes per cubic metre, $\mu\text{g}/\text{m}^3$) or a volume of gaseous pollutant per unit volume of air (parts per million, ppm).

Exceedance: A period of time where the concentration of a pollutant is greater than the appropriate Air Quality Objective.

Nitrogen Oxides: Nitric oxide (NO) is mainly derived from road transport emissions and other combustion processes such as the electricity supply industry. NO is not considered to be harmful to health. However, once released into the atmosphere, NO is usually very rapidly oxidised to nitrogen dioxide (NO₂), which is harmful to health. NO₂ and NO are both oxides of nitrogen and together are referred to as nitrogen oxides (NO_x).

Particulate Matter: Fine Particles are composed of a wide range of materials arising from a variety of sources including combustion sources (mainly road traffic), and coarse particles, suspended soils and dust from construction work. Particles are measured in a number of different size fractions according to their mean aerodynamic diameter. Most monitoring is currently focused on PM₁₀ (less than 10 microns in diameter), but the finer fractions such as PM_{2.5} (less than 2.5 microns in diameter) is becoming of increasing interest in terms of health effects.

$\mu\text{g}/\text{m}^3$ microgrammes per cubic metre of air: A measure of concentration in terms of mass per unit volume. A concentration of 1 $\mu\text{g}/\text{m}^3$ means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant.