



Land South of Saltmarsh Lane, Hayling Island Air Quality Assessment

For Hayling Island Builders Ltd

Date: 2 February 2022

Doc ref: 22776-HYD-XX-ZZ-RP-Y-2001_P02

DOCUMENT CONTROL SHEET

Issued by	Hydrock Consultants Limited 5th Floor Merchants House Wapping Road Bristol	Tel: 0117 945 9225 www.hydrock.com
Client	Hayling Island Builders Ltd	
Project name	Land South of Saltmarsh Lane, Hayling Island	
Title	Air Quality Assessment	
Doc ref	22776-HYD-XX-ZZ-RP-Y-2001_P02	
Project no.	C-22776-C	
Status	Final	
Date	02/02/2022	

Document Production Record		
Issue Number	P02	Name
Prepared by	MN	
Checked by	PH	
Approved by	MN	

Document Revision Record			
Issue Number	Status	Date	Revision Details
P01	Draft	28/01/2022	DRAFT
P02	Final	02/02/2022	SUBMISSION

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1. INTRODUCTION

Hydrock have been commissioned by Hayling Island Builders Ltd to prepare an Air Quality Assessment (AQA) to support an outline planning application for a residential development comprising of up to 60 dwellings at Land South of Saltmarsh Lane, Hayling Island, in the administrative boundary of Havant Borough Council (HBC). The OS grid reference for the approximate centre of the Site is 471241 (x), 100209 (y). The location of the Site is shown below in Figure 1.

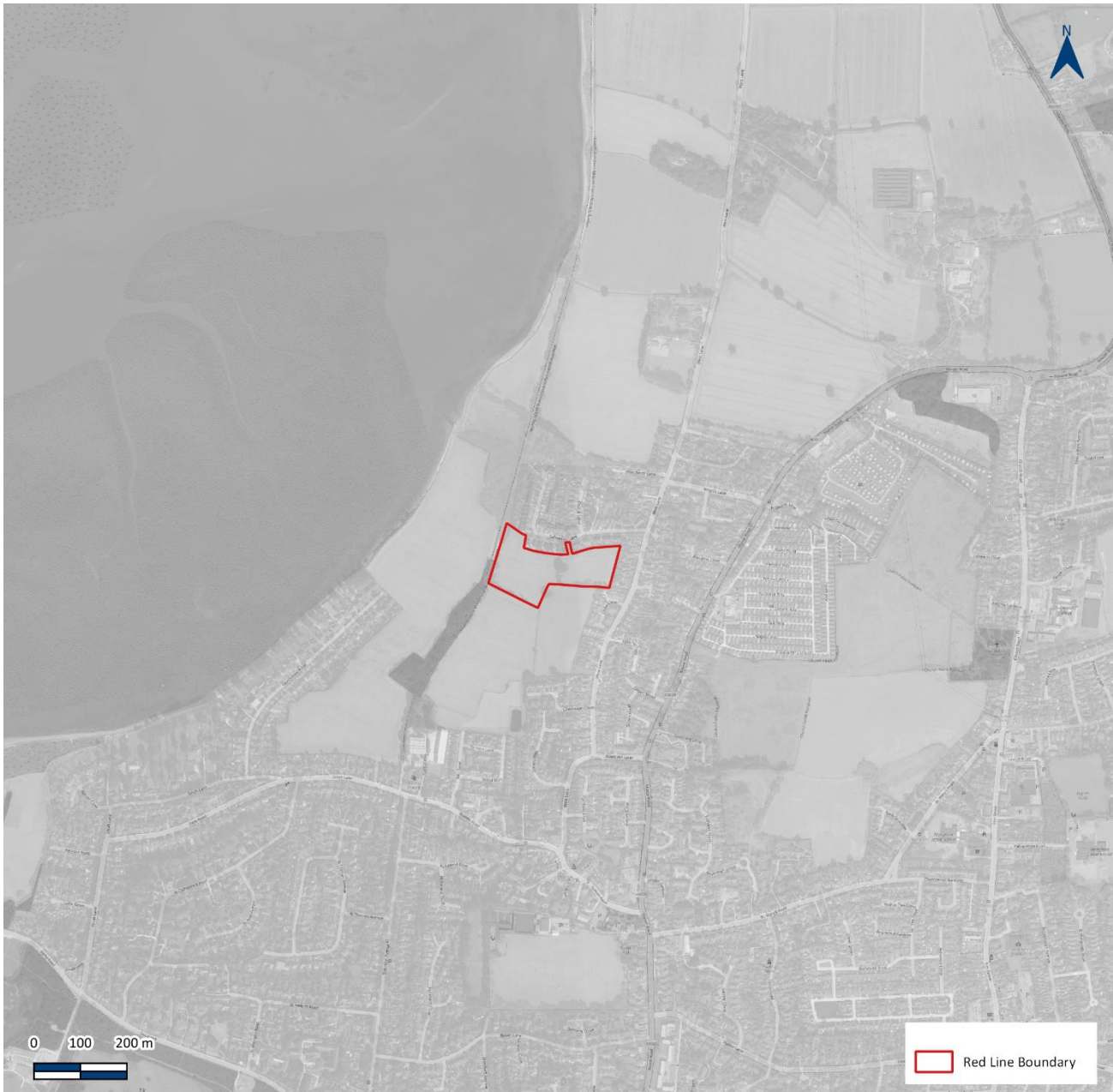


Figure 1 – Site Location Plan

The Site covers approximately 2.4 hectares and is located in the southwest of Hayling Island, approximately 750m north from West Town. The Site is currently occupied under agricultural use.

The main source of air pollution in the vicinity of the Site is considered to be emissions from vehicles using the local road network, predominantly West Lane and Manor Road A3023 to the east. No industrial pollution sources in the immediate vicinity of the Site have been identified that would reasonably influence ambient air quality.

1.1 Proposed Development

Outline planning permission is sought for up to 60 residential dwellings to the south of Saltmarsh Lane, together with associated car parking and landscaping. The Illustrative Masterplan, prepared by Mosaic Architects, is shown below in Figure 2:



Figure 2 – Illustrative Masterplan

1.2 Purpose of Air Quality Assessment

The purpose of this assessment is to provide the following:

- » Review of baseline air quality to assess the risk of exceedance of Air Quality Strategy (AQS) Objectives at the Site and surrounding area;
- » Construction Phase Assessment to conclude on the requirements for mitigation to reduce the significance of impacts to negligible during this phase; and,
- » Screening assessment of potential adverse impacts during the operational phase, including for both off-site impacts and potential introduction of new exposure in the anticipated opening year of 2026.

2. RELEVANT LEGISLATION AND POLICY

2.1 National Air Quality Objectives

There are two sets of air quality legislation which include ambient air quality thresholds for the protection of public health that apply in England, these include legally binding limit values originally set by the European Union (EU) Directive 2008/50/EC¹ on ambient air quality and cleaner air for Europe; and regulations implementing national air quality objectives as set out in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland (AQS)² which local authorities are required to work towards achieving.

The EU (Withdrawal Agreement) Act 2020 sets out arrangement for implementing air quality limit values that are included in the EU Directive on ambient air quality and cleaner air for Europe (2008/50/EC) included in the following:

- Air Quality Regulations (SI 2010 No.1001)³ and amended (SI 2016 No.1184)⁴ ;
- The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019 (SI 2019 74)⁵ ;
- The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 (SI 2020 1313)⁶ amend the Air Quality Regulations (SI 2010 No.1001) to account for EU withdrawal; and
- The AQS objectives are implemented in the Air Quality (England) Regulations 2000 (SI 2000/928)⁷ and Air Quality (England) (Amendment) Regulations 2002 (SI 2002/3043)⁸.

The Air Quality Strategy 2007 Volume 1 outlines the Limit Values, Target Values, Standards, Objectives, and Exposure Reduction Targets for the protection of human health and the environment. The criteria relevant to this assessment is provided below, in Table 1:

Table 1 - UK Air Quality Standards

Pollutant	Averaging Period	Air Quality Standard (AQS)	National Air Quality Objectives
Nitrogen dioxide (NO ₂)	1 Hour Mean	200 µg/m ³	Not to be exceeded more than 18 times in a year.
	Annual Mean	40 µg/m ³	

1 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 Available at: <https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A32008L0050>

2 Defra. "The Air Quality Strategy for England, Scotland, Wales and Northern Ireland". Available at: <https://www.gov.uk/government/publications/2010-to-2015-government-policy-environmental-quality/2010-to-2015-government-policy-environmental-quality#appendix-5-international-european-and-national-standards-for-air-quality>

3 The National Archives. "The Air Quality Standards Regulations 2010". Available at: <http://www.legislation.gov.uk/uksi/2010/1001/contents/made>

4 The National Archives (2016). "The Air Quality Standards (Amendment) Regulations 2016". Available at: <https://www.legislation.gov.uk/uksi/2016/1184/contents/made>

5 The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019 (legislation.gov.uk). Available at:

<https://www.legislation.gov.uk/uksi/2019/74/contents/made>

6 The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 (legislation.gov.uk). Available at:

<https://www.legislation.gov.uk/uksi/2020/1313/contents/made>

7 The National Archives. "The Air Quality (England) Regulations 2000". Available at: <http://www.legislation.gov.uk/uksi/2000/928/contents/made>

8 The National Archives. "The Air Quality (England) (Amended) Regulations 2002". Available at: <http://www.legislation.gov.uk/uksi/2002/3043/contents>

Particulate matter (PM ₁₀)	24 Hour Mean	50 µg/m ³	Not to be exceeded more than 35 times in a year.
	Annual Mean	40 µg/m ³	
Particulate matter (PM _{2.5})	Annual Mean	25 µg/m ³	

Defra's Local Air Quality Management Technical Guidance 2016 (LAQM.TG (16))⁹ provides guidance on where the AQS Objectives should apply. This is summarised below, in Table 2:

Table 2 - Summary of where AQS Objectives apply

Averaging Period	Objectives should apply at:	Objectives should generally NOT apply at:
Annual mean	All locations where members of the public might be regularly exposed. Building facades of residential properties, schools, hospitals, care homes etc.	Building facades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside Sites (as opposed to other locations at the building façade) or any other location where public exposure is expected to be short term.
24-hour mean and 8-hour mean	All locations where the annual mean objective would apply, together with hotels. Gardens of residential properties	Kerbside Sites (as opposed to other locations at the building façade) or any other location where public exposure is expected to be short term.
1-hour mean	All locations where the annual Mean and: 24 and 8-hour mean objectives apply. Kerbside Site (for example, pavements of busy shopping streets). Those parts of car parks, bus stations and railways stations etc. which are not fully enclosed, where members of the public might be expected to 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.
15-min mean	All locations where member of the public might reasonably be exposed for a period of 15 minutes	

From the above, it can be concluded that the annual mean and short-term AQS Objectives apply at the both Site when considering the exposure of future occupiers to poor air quality, and the exposure of existing receptors to potential impacts.

⁹ Defra, "LAQM Technical Guidance LAQM.TG16" (Department for Food, Environment and Rural Affairs (Defra), April 2021), <https://laqm.defra.gov.uk/technical-guidance/>.

2.2 Local Air Quality Management

Obligations under the Environment Act 2021¹⁰ (which provides an amendment to the Environment Act 1995¹¹) requires local authorities to review and assess air quality in their administrative boundaries. Where AQS objectives are predicted to be exceeded, the local authority must declare an Air Quality Management Area (AQMA) at sensitive receptor locations and formulate an Air Quality Action Plan (AQAP) to reduce pollution concentrations to values below AQS objectives. **HBC do not currently have any declared AQMAs within their borough boundary.**

2.3 National Planning Policy Framework

The National Planning Policy Framework (NPPF)¹² sets out the Government's planning policy for England. Paragraph 105, it states that significant development should be focused on locations which are or can be made sustainable, which can help to reduce congestion and emissions, and improve air quality and public health.

The NPPF requires planning decisions for any new development to prevent new and existing development from contributing to, or being put at risk from, unacceptable levels of air pollution (paragraph 174). It also states that planning decisions should sustain and contribute towards compliance with relevant limit values or national objectives for air pollutants, taking into account the presence of AQMAs and Clean Air Zones (CAZ) (paragraph 186), and cumulative impacts from other sites (paragraph 185).

Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. Furthermore, planning decisions should ensure that any new development in AQMAs and CAZ is consistent with the local air quality action plan.

2.4 Planning Practice Guidance

Reference ID 32 (Air Quality) of the National Planning Practice Guidance (NPPG)¹³ which was last updated in November 2019, provides guiding principles on how planning can take account of the impact of new development on air quality. The NPPG summarises the importance of air quality in planning and the key legislation relating to it.

In particular, it provides some examples of mitigation measures to reduce air quality impacts, including:

- Maintaining adequate separation distances between sources of air pollution and receptors;
- Using green infrastructure, in particular trees, where this can create a barrier or maintain separation between sources of pollution and receptors;
- Appropriate means of filtration and ventilation;
- Including infrastructure to promote modes of transport with a low impact on air quality (such as electric vehicle charging points);
- Controlling dust and emissions from construction, operation and demolition; and,

¹⁰ <https://bills.parliament.uk/bills/2593/publications>

¹¹ Environment Agency, "Environment Act 1995" (The Environment Agency, 2002), <http://www.legislation.gov.uk/ukpga/1995/25/contents>.

¹² Ministry of Housing, Communities and Local Government, "National Planning Policy Framework," July 2021, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1004408/NPPF_JULY_2021.pdf

¹³ Ministry of Housing, Communities & Local Government, "Reference ID (32) Air Quality" (Ministry of Housing, Communities & Local Government, 2019), <https://www.gov.uk/guidance/air-quality--3>.

- Contributing funding to measures, including those identified in air quality action plans and low emission strategies, designed to offset the impact on air quality arising from new development.

2.5 Local planning policy

2.5.1 Adopted Local Development Framework

HBC's adopted Local Plan comprises the Core Strategy (2011)¹⁴ and the Site Allocations Plan (2014)¹⁵. The Core Strategy contains Policy DM10: Pollution, which is relevant to air quality:

"DM10 Pollution

*Development that may cause pollution of water, **air** or soil or pollution through noise, smell, smoke, fumes, gases, steam, dust, vibration, light, heat, electromagnetic radiation and other pollutants will only be permitted where all of the following relevant criteria can be met:*

- 1. The health and safety of existing and future users of the site, or nearby occupiers and residents is not put at risk.*
- 2. National air quality standards or objectives would not be breached.*
- 3. The water environment would not be detrimentally affected.*
- 4. It would not lead to an unacceptable deterioration in the quality or potential yield of coastal, surface and ground water resources.*
- 5. External lighting is of the minimum level of illumination and duration required for security and operational purposes.*
- 6. External lighting would not interfere with safe navigation in either Chichester or Langstone Harbours and other coastal locations."*

Policy DM12: Mitigating the Impacts of Travel, is also relevant to consider:

"DM12 Mitigating the Impacts of Travel

*New developments will be required to mitigate their travel impact, **including the environmental impacts of travel (such as noise, air and visual pollution)** and impacts on amenity, health and climate change by ensuring that, where relevant, the following criteria are met:*

- 1. Adequate provision is made for integrated and improved transport infrastructure or appropriate mitigation measures, through direct improvements and S106 contributions in accordance with the Hampshire County Council Transport Contributions Policy.*
- 2. The submission of a transport assessment and travel plan alongside any planning application on proposals for major development or where a proposal is likely to have significant transport implications.*
- 3. The submission of a transport statement must accompany planning applications to explain changes to travel demand.*

¹⁴ <https://cdn.havant.gov.uk/public/documents/ADOPTED%20CORE%20STRATEGY%20.pdf>

¹⁵ <https://cdn.havant.gov.uk/public/documents/Adopted%20Allocations%20Plan%20July%202014%20-%20Copy.pdf>

4. A bond is provided which will be used to mitigate negative travel impacts of the development, should the travel plan fail to achieve its targets. This bond will be held by the relevant local transport authority.

5. In relation to outline planning applications, a framework for the preparation of travel assessments and travel plans will be submitted with the planning application proposals.”

2.5.2 Emerging Policy

In addition to the above, the Emerging Havant Borough Local Plan, which sets out the vision for future development in the borough, is also relevant to consider. However, until adoption the Emerging Local Plan has limited weight in determining planning applications. Within the Emerging Local Plan, policies E22 and E23 are relevant:

“E22 | Amenity and pollution

Development proposals will be permitted where:

a. **Projected levels of noise**, odour, vibration, light, water or air pollution do not have a likely significant negative effect on the amenity of existing and future users of the site, nearby occupiers or the wider environment; or

b. Measures are provided which are suitable for the purposes intended and will ensure that any likely significant negative effect on receptor(s) are mitigated to an acceptable level.”

“E23 | Air quality

Offsetting emissions

a. Major development proposals will be expected to provide mitigation measures which offset emissions and are proportionate to the scale and nature of the development.

Threshold based assessment

In addition to a., development proposals of 150 or more (gross) residential units, 1,000 sqm or more of commercial floorspace, or which are likely to materially alter the traffic flow on the local highway network will be permitted where:

b. Projected levels of air pollution or emissions associated with the development would not result in a significant deterioration of current air quality at a location where national air quality objectives or limit values apply; or

c. Measures are provided which demonstrably mitigate the impact on air quality to an acceptable level.”

2.5.2.1 Habitats Regulation Assessment

Havant Borough includes numerous nature conservation areas of national and international significance. These sites may be adversely affected by increases in air concentrations of pollutants, particularly oxides of nitrogen and ammonia, and the deposition of these pollutants within the habitats. The designated sites considered to be

of relevance to this assessment are Chichester and Langston Harbours RAMSAR, SSSI and Solent Maritime SAC. With regard to these sites, the HRA^{16 16} states that:

“Air quality impacts on designated sites were assessed based on predicted annual average airborne concentrations of oxides of nitrogen (NO_x) and ammonia (NH₃), as well as annual deposition of nutrient nitrogen and acid. Predicted pollutant contributions associated with the proposed development in the Havant DM (for consideration of the HBLP in isolation) and in the PUSH DM (for consideration of the HBLP in-combination) scenarios were compared to pollutant screening thresholds.

This Air Quality HRA indicates that, pre-mitigation, there will be no threat to the ability of these European sites to achieve their conservation objectives or maintain their integrity as a result of the Havant Borough Local Plan (either alone or in combination).

- Chichester and Langstone Harbours Ramsar & SPA

The emerging HBLP has the potential, pre-mitigation, to result in adverse air quality impacts for one European designated site:

- Solent Maritime SAC

With the application of the mitigation advocated above, adverse effects on the qualifying features of the Solent Maritime SAC can be prevented and as such there will be no threat to the ability of the European site to achieve its conservation objectives or maintain its integrity as a result of the Havant Borough Local Plan (either alone or in combination).”

¹⁶ <https://cdn.havant.gov.uk/public/documents/Air%20Quality%20Habitat%20Regulations%20Assessment.pdf>

3. METHODOLOGY

3.1 Consultation

The scope of assessment (as outlined below) was emailed to HBC's Environmental Health department with a request for comment in January, 2022. At the time of writing, no response had been received. As such, the assessment has been prepared in accordance with best practice guidance.

3.2 Guidance

Defra's LAQM.TG (16)⁹ and the EPUK & IAQM Land-use Planning & Development Control: Planning for Air Quality¹⁷ have been followed as guidance to produce this assessment. The IAQM's guidance on assessing impacts from construction¹⁸ has also been followed.

For the assessment of likely significant effects on sensitive ecological habitats, the IAQM's guidance on the assessment of air quality impacts on designated nature sites¹⁹ and Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations²⁰ have been referred to.

3.3 Baseline Air Quality

The baseline air quality conditions in the vicinity of the Site have been established through the compilation and review of appropriately sourced modelled and monitored data. This is provided in section 4, and includes:

- Defra's modelled background concentrations of AQS pollutants (UK-AIR)²¹. These estimates are produced using detailed modelling tools and are available as concentrations at central 1km² National Grid square locations across the UK. *At the time of writing, the most recent background maps were from August 2020 and based on monitoring data from 2018;*
- Defra's modelled roadside concentrations of key AQS pollutants²², including NO₂ (included as part of the pollution climate mapping (PCM) model), which was previously used in annual reporting regarding compliance with EU limit values, and
- HBC's air quality monitoring data, derived from the latest available air quality annual status report (ASR) published in 2019²³ - *At the time of writing, these data were from 2018 (which provides a robust assessment, as data do not include any uncertainties associated with changes in travel behaviour as a result of the COVID-19 pandemic)/*
 - » **Note that more recent data was requested from HBC, as it is not in the public domain. At the time of writing, no response had been received.**

17 EPUK and IAQM, "Land-Use Planning & Development Control: Planning for Air Quality" (Institute for Air Quality Management (IAQM), January 2017), <http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf>.

18 IAQM, "Guidance on the Assessment of Dust from Demolition and Construction" (Institute of Air Quality Management (IAQM)), February 2014), <http://www.iaqm.co.uk/text/guidance/construction-dust-2014.pdf>.

19 <https://iaqm.co.uk/text/guidance/air-quality-impacts-on-nature-sites-2020.pdf>

20 <http://publications.naturalengland.org.uk/publication/4720542048845824>

21 UK-AIR, "Background Mapping Data for Local Authorities - 2018," n.d., <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018>.

22 Defra, "UK AIR Air Information Resource - UK Ambient AQ Map", <https://uk-air.defra.gov.uk/data/gis-mapping/>

23 [https://cdn.havant.gov.uk/public/documents/HBC_AS1903v2%20Rpt.%20Main%20\[Amend%20inc.%20Apdx\].pdf](https://cdn.havant.gov.uk/public/documents/HBC_AS1903v2%20Rpt.%20Main%20[Amend%20inc.%20Apdx].pdf)

3.4 Construction Phase Assessment

A construction phase assessment is provided in section 5, which has been undertaken in line with IAQM guidance¹⁸. This considers the risk of impacts during the construction phase in terms of nuisance dust, human health (PM₁₀ exposure) and ecological impacts.

With regard to ecological receptors, risk assessment should be taken where high-sensitivity receptors are located within 50m of a site boundary. The Multi Agency Geographic Information for the Countryside (MAGIC) website, which incorporates Natural England's interactive maps²⁴, has been reviewed to identify whether any statutory ecological sensitive receptors are situated within 50m of the site boundary or within 50m of any routes used by construction vehicles on the public highway, up to 500m from the site entrance. The local area was screened for the following designations:

- RAMSAR;
- Sites of Special Scientific Interest (SSSI)
- Special Areas of Conservation (SAC); and
- Special Protection Areas (SPA).

Chichester and Langston Harbours RAMSAR, SSSI and Solent Maritime SAC are situated approximately 130m north of the Site.

With regard to human receptors, based on the IAQM guidance, residential dwellings are considered as high sensitivity receptors in relation to both dust soiling and adverse health effects of PM₁₀. Indicative examples of medium sensitivity receptors include places of work, offices and hotels.

Within distances of 20m of the site boundary there is a high risk of dust impacts. Up to 100m from the construction site, there may still be a high risk, particularly if the receptor is downwind of the prevailing wind direction in relation to the dust source. At distances >100m up to 350m, the risk of impacts is low.

The IAQM guidance states that the potential dust emission magnitude from Demolition, Earthworks, Construction and Trackout should all be assessed individually. In addition, the sensitivity of the area to adverse dust impacts should also be defined.

The overall significance of the risk of adverse impacts during the construction phase can then be defined using the 'risk of impacts matrix' for each stage of the construction phase described above. The outcome of the risk assessment is provided in Section 5.

3.5 Operational Phase Assessment

3.5.1 Impact Assessment

The scope of assessment has been determined against the EPUK & IAQM's checklist criteria. The EPUK & IAQM guidance¹⁷ recommends a two-stage screening approach to determine whether emissions from road traffic generated by a development have the potential for significant air quality impacts. See Table 3 and Table 4 below.

²⁴ Natural England and MAGIC partnership organisations., "Multi Agency Geographic Information for the Countryside.," 2020, <https://magic.defra.gov.uk/MagicMap.aspx>.

Table 3 – EPUK & IAQM Stage 1 indicative criteria for requiring an assessment

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

The development meets the criteria to proceed to stage 2. The EPUK & IAQM stage 2 criteria shown in Table 4 determines whether a detailed assessment of potential air quality impacts is required*.

**Note that guidance includes numerous criteria which are not directly relevant to the Proposed Development, such as those related to the realignment of roads within an AQMA, introduction of a new bus station, new road junctions and underground car parks. These have been excluded from this assessment and only relevant screening criteria have been included.*

Table 4 – EPUK & IAQM Stage 2 criteria

Criteria	The development will:	Indicative Criteria to Proceed to an Air Quality Assessment
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 (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.

Discussion of operational phase impacts, including comparison of the Proposed Development to the Stage 2 criteria, is provided in section 6 of this report. However, as there are no AQMAs declared by HBC, it is reasonable to apply the non-AQMA criteria.

3.5.2 Exposure Assessment

Due to the sensitive nature of the Proposed Development, which will introduce new residential receptors, an exposure assessment has been undertaken drawing upon the findings of the baseline review in section 4. In addition, the exposure assessment includes a review local traffic conditions and considers proximity to the closest roads sources to support the conclusions reached. The exposure assessment is provided in section 6.2.

4. BASELINE AIR QUALITY CONDITIONS

Baseline air quality conditions in the vicinity of the Site have been established through compilation and review of appropriately sourced monitoring and modelling data.

4.1 UK-AIR background concentrations

Defra's estimated UK-AIR background concentrations of the key AQS pollutants (NO₂, PM₁₀ and PM_{2.5}) relevant to this assessment are presented in Table 5. Note, the background concentrations are presented for the grid square within which the Site is located (471500 (x), 100500 (y)) for the relevant assessment years:

Table 5 - UK-AIR background concentrations and AQS Objectives

Pollutant	AQS objective	Annual Mean Concentrations (µg/m ³)		
		2018	2022	2026
Nitrogen dioxide (NO ₂)	40	10.7	9.5	8.5
Particles (PM ₁₀)	40	13.7	12.9	12.4
Particles (PM _{2.5})	25	9.3	8.7	8.3

The data show that annual mean background concentrations of NO₂, PM₁₀ and PM_{2.5} are below the AQS objectives in all years. In 2018, concentrations of NO₂, PM₁₀ and PM_{2.5} were below the AQS objectives by 73%, 66% and 63% respectively.

Concentrations of all pollutants are predicted to decline incrementally each year. These reductions are principally due to the forecast effect of the roll out of cleaner vehicles and strategies to reduce emissions across all sectors.

4.2 Defra Roadside Modelled Concentrations (Pollution Climate Mapping)

Defra's modelled roadside concentrations of NO₂ is shown below in Figure 3. The road closest to the Site, i.e., West Lane, was not included within the PCM model because it was not considered by Defra to be at risk of exceeding the AQS Objectives.



Figure 3 - Defra Modelled PCM Roadside NO₂ Concentrations (µg/m³)

Figure 3 illustrates that 2019 modelled roadside NO₂ concentrations are <40µg/m³ on the closest PCM road link to the Site. However, it is recognised that this road is situated approximately 300m east of the Site and there are uncertainties associated with these modelled concentrations. As such, further analysis of local air quality monitoring is provided below.

4.3 Local Authority Air Quality Monitoring Data

HBC monitor air quality at key locations across the borough through a network of passive diffusion tubes. HBC did not undertake any automatic (continuous) monitoring during 2018.

4.3.1 NO₂ Diffusion Tube Monitoring Data

HBC undertook or supported non-automatic (passive) monitoring of NO₂ at 37 locations during 2018. Not all of these locations were monitored concurrently, and the total includes locations that were decommissioned within the 2018 monitoring year, new locations established within the same period, and locations monitored over a limited period for indicative purposes. The closest 3 HBC diffusion tubes to the Site are shown in Figure 4:

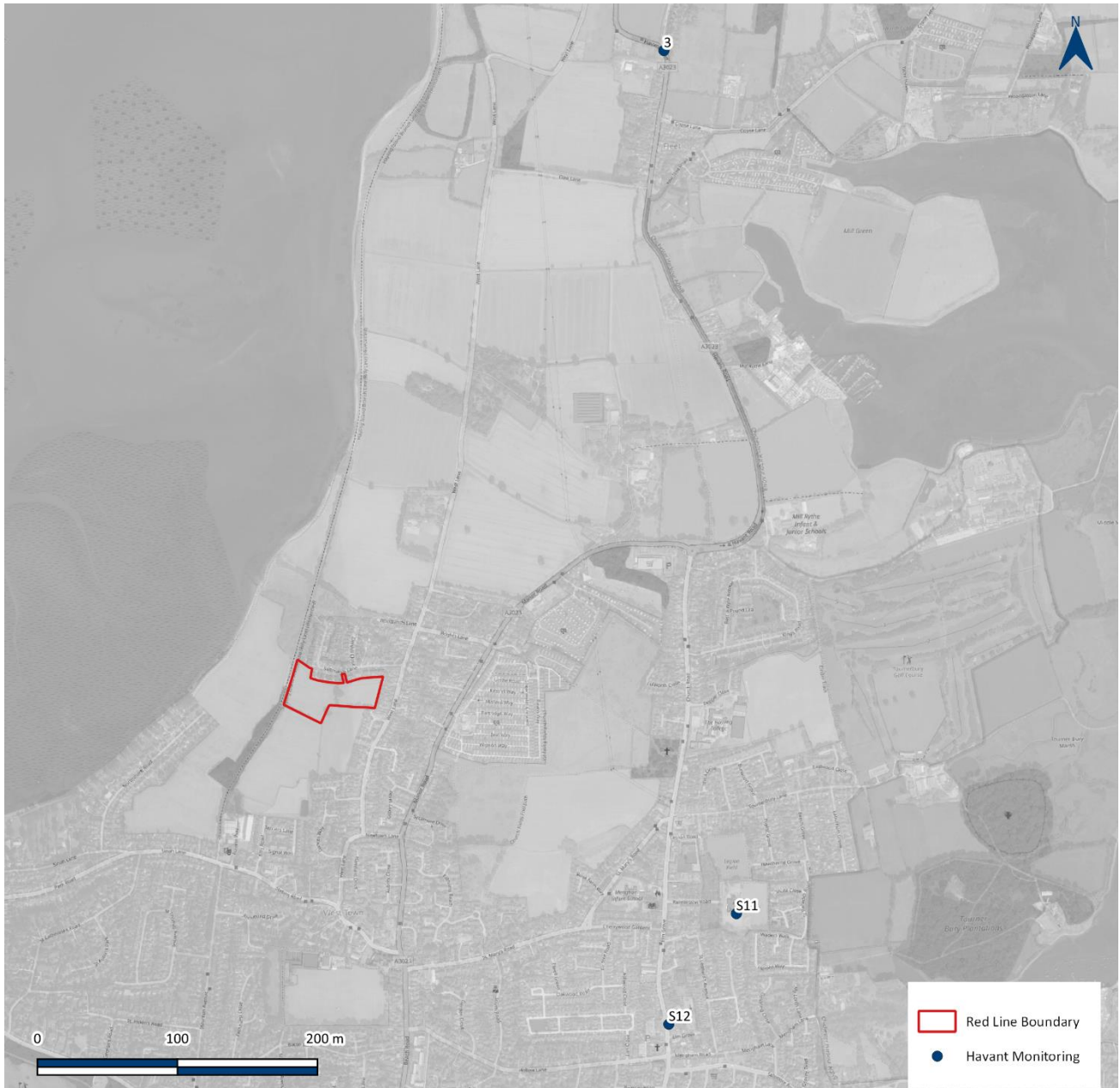


Figure 4 – HBC Diffusion Tube Sites

The monitoring data for these diffusion tubes, as reported in HBC's ASR, is summarised in Table 6 below.

Table 6 – HBC Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X(m)	Y(m)	Distance from Site (km)	Annual Mean NO ₂ Concentrations (µg/m ³)				
						2015	2016	2017	2018	2019
S12	Mengham Junior Sch. (Elm Grove)	Suburban	472212	99265	1.2	-	-	-	26.1	NA
S11	Mengham Junior Sch. (Maple Gardens)	Urban Background	472405	99581	1.2	-	-	-	12.7	NA
3	Havant Road	Kerbside	472198	102048	1.9	28.7	33.4	32.2	31.6	NA

Table 6 shows there have been no exceedances of the NO₂ annual mean AQS Objective at the 3 closest diffusion tubes to the Site in recent years. Measurements at Site ID 3 show a relatively stable incrementally declining trend between 2016 and 2018, following a slight increase in annual mean concentrations between 2015 and 2016. This stable declining trend is also noted in the HBC ASR²³.

The diffusion tube closest to the Site (ID S12) and considered most representative, illustrates annual mean NO₂ concentrations below the AQS Objective.

It is also noted that diffusion tube S11 is representative of urban background concentrations, so comparison can be made to UK-AIR modelled background concentrations for the same year. This shows that in 2018, monitored concentrations were approximately 14.9% higher than UK-AIR background data for the same year.

5. CONSTRUCTION PHASE ASSESSMENT

5.1 Overview

The construction phase of the Proposed Development will involve a number of activities that will produce polluting emissions to air. Predominantly, these will be emissions of dust. As such, a qualitative construction dust risk assessment has been carried out in accordance with IAQM Guidance¹⁸.

The risks of impact and the significance of each stage of the construction phase is classified as Negligible, Low, Medium or High, determined against a matrix which considers the distance from source, receptor sensitivity, background pollution concentrations and the potential dust emission magnitude of the works.

The information used to inform the construction dust risk assessment was provided by the design team.

5.2 Construction Traffic

The IAQM's guidance states that, from experience of assessing exhaust emissions from site traffic, it is unlikely that any significant adverse impacts on local air quality would be caused and in the vast majority of cases, quantitative assessment is not needed. HGV movements are expected to be below AADT screening thresholds for detailed assessment. As such, short term effects of construction traffic emissions have not been assessed.

5.3 Dust Emission Magnitude

5.3.1 Demolition

There are no demolition works associated with the Proposed Development and therefore no dust emissions expected from this activity. The impact of demolition activities is therefore **Not Applicable**.

5.3.2 Earthworks

The total area of the Site is 25,039m². This exceeds the IAQM's Large criteria of 10,000m². The prevailing soil-type at the Site is described as '*Loamy soils with naturally high groundwater*' following review of Soilscales²⁵. While loam soils have a moderate potential for dust as they are composed of almost equal amounts of sand and silt with less clay content, naturally high groundwater may act as natural mitigation (e.g., reducing potential dust emission magnitude).

The number of heavy earth-moving vehicles operating at any one time is expected to be up to 5 during peak construction. The total volume of material to be moved during earthworks is estimated to be <20,000m³.

On balance, based on the parameters defined above, the potential dust emission magnitude during this phase has been defined as '**Medium**', with reference to IAQM guidance.

5.3.3 Construction

The construction phase is expected to take approximately 24 months. The total cumulative volume of new buildings and superstructures to be constructed across the Proposed Development is estimated to fall within the IAQM's medium threshold of 25,000-100,000m³. No on-site concrete batching or sandblasting is expected to form part of the works. Traditional brick and timber will form the main construction materials.

²⁵ <http://www.landis.org.uk/soilscales/>

The potential dust emission magnitude during construction is considered to be ‘**Medium**’, in accordance with IAQM guidance.

5.3.4 Trackout

Factors which determine the dust emission magnitude are vehicle size, vehicle speed, vehicle numbers, geology and duration. With specific reference to vehicle numbers, IAQM guidance advises that numbers are for vehicles that leave the site after moving over unpaved ground, where they will accumulate mud and dirt that can be tracked out onto the public highway.

It is expected that there would be <10 outward HDV movements from the Site per day during peak construction. Approximately <50m of unpaved surfaces would be utilised as site traffic would be routed along the existing road network. Accordingly, the potential dust emission magnitude during Trackout is considered to be ‘**Small**’, with reference to IAQM guidance.

5.3.5 Potential Dust Emission Magnitude Summary

A summary of the potential dust emission magnitude for each activity is presented in Table 7 below.

Table 7 - Potential Dust Emission Magnitude

Activity	Potential Dust Emission Magnitude
Earthworks	Medium
Construction	Medium
Trackout	Small

5.4 Sensitivity of Area

Detailed, hourly sequential meteorological for the period 2016 to 2020 were obtained from Thorney Island meteorological measurement station, using the WorldMet R package²⁶. The meteorological data is considered to be reasonably representative of prevailing weather conditions at the Site based on proximity and distance to the coast. Figure 5 shows the wind rose:

²⁶ David Carslaw, NOAA Integrated Surface Database (ISD) Surface Meteorological Observations: Davidcarslaw/WorldMet, R, 2018, <https://github.com/davidcarslaw/worldmet>.

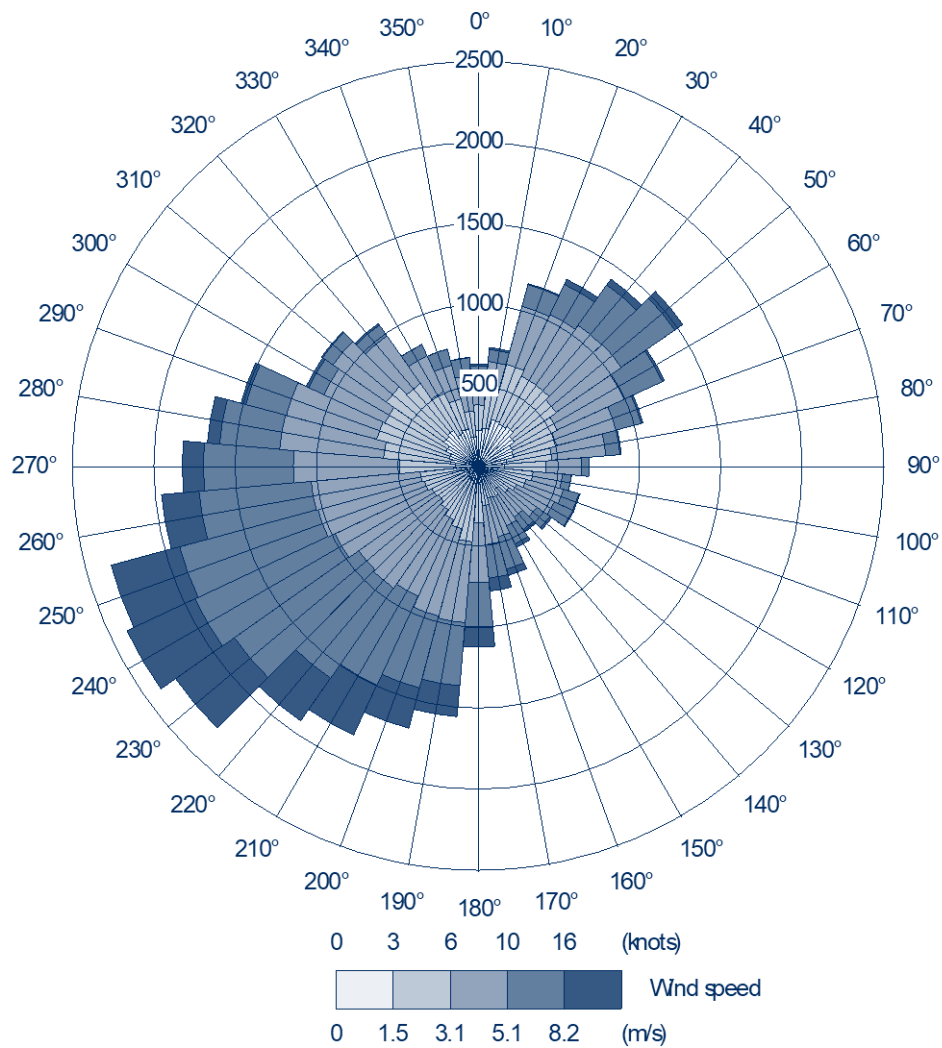


Figure 5 – Wind Rose for Thorney Island Meteorological Station (2016 – 2020)

The wind rose shows that the prevailing winds are from the south-west and west. As such, receptors downwind (i.e., east, north-east) of the Site are more at risk to dust impacts during construction.

Figure 6 shows the construction phase distance buffers (20m, 50m, 100m and 350m) plotted around the Site boundary, as well as identified high and medium sensitivity receptor locations within these buffers:

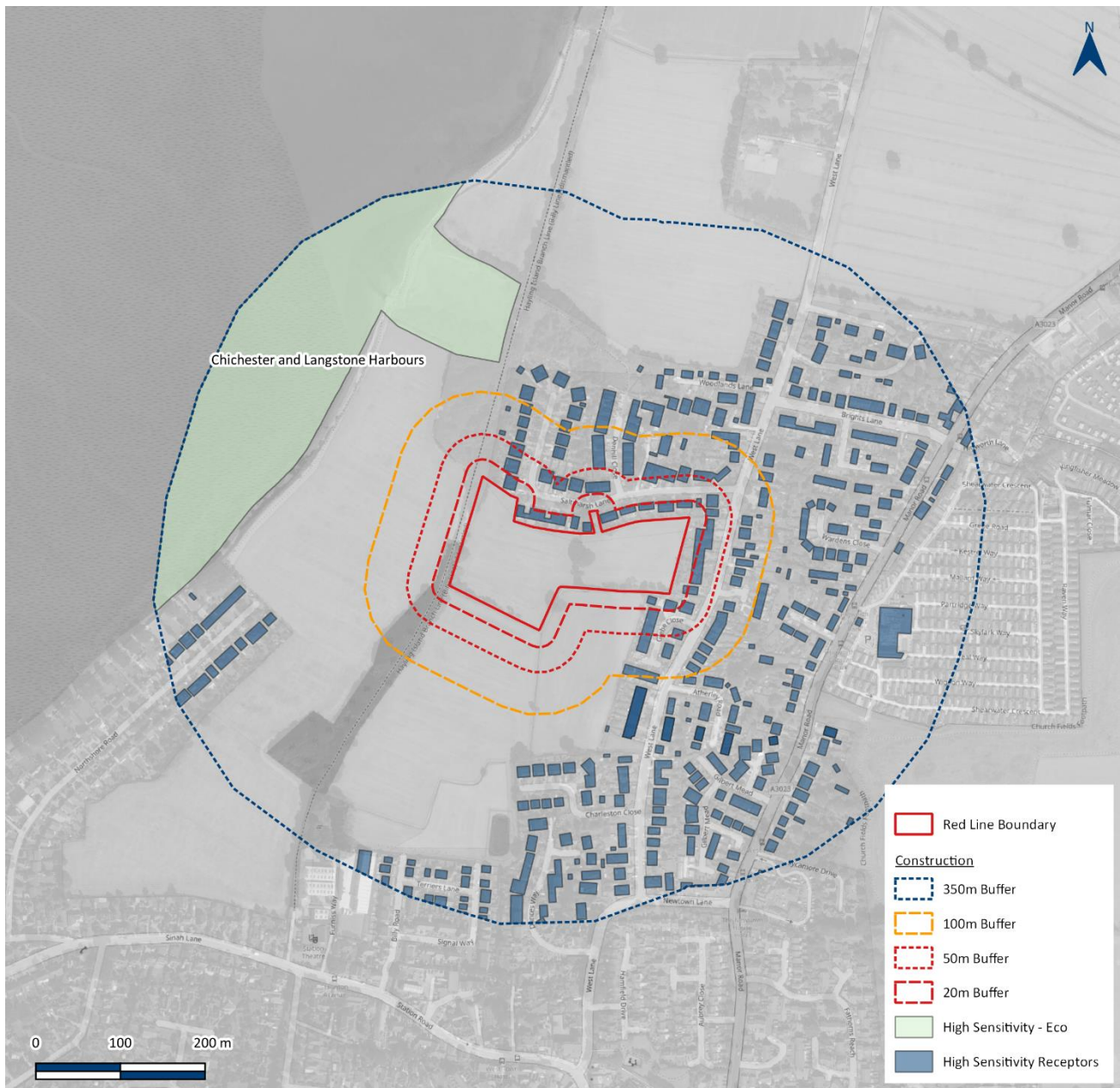


Figure 6 – Construction Phase Receptors

There are sensitive receptors adjacent to the eastern and southern Site boundary, with over 10 high-sensitivity receptors within 20m of the boundary. According to IAQM guidance, where there are more than 10 high sensitivity receptors within 20m, the overall sensitivity of the surrounding area to nuisance dust soiling effects during Earthworks and Construction is defined as 'High'.

With regard to Trackout, the sensitivity is assessed where receptors are located within 50m from Trackout routes up to 50m from the Site (the distance applied to 'Small' sites). As there are more than 10 high-sensitivity receptors within 50m of the Trackout route, the sensitivity to dust soiling impacts from Trackout is defined as 'High'.

As shown in section 4, UK-AIR predictions show that annual mean concentrations of PM₁₀ are well below 32µg/m³ in the vicinity of the Site²⁷ and are not likely to exceed 24µg/m³. The IAQM guidance states where PM₁₀ concentrations are <24µg/m³ and there are fewer than 100 high sensitivity receptors within 20m of the Site boundary, the overall sensitivity of the surrounding area to human health impacts is defined as ‘**Low**’.

Finally, Chichester and Langstone Harbours RAMSAR has been identified within the 350m of the Site. These receptors are greater than 50m from the Site boundary and anticipated trackout routes, and therefore their sensitivity to impacts during Earthworks, Construction and Trackout is considered to be ‘**Negligible**’.

5.4.1 Summary of Area Sensitivity

Table 8 - Sensitivity of Local Area

Potential Impact	Sensitivity of the surrounding area		
	Earthworks	Construction	Trackout
Nuisance Dust Soiling	High	High	High
Human Health	Low	Low	Low
Ecology	Negligible	Negligible	Negligible

5.5 Risk of Impacts

Using the methodology prescribed in the IAQM guidance, the overall risk of impacts can be defined by combining the sensitivity of the area with the potential dust emission magnitude of each stage of the construction phase as described above.

Table 9 provides a summary of the construction dust risk assessment. Overall, the Proposed Development is considered to be **Medium Risk** for nuisance dust soiling effects, **Low Risk** for PM₁₀ health effects and to be **Medium Risk** for ecological impacts, in the absence of mitigation.

Table 9 - Risk of adverse impacts during construction phase

Potential Impact	Risk of Impacts		
	Earthworks	Construction	Trackout
Nuisance Dust Soiling	Medium Risk	Medium Risk	Low Risk
Human Health	Low Risk	Low Risk	Negligible
Ecology	Negligible	Negligible	Negligible

Details of the mitigation requirements for a Medium-Risk site are summarised in section 7 and are detailed in full in Appendix A.

²⁷ The concentration at which exceedance of the 24-hour AQS OBJECTIVE is likely.

6. OPERATIONAL PHASE ASSESSMENT

6.1 Impact Assessment

With reference to EPUK & IAQM Stage 2 screening criteria 1 and 2 (Table 4), the appointed transport consultants (Paul Basham Associates (PBA)) provided the following information to support the screening assessment:

Table 10 – Proposed Development AADT Trip Generation

Saltmarsh (HCC Trip Rates)	AM Peak (0800-0900)			PM Peak (1700-1800)			24 Hour AADT Trips
	Arrivals	Departures	Total	Arrivals	Departures	Total	
Trip Generation (60 dwellings)	9	18	27	19	14	33	360

Based on the above, with regard to screening criteria 1 and 2, detailed assessment of air quality impacts from road traffic sources has not been undertaken, as it is reasonable to conclude that operational phase air quality impacts are unlikely to be significant, as the EPUK & IAQM guidance criteria are not triggered.

In addition to the above, IAQM¹⁹¹⁹ and Natural England²⁰²⁰ guidance both provide an initial traffic screening threshold of 1,000 Annual Average Daily Traffic (AADT) to determine the need for further detailed assessment of air quality impacts at sensitive ecological receptor locations. The Proposed Development trip generation is well below this threshold.

Coupled with the conclusions of the HRA¹⁶, which demonstrated no significant impacts on designated ecological sites with the emerging HBC Local Plan, no further assessment of ecological receptors is considered to be necessary.

6.2 Exposure Assessment

6.2.1 Traffic Data Review

The Department for Transport (DfT) provides historical road transport statics for the motorway, 'A' road and minor road network in Great Britain²⁸. Traffic data for Manor Road A3023 from the Department for Transport (count point ID 27621²⁹) shows that traffic flows are in the region of <10,000 vehicles per day. Using LAQM.TG (16) criteria, Manor Road A3023 is classified as a 'main' road.

Table 11 - Review of Traffic Data

Road Link	2019 AADT
Manor Road A3023	5692

²⁸ Map Road traffic statistics - Road traffic statistics (dft.gov.uk)

²⁹ <https://roadtraffic.dft.gov.uk/manualcountpoints/27621>

There is a known relationship between NO₂ concentrations and distance to source, whereby concentrations reduce ('fall-off') as distances increase, and LAQM.TG (16) suggests that the influence of emissions from roads with <10,000 vehicles per day is greatest within 10m of the kerb.

Traffic flows on all other roads around the Site are not expected to exceed 10,000 AADT and therefore are not considered to be significant sources of air pollution.

6.2.2 Summary of Baseline Conditions

The data provided in section 4 showed that:

- Annual mean background concentrations of NO₂, PM₁₀ and PM_{2.5} at the grid square within which the Site is located showed that in all years, concentrations are below the AQS objectives with a forecasted declining trend;
- The Site is not located in proximity to any roads expected to experience pollutant concentrations at or above AQS Objectives (determined by Defra's PCM model), and
- Local monitoring data, at the diffusion tubes closest to the Site were below the annual mean NO₂ AQS objective in 2018.

6.3 Determination of Site Suitability

From the evidence presented in this section, it is concluded that the risk of exceedance of the annual mean AQS Objective for NO₂ and other pollutants at the Site is low, and future residents of the Proposed Development will not be introduced to an area of existing poor air quality.

With regard to the potential impact on existing receptors, mitigation measures are discussed further in Section 7.

7. MITIGATION MEASURES

7.1 Construction Phase

The qualitative construction dust risk assessment shows that the works are **Medium Risk** for adverse impacts during construction, in the absence of mitigation.

To effectively reduce the risk of impacts to Negligible, appropriate mitigation measures should be adopted. The IAQM's highly recommended mitigation measures for Medium-Risk sites are provided at Appendix A of this report. Implementing these measures should effectively reduce the risk of impacts to Negligible during the construction phase.

7.2 Operational Phase – Road Sources

7.2.1 *Electric Vehicle Charging Infrastructure*

Electric Vehicle Charging Infrastructure will be provided across the Site at a rate of provision compliant with applicable policy. It should be noted that in November 2021, the UK government announced its vision to put in place a regulatory framework for electric vehicle charging which supports a nationwide network of reliable, accessible and easy-to-use infrastructure. As part of this vision, it was announced that the following measures would be a legal requirement from 2022³⁰:

- New residential dwellings, including those created from a change of use, with associated parking within the Site boundary to have an electric vehicle charge point; and
- All new non-residential buildings, with more than 10 parking spaces within the Site boundary of the building, to have a minimum of one charge point and in addition to this, cable routes for one in five of the total number of spaces.

7.2.2 *Travel Plan Measures*

As detailed in the Transport Statement (TS) prepared by PBA, the Site is located approximately 750m north from West Town. The Site is well connected to the local public transport, pedestrian and cycle networks which gives access to wider areas such as like Havant, Portsmouth, and other local amenities, providing an opportunity to therefore promote and create a sustainable development. These provide an opportunity to promote and establish a sustainable development which will help to reduce potential air quality impacts.

7.3 Ventilation Strategy

It is understood that natural ventilation is the proposed ventilation strategy for the Site. This is considered appropriate based on the results of the air quality assessment.

7.4 Combustion Sources

During the detailed design phase, renewable energy solutions for space heating / energy / hot water should be considered, such as Air Source Heat Pumps (ASHPs), where possible. As the anticipated opening year of the

³⁰ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1040254/consultation-response-electric-vehicle-charging-in-residential-and-non-residential-buildings.pdf

Proposed Development is 2026, gas boilers should not be considered as these will be banned for new build properties in the UK from 2025³¹.

³¹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1026356/domestic-offgg-consultation.pdf

8. DISCUSSION AND CONCLUSION

Hydrock have been commissioned by Hayling Island Builders Ltd to prepare an Air Quality Assessment (AQA) to support an outline planning application for a residential development comprising of up to 60 dwellings at Land South of Saltmarsh Lane, Hayling Island.

Existing baseline air quality at the Site and surrounding area has been determined by reviewing UK-AIR background concentrations, Defra's PCM modelling and local air quality monitoring data.

UK-AIR modelled background concentrations of NO₂, PM₁₀ and PM_{2.5} at the Site and surrounding area are below the key AQS Objectives with a declining trend in future years. Defra's PCM modelled links closest to the Site are not in exceedance of the AQS Objectives. Monitored concentrations of NO₂ have not exceeded the annual mean AQS Objective at the three closest diffusion tube locations in recent years.

A qualitative construction phase assessment has been undertaken in line IAQM guidance. It has been shown that the construction phases of the Proposed Development could give rise to emissions that may cause some dust soiling effects on adjacent uses. However, by adopting appropriate mitigation measures to reduce emissions and their potential impact, such as those recommended in this report, there should be no significant residual effects, complying with the requirements of the NPPF and PPG.

By following screening criteria provided in EPUK & IAQM guidance, the need for detailed dispersion modelling to assess the significance of potential impacts has been scoped out of this assessment, as vehicle traffic movements associated with the Site are not expected to trigger the indicative criteria for assessment. As such, it is not anticipated that any significant impacts on local air quality will occur and the Proposed Development is considered to be compliant with the NPPF and HBC Planning Policies.

A qualitative exposure assessment has also been undertaken. This shows that the Site is not located within proximity to roads identified by Defra's PCM model, and the Proposed Development is not expected to introduce sensitive use within 10m of Manor Road A3023. This, alongside the data provided in the baseline review, supports the conclusion that the Site is acceptable for residential use.

While no assessment of off-site impacts has been undertaken the Proposed Development will provide electric vehicle charging infrastructure, and is well connected to the local public transport network and pedestrian and cycle routes.

From the evidence presented, the Proposed Development is expected to comply with all relevant air quality policy. As such, air quality should not pose any significant obstacles to the planning process.

Appendix A - Construction Dust Mitigation for Medium Risk sites

In order to mitigate the worst-case dust impacts the following mitigation measures are highly recommended by the IAQM for Medium Risk construction sites.

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
- 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 Appendix. The DMP may include monitoring of dust deposition, dust flux, real-time PM₁₀ continuous monitoring and/or visual inspections.

Site Management

- 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.
- Record any exception incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book.

Monitoring

- Carry out regular site inspections to monitor compliance with the Dust Management Plan, record inspection results, and make an inspection log available to the local authority when asked.
- Increase the frequency of 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.
- Agree dust deposition, dust flux, or real-time PM₁₀ continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it is a large site, before work on a phase commences

Preparing and Maintaining the Site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on 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.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.

- 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.
- Cover, seed or fence stockpiles to prevent wind whipping.

Operating Vehicle/Machinery and Sustainable Travel

- 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 practicable.
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.

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 on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

- Avoid bonfires and burning of waste materials.

Construction

- 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.

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.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site log book.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior leaving the site where reasonably practicable).

- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10m from receptors where possible.