Broadbridge Heath Trust

Tilletts Lane, Warnham, West Sussex

Air Quality Assessment

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Consultants in air quality & odour assessment

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Approved for Issue 

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1 Introduction

Michael Bull and Associates Ltd (MBAL) has been commissioned by Broadbridge Heath Trustto undertake an air quality assessment of a proposal for residential development for 59 properties on land at Tilletts Lane, Warnham. The site is located within the boundary of Horsham District Council (HDC).

This report assesses the likely significant effects of the proposed development on the environment in respect of air quality during construction and operation. During construction, the main sources of air pollutant are the construction activities themselves. During operation, the source of air pollution would be potentially from road traffic accessing the site and from any combustion sources such as boilers within the proposed development. Therefore, the main pollutants of concern for local air quality are oxides of nitrogen (NOx), including nitrogen dioxide (NO_2), particulate matter (PM_{10} and $PM_{2.5}$) and dust.

A damage cost assessment has also been included within this report.

2 Air quality standards and legislation

2.1 European Air Quality Management

In 1996, the European Commission published the Air Quality Framework Directive on ambient air quality assessment and management (96/62/EC) . This Directive defined the policy framework for twelve air pollutants known to have harmful effects on human health and the environment. Limit values (pollutant concentrations not to be exceeded by a certain date) for each specified pollutant were set through a series of Daughter Directives, including Directive 1999/30/EC (the 1st Daughter Directive) for NO_2 and PM_{10} amongst other pollutants.

In May 2008, the Directive 2008/50/EC on ambient air quality and cleaner air for Europe came into force. This Directive consolidated the Air Quality Framework Directive and most of the Daughter Directives, made provision for extended compliance deadlines for NO_2 and PM_{10} and introduced standards for $PM_{2.5}$ concentrations. The Directive was transposed into national legislation in England by the Air Quality Standards 2010 (amended in 2016). The Secretary of State for the Environment has the duty of ensuring compliance with the air quality limit values.

2.2 Air quality standards

Some pollutants have standards expressed as annual average concentrations due to the chronic way in which they affect health or the natural environment (i.e. effects occur after a prolonged period of exposure to elevated concentrations) and others have standards expressed as 24 hour, 1 hour or 15 minute average concentrations due to the acute way in which they affect health or the natural environment (i.e. after a relatively short period of exposure). Some pollutants have standards expressed in terms of both long term and short term concentrations.

In this assessment, the term 'air quality standard' has been used to refer to both the UK objectives and European limit values. Table 1 sets out the air quality standards for the pollutants relevant to this study. Other pollutants have been screened out of this air quality assessment, since they are not likely to cause exceedances of their respective standards.

Table 1 Air quality standards

Pollutant	Averaging period	Air quality standard
Human health		
Nitrogen dioxide (NO_2)	Annual mean	40µg/m^3
	1-hour mean	200µg/m^3 [1]
Particulate matter (PM_{10})	Annual mean	40µg/m^3
	24-hour mean	50µg/m^3 [2]
Fine particulate matter ($PM_{2.5}$)	Annual mean	25µg/m^3

[1] not to be exceeded more than 18 times a year (99.8th percentile)

[2] not to be exceeded more than 35 times a year (90.4th percentile)

2.3 Environment Act 1995

Part IV of the Environment Act 1995 places a duty on the Secretary of State for the Environment to develop, implement and maintain an Air Quality Strategy with the aim of reducing atmospheric emissions and improving air quality. The Air Quality Strategy for England, Scotland, Wales and Northern Ireland provides the framework for ensuring compliance with the air quality limit values based on a combination of international, national and local measures to reduce emissions and improve air quality. This includes the statutory duty, also under Part IV of the Environment Act 1995, for local authorities to undergo a process of local air quality management and declare Air Quality Management Areas (AQMA) where necessary.

2.4 Environment Act 2021

The Environment Act 2021 committed the government to set new targets for $PM_{2.5}$, this has now been set in the Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 which gives a target for annual mean $PM_{2.5}$ of 10µg/m^3 to be met by the year 2040. An interim target is detailed in the Government's Environmental Improvement Plan 2023 of 12µg/m^3 to be met by the end of January 2028. .

2.5 Dust nuisance

Dust is the generic term used to describe particulate matter in the size range 1 75µm in diameter (British Standard document BS 6069 Part Two) . Dust nuisance is the result of the perception of the soiling of surfaces by excessive rates of dust deposition. Under provisions in the Environmental Protection Act 1990 , dust nuisance is defined as a statutory nuisance.

There are currently no standards or guidelines for dust nuisance in the UK, nor are formal dust deposition standards specified. This reflects the uncertainties in dust monitoring technology and the highly subjective relationship between deposition events, surface soiling and the perception of such events as a nuisance. In law, complaints about excessive dust deposition would have to be investigated by the local authority and any complaint upheld for a statutory nuisance to occur. However, dust deposition is generally managed by suitable on-site practices and mitigation rather than by the determination of statutory nuisance and/or prosecution or enforcement notice(s).

3 Policy and guidance

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

3.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF)[1] was revised in 2025 and sets the Government's planning policies with the purpose of achieving sustainable development. Paragraph 199 of the NPPF on air quality 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.'*

In addition, paragraph 110 states that:

> *'The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making.'*

Paragraph 187 discusses how planning policies and decisions should contribute to and enhance the natural and local environment. In relation to air quality, NPPF notes that this can be achieved 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.'*

[1] Ministry of Housing, Communities and Local Government (2019) National Planning Policy Framework

3.2 Clean Air Strategy

The Department for Environment, Food and Rural Affairs (Defra) Clean Air Strategy[2] was published in 2019 and sets targets for improving air quality across the country. It includes actions for reducing emissions from various sources, such as transport, domestic activities, farming and industry. There is also a long-term target for reducing population exposure to $PM_{2.5}$ concentrations to meet the World Health Organisation's (WHO) target of 10µg/m^3 as an annual mean (see Section 2.4).

3.3 Horsham District Planning Framework

Policy 24 of the Horsham District Planning Framework includes policies relating to air quality, this states

Policy 24 Strategic Policy: Environmental Protection

The high quality of the district's environment will be protected through the planning process and the provision of local guidance documents. Taking into account any relevant Planning Guidance Documents, developments will be expected to minimise exposure to and the emission of pollutants including noise, odour, air and light pollution and ensure that they:

……

4. Minimise the air pollution and greenhouse gas emissions in order to protect human health and the environment;

5. Contribute to the implementation of local Air Quality Action Plans and do not conflict with its objectives;

6. Maintain or reduce the number of people exposed to poor air quality including odour. Consideration should be given to development that will result in new public exposure, particularly where vulnerable people (e.g. the elderly, care homes or schools) would be exposed to the areas of poor air quality;

7. *Ensure that the cumulative impact of all relevant committed developments is appropriately assessed*.

3.4 Sussex-Air - Air quality and emissions mitigation guidance for Sussex

This document[3] provides advice on undertaking an air quality assessment for developments in Sussex. The main methodologies required are those described in relevant IAQM guidance (see Section 3.5). However there is an additional requirement for a Emissions Mitigation Assessment which essentially calculates the damage costs owing to pollutant emissions from transport associated with the development.

[2] Defra (2019) Clean Air Strategy 2019

[3] Sussex-Air, Air quality and emissions mitigation guidance for Sussex (2021)

3.5 Other relevant guidance

3.5.1 Institute of Air Quality Management Dust Guidance

The Institute of Air Quality Management (IAQM) guidance[4] provides guidance to development consultants and environmental health officers on how to assess air quality impacts from construction. The IAQM guidance provides a method for classifying the significance of effect from construction activities based on the 'dust magnitude' (high, medium or low) and proximity of the proposed development to the closest receptors. The guidance recommends that once the significance of effect from construction is identified, the appropriate mitigation measures are implemented. Experience has shown that once the appropriate mitigation measures are applied in most cases the resulting dust impacts can be reduced to negligible levels.

3.5.2 EPUK/IAQM Land-Use Planning & Development Control

The 2017 Land-Use Planning & Development Control guidance document[5] produced by Environmental Protection UK (EPUK) and the IAQM provides a framework for professionals operating within the planning system to provide a means of reaching sound decisions, having regard to the air quality implications of development proposals.

The document provides guidance on when air quality assessments are required by providing screening criteria regarding the size of a development, changes to traffic flows/composition energy facilities or combustion processes associated with the development. These criteria have been applied in this assessment.

[4] IAQM (2016) Guidance on the Assessment of Dust from Demolition and Construction (Version 1.1)
[5] EPUK/IAQM, (2017) Land-Use Planning & Development Control: Planning for Air Quality

4 Assessment Methodology

4.1 Scope of assessment

The overall approach to the air quality assessment comprises:

- a review of the existing air quality conditions at, and in the vicinity of, the site;
- an assessment of the potential changes in air quality arising from the construction activities and operation associated with the site; and
- emissions mitigation assessment.

4.1 Methodology of baseline assessment

Existing or baseline ambient air quality refers to the concentration of relevant substances that are already present in the environment. These are present from various sources, such as industrial processes, commercial and domestic activities, traffic and natural sources.

A desk-based review of the following data sources has been undertaken to determine baseline conditions of air quality in this assessment:

- HDC 2024 Air Quality Annual Status Report (the latest available on the HDC website at the time of writing, published June 2024); and
- The Defra UK Air Information Resource website (www.uk-air.gov.uk).

4.2 Methodology of construction phase assessment

The IAQM assessment method has been used to assess the impacts from dust on local sensitive receptors.

4.2.1 Construction dust assessment

The effects from demolition have been assessed using the qualitative approach described in the latest guidance by the IAQM.

An ‘impact’ is described as a change in pollutant concentrations or dust deposition, while an ‘effect’ is described as the consequence of an impact. The main impacts that may arise during construction of the site are:

- Dust deposition, resulting in the soiling of surfaces;
- Visible dust plumes;
- Elevated PM_{10} concentrations as a result of dust generating activities on site; and
- An increase in NO_2 and PM_{10} concentrations due to exhaust emissions from NRMM and vehicles accessing the site.

The IAQM guidance considers the potential for dust emissions from dust-generating activities, such as demolition of existing structures, earthworks, construction of new buildings and trackout. Earthworks refer to the processes of soil stripping, ground levelling, excavation and land capping, while trackout is the transport of dust and dirt from the site onto the public road network where it may be deposited and then re-suspended by vehicles using the network. This arises when vehicles leave the site with dusty materials, which may then spill onto the road, or when they travel over muddy ground on site and then transfer dust and dirt onto the road network.

For each of these dust-generating activities, the guidance considers three separate effects:

- Annoyance due to dust soiling;
- Harm to ecological receptors; and
- The risk of health effects due to a significant increase in PM_{10} exposure.

The receptors can be human or ecological and are selected based on their sensitivity to dust soiling and PM_{10} exposure. Sensitive receptors are defined as those properties/schools/hospitals that are likely to experience a change in pollutant concentrations and/or dust nuisance due to the construction of the site.

The methodology takes into account the scale to which the above effects are likely to be generated (classed as small, medium or large), along with the levels of background PM_{10} concentrations and the distance to the closest receptor, in order to determine the sensitivity of the area. This is then taken into consideration when deriving the overall risk for the site. Suitable mitigation measures are also proposed to reduce the risk of the site.

There are five steps in the assessment process described in the IAQM guidance. These are summarised below.

Step 1: Need for Assessment

The first step is the initial screening for the need for a detailed assessment. According to the IAQM guidance, an assessment is required where there are sensitive receptors within 350m of the site boundary (for ecological receptors that is 50m) and/or within 50m of the route(s) used by the construction vehicles on the public highway and up to 500m from the site entrance(s).

Step 2: Assess the Risk of Dust Impacts

This step is split into three sections as follows:

- 2A. Define the potential dust emission magnitude;
- 2B. Define the sensitivity of the area; and
- 2C. Define the risk of impacts.

Each of the dust-generating activities is given a dust emission magnitude depending on the scale and nature of the works (step 2A) based on the criteria shown in Table A1 (Appendix A)

The sensitivity of the surrounding area is then determined (step 2B) for each dust effect from the above dust-generating activities, based on the proximity and number of receptors, their sensitivity to dust, the local PM_{10} background concentrations and any other site-specific factors. Table A2 - A4 (Appendix A) show the criteria for defining the sensitivity of the area to different dust effects.

The overall risk of the impacts for each activity is then determined (step 2C) prior to the application of any mitigation measures (Table A5, Appendix A) and an overall risk for the site derived.

Step 3: Determine the Site-Specific Mitigation

Once each of the activities is assigned a risk rating, appropriate mitigation measures are identified. Where the risk is negligible, no mitigation measures beyond those required by legislation are necessary.

Step 4: Determine any Significant Residual Effects

Once the risk of dust impacts has been determined and the appropriate dust mitigation measures identified, the final step is to determine whether there are any residual significant effects. The IAQM guidance notes that it is anticipated that with the implementation of effective site-specific mitigation measures, the environmental effect will not be significant in most cases.

Step 5: Prepare a Dust Assessment Report

The last step of the assessment is the preparation of a dust assessment report. This forms part of this report.

4.3 Operational phase assessment methodology

A screening assessment was undertaken using the criteria contained in the EPUK/IAQM land-use guidance document[5] to determine potential local air quality effects associated with the Proposed Development.

EPUK/IAQM guidance document states the following criteria should be used to determine if a detailed air quality assessment is required:

- A change of Light Duty Vehicle flows of more than 500 Annual Average Daily Traffic (AADT) movements (or 100 if in or adjacent to an AQMA); and
- A change of Heavy Duty Vehicle flows of more than 100 AADT (or 25 AADT if within or adjacent to an AQMA) movements.

Where these criteria are not exceeded then a simple assessment without quantification of impacts is acceptable (Para 6.9 of the EPUK/IAQM guidance). Consideration has also been given to whether building emissions from the boiler are likely to be significant.

These criteria have been applied in this assessment.

4.4 Damage Cost Assessment

The methodology used is described in the Sussex-Air guidance, which is as follows:

The calculation uses the DEFRA Emissions Factor Toolkit to estimate the transport emissions from a proposed development, which is then used to estimate the associated health damage cost.

The emissions assessment and corresponding mitigation calculation follows this process:

1. Identify the trips/annum generated by the proposed development (this information will be available in the Transport Assessment, Transport Statement or TRICS database);

2. Assume an average distance travelled of 10km/trip;

3. Calculate the emissions of NOx and $PM_{2.5}$ (tonnes/annum) using the Emissions Factor Toolkit, and an assumption of an average speed of 50Km/h;

4. Look-up the latest HM Treasury and Defra IGCB damage costs and multiply the outputs from 3. above to provide a value of the emissions health damage, for each pollutant.

5. Multiply the calculated emissions health damage values by 5, to quantify emissions over a five-year period; and

6. Sum the NOx and $PM_{2.5}$ costs to provide a total health damage value.

5 The proposed development and its surroundings

The site is located between Tilletts Lane to the west and Threestile Road to the east. The existing site comprises open fields used for agriculture. The site boarded by agricultural land to the north; dwellings and a football field to the south; dwellings to the east; and, Tilletts Lane to the west.

The site is about 3.5 kilometres north west of the centre of Horsham. The location of the site is illustrated in Figure 1.

The proposal is for 59 new dwellings and a sketch layout of the proposal is shown in Figure 2. A Transport Assessment has been prepared by Bright Plan Ltd for the proposed development, this predicts an increase in vehicle in two way movements of 192 on Threestile Road and 91 on Tillets Lane (based on 12 hour flows).

Bright Plan Ltd has advised MBAL that a conversion factor of 1.624 can be used to convert 12 hour flows to AADT. Therefore the resulting AADT increases are 312 on Threestile Road and 148 on Tillets Lane.

6 Baseline environment

This section sets out the findings from the assessment of baseline air quality in the area. This information has been compiled from the 2024 HDC Air quality status report and from the Defra Air Information Resource Website.

There are two AQMAs declared within HDC, one in Cowfold and the other in Storrington, these are not close to the proposed development site and not expected to be affected by the proposals.

6.1 HDC Air Quality Status Report 2024 (ASR)

The ASR details the result of air quality monitoring from the automatic monitoring and diffusion tube in the area for the period 2019-2023.

HDC operate three automatic monitoring sites but none of these are located close to the proposed development.

There are also several diffusion tube sites which measure average nitrogen dioxide concentrations. None of these sites are located close to the development, there is one site north of Horsham (ID N Horsham 2N) located approximately 2km from the proposed development. This is a roadside diffusion tube site (and therefore concentrations recorded will be very specific to the local area). The results are shown in Table 2.

Table 2 Results of air quality monitoring – diffusion tube ID N Horsham 2N (µg/m^3)

Year	**2019**	**2020**	**2021**	**2022**	**2023**
Annual mean NO_2 concentration (µg/m^3)	17.3	15.8	14.6	14.1	14.1

The results show that recorded concentrations are well below 40µg/m^3.

6.2 Defra background maps

Defra provides predicted annual mean background pollutant concentrations for every 1km grid square in England and these are available on the Defra Air Information Resource Website. Data for 2025 was downloaded for NO_2, PM_{10} and $PM_{2.5}$ for the grid square 515500, 133500. This information is provided in Table 3.

Table 3 Background pollutant concentrations from Defra mapping (µg/m^3)

NO_2	**PM_{10}**	**$PM_{2.5}$**
7.8	11.0	6.8

As would be expected, these concentrations are well below the relevant standards.

6.3 Summary

Monitoring results at the diffusion tube site nearest to the proposed development and the Defra background maps show that concentrations are well below the relevant air quality standards. This would be expected given the location in a relatively rural area.

7 Assessment of construction and operational effects

7.1 Assessment of effects from construction

The proposed development will be constructed open land with a single small dwelling to be removed. Dust can be generated due to activities such as demolition, earthworks, construction and trackout (where mud is carried by vehicle wheels on the access roads). There will be no significant demolition and has therefore been scoped out of requiring further assessment.

7.1.1 Sensitive receptors

Receptors are defined as those properties that are likely to experience a change in pollutant concentrations and/or dust nuisance due to the construction of the proposed development. In this instance there are a small number of houses near the development although it is assumed that less than 10 would be within 50m of construction activities at any time.

There are no sensitive ecological receptors likely to be affected by this proposal, the nearest designated sites are the Warnham SSSI around 2.5km north east of the site and the Warnham Local Nature Reserve just under 2km ENE of the site [6].

7.1.2 Dust emission magnitude

Each dust-generating activity has been assigned a dust emission magnitude using a conservation approach. The dust emission magnitude for each activity is shown in Table 4.

Table 4 Assessment of dust emission magnitude

Activity	Dust emission magnitude	Reasoning
Earthworks	Medium	There are unlikely to be major earthworks but early in the development there may be open areas greater than 2500 m^2.
Construction	Medium	Construction will be by individual house with relatively small volume. Unlikely to be using significant quantities of potentially dusty materials. Possible use of on-site cement batching.
Trackout	Medium	10-50 HDV outward movements in any one day, unpaved road length 50-100m.

There are a small number of existing housing near the site, but there are less than 10 properties within 50m of construction activities.

Overall the sensitivity of the area to dust soiling is Low as defined in Table A2 owing to the small number of houses nearby.

The average Defra background PM_{10} concentration for the grid square where the proposed development is located (Table A3) is well below the 24µg/m^3 threshold in the IAQM guidance. The sensitivity of the area for health has therefore been assigned as Low.

[6] Information taken from https://magic.defra.gov.uk/ accessed 19/6/25

7.1.3 Risk of impacts

Taking into consideration the dust emission magnitude (medium) and the sensitivity of the area (low), the proposed development has been classified as low risk to dust soiling and low risk to human health impacts .

Specific mitigation to minimise risk of dust soiling and human health impacts of the proposed development is described in Section 7. Overall, the mitigation measures for low risk sites mitigation will be considered for the proposed development, however, some enhanced measures have been included to protect the housing near to the site entrance.

Table 5 Summary dust impact before mitigation

Activity	Risk of dust soiling	Human health risk
Earthworks	Low risk	Low Risk
Construction	Low risk	Low risk
Trackout	Low risk	Low risk

7.2 Operational impacts

The proposal will not result in an increase in AADT traffic flows above the thresholds in the EPUK/IAQM guidance. There are no significant air pollution sources within the proposed development. No operational impacts are therefore expected to arise from this development.

8 Mitigation Measures

8.1 Construction phase

The proposed development is considered to be a low-risk site for dust soiling, however, there are a small number of properties nearby, so some medium Risk mitigation measures have been included. The following mitigation measures from the IAQM guidance are relevant. The IAQM guidance notes that with the implementation of effective site-specific mitigation measures, the environmental effect will not be significant in most cases.

8.1.1 Communications

- 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.

8.1.2 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 exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.

8.1.3 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
- 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.

8.1.4 Preparing and maintaining site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the 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 actives 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.

8.1.5 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.

8.1.6 Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction.
- 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 such 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.

8.1.7 Waste management

- Avoid bonfires and burning of waste materials

8.1.8 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.
- Ensure bulk cement and other fine powder materials (if used) are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

8.1.9 Trackout

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

9 Emission Mitigation Assessment

There are a total increase in traffic of 460 AADT summing the changes on Threestile Road and Tilletts Lane.

The Sussex guidance requires that it is assumed that the average distance travelled is 10km at a speed of 50kph.

These values have been placed in the DEFRA Emission Factor Toolkit[7] using rural road type (not London) to calculate the annual link emissions. The resulting values are shown in Table 4.

Year	2026	2027	2028	2029	2030
NOx	309.31	272.25	236.66	203.14	172.5
PM2.5	30.17	29.59	29.09	28.66	28.28

Table 5 Calculated link emissions 2026-2030 (kg/yr)

The values obtained for 2023 damage costs[8] using central values are £31,972/tonne for $PM_{2.5}$ and £4,921/tonne for NOx. This have been used in combination with the values in Table 4 to calculate the damage costs as shown in Table 5.

Year	2026	2027	2028	2029	2030
Nox	£1,522.11	£1,339.74	£1,164.60	£999.65	£848.87
PM2.5	£964.60	£946.05	£930.07	£916.32	£904.17

Table 6 Calculated damage costs

This gives a total damage cost over five years of £10,536.18.

7 https://laqm.defra.gov.uk/air-quality/air-quality-assessment/emissions-factors-toolkit/ accessed 20/6/25
8 https://www.gov.uk/government/publications/assess-the-impact-of-air-quality/air-quality-appraisal-damage-cost-guidance#annex-a accessed 20/6/25

10 Summary

An assessment has been undertaken to examine the potential air quality impacts during construction and operation of a proposed residential development for 59 properties on land at Tilletts Lane, Warnham.

The impacts during construction have been assessed using the methodology detailed in the relevant IAQM guidance and appropriate mitigation measures detailed to reduce impacts to acceptable levels.

The expected traffic generation from the development is below the thresholds detailed in the EPUK/IAQM guidance and therefore the operational air quality impacts do not require a detailed assessment and the impacts would be expected to be negligible.

A damage cost assessment has been provided in accordance with the Sussex-Air guidance.

Figures

Figure 1 Site location - Source – Google Earth (not to scale)

Figure 2 - Schematic of proposed site layout

Appendix A – IAQM Construction Guidance Information

A1 Dust Emission Magnitude

Dust emission magnitude		
Small	**Medium**	**Large**
Demolition		
• total building volume <20,000m^3 • construction material with low potential for dust release (e.g. metal cladding or timber) • demolition activities <10m above ground • demolition during wetter months	• total building volume 20,000 - 50,000m^3 • potentially dusty construction material • demolition activities 10 - 20m above ground level	• total building volume >50,000m^3 • potentially dusty construction material (e.g. concrete) • on-site crushing and screening • demolition activities >20m above ground level
Earthworks		
• total site area <2,500m^2 • soil type with large grain size (e.g. sand) • <5 heavy earth moving vehicles active at any one time • formation of bunds <4m in height • total material moved <10,000 tonnes • earthworks during wetter months	• total site area 2,500m^2 - 10,000m^2 • moderately dusty soil type (e.g. silt) • 5 – 10 heavy earth moving vehicles active at any one time • formation of bunds 4 - 8m in height • total material moved 20,000 - 100,000 tonnes	• total site area >10,000m^2 • potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) • >10 heavy earth moving vehicles active at any one time • formation of bunds >8m in height • total material moved >100,000 tonnes
Construction		
• total building volume <25,000 m^3 • construction material with low potential for dust release (e.g. metal cladding or timber)	• total building volume 25,000 - 100,000m^3 • potentially dusty construction material (e.g. concrete) • on-site concrete batching	• total building volume >100,000m^3 • on-site concrete batching • sandblasting
Trackout		
• <10 HDV (>3.5t) outward movements in any one day • surface material with low potential for dust release • unpaved road length <50m	• 10 – 50 HDV (>3.5t) outward movements in any one day • moderately dusty surface material (e.g. high clay content) • unpaved road length 50 – 100m;	• >50 HDV (>3.5t) outward movements in any one day • potentially dusty surface material (e.g. high clay content) • unpaved road length >100m

A2 Sensitivity of the area to dust soiling effects

Receptor sensitivity	Number of receptors	Distance from the source (m)			
		< 20	< 50	< 100	< 350
High	> 100	High	High	Medium	Low
	10 – 100	High	Medium	Low	Low
	< 10	Medium	Low	Low	Low
Medium	> 1	Medium	Low	Low	Low
Low	> 1	Low	Low	Low	Low

A3 Sensitivity of the area to human health impacts

Background PM_{10} concentrations (annual mean)	Number of receptors	Distance from the source (m)				
		< 20	< 50	< 100	< 200	< 350
High receptor sensitivity						
> 32µg/m^3	> 100	High	High	High	Medium	Low
	10 – 100			Medium	Low	
	< 10		Medium	Low		
28 – 32µg/m^3	> 100	High	High	Medium	Low	Low
	10 – 100		Medium	Low		
	< 10					
24 – 28µg/m^3	> 100	High	Medium	Low	Low	Low
	10 – 100					
	< 10	Medium	Low			
< 24µg/m^3	> 100	Medium	Low	Low	Low	Low
	10 – 100	Low				
	< 10					
Medium receptor sensitivity						
> 32µg/m^3	> 10	High	Medium	Low	Low	Low
	< 10	Medium	Low			
28 – 32µg/m^3	>10	Medium	Low	Low	Low	Low
	1 -10	Low				
24 – 28µg/m^3	>10	Low	Low	Low	Low	Low
	1 -10					
< 24µg/m^3	>10	Low	Low	Low	Low	Low
	1 -10					
Low receptor sensitivity						
–	> 1	Low	Low	Low	Low	Low

A4 Sensitivity of the area for ecological impacts

Receptor sensitivity	Distance from the source (m)	
	< 20	< 50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

A5 Risk of dust impacts

Sensitivity of area	Dust emission magnitude		
	Large	Medium	Small
Demolition			
High	High risk site	Medium risk site	Medium risk site
Medium	High risk site	Medium risk site	Low risk site
Low	Medium risk site	Low risk site	Negligible
Earthworks			
High	High risk site	Medium risk site	Low risk site
Medium	Medium risk site	Medium risk site	Low risk site
Low	Low risk site	Low risk site	Negligible
Construction			
High	High risk site	Medium risk site	Low risk site
Medium	Medium risk site	Medium risk site	Low risk site
Low	Low risk site	Low risk site	Negligible
Trackout			
High	High risk site	Medium risk site	Low risk site
Medium	Medium risk site	Low risk site	Negligible
Low	Low risk site	Low risk site	Negligible