

Air Quality Assessment

Horebeech Lane, Horam

February 2018



Horebeech Lane (Southside), Horam, TN21 0HR
Air Quality Assessment

February 2018

Chailey Homes

10 Cophall Farm Business Park

Effingham Road

Copthorne

West Sussex

RH10 3HZ

	Name	Date
Written By	Patrick Nolan	15/02/18
Checked By	Nigel Jenkins	19/02/2018
Authorised By	Nigel Jenkins	19/02/2018

This report has been prepared for the exclusive use of the commissioning party and may not be reproduced without prior written permission from Phlorum Limited.

All work has been carried out within the terms of the brief using all reasonable skill, care and diligence.

No liability is accepted by Phlorum for the accuracy of data or opinions provided by others in the preparation of this report, or for any use of this report other than for the purpose for which it was produced.

Contents

1. Introduction 1
2. Policy Context 2
3. Baseline 7
4. Assessment Methodology 12
5. Construction Phase Impacts 18
6. Operational Phase Impacts 24
7. Discussion 29
8. Conclusions 30

Figure 1 – Site Location Plan

Figure 2 – Construction Phase Receptors

Figure 3 – Operational Phase Receptors

Figure 4 – Daily Traffic Flow Diagram

Appendix A – EPUK & IAQM Significance Criteria

Appendix B – Model Verification Study

Appendix C – IAQM Highly Recommended Mitigation Measures

1. Introduction

1.1 Phlorum Ltd has been commissioned by Chailey Homes to undertake an air quality assessment for a residential development at Horebeech Lane, Horam, East Sussex, TN21 0HR. The National Grid Reference for the centre of the site is 558385, 116795. A site location plan is shown in Figure 1.

1.2 The proposed development comprises the construction of 58 residential units.

1.3 The application site is an area of greenfield land located on the eastern outskirts of Horam, approximately 1.5km north-east of Horam Park. The site is bounded by Horebeech Lane to the north and The Cuckoo Trail Path to the south. Beyond these physical barriers, land use is dominated by farmland.

1.4 The main sources of air pollution within the vicinity of the application site are vehicles travelling on the local road network, particularly Horebeech Lane.

1.5 Wealden District Council (WDC) has not declared any Air Quality Management Areas (AQMA), due to previous Local Air Quality Management (LAQM) assessments indicating that there were no exceedances of UK Air Quality Standards (AQS) within the district.

2. Policy Context

The UK Air Quality Strategy (UKAQS)

2.1 The UKAQS[1] sets a number of "air quality standard" (AQS) concentrations for a number of key pollutants that are to be achieved at sensitive receptor locations across the UK by various "objective" dates. The sensitive locations at which the standards and objectives apply are places where the population is expected to be exposed to the various pollutants over the particular averaging period. Thus for those objectives to which an annual mean standard applies, the most common sensitive receptor locations used to measure concentrations against the set standards are areas of residential housing, since it is reasonable to expect that people living in their homes could be exposed to pollutants over such a period of time. Schools and children's playgrounds are also often used as sensitive locations for comparison with annual mean objectives due to the increased sensitivity of young people to the effects of pollution (regardless of whether or not their exposure to the pollution could be over an annual period). For shorter averaging periods of between 15 minutes, 1 hour or 1 day, the sensitive receptor location can be anywhere where the public could be exposed to the pollutant over these shorter periods of time.

2.2 The objectives adopted in the UK are based on the Air Quality (England) Regulations 2000[2], as amended, for the purpose of Local Air Quality Management. These Air Quality Regulations have been adopted into UK law from the limit values required by European Union Daughter Directives on air quality.

2.3 Obligations under the Environment Act 1995 require local authorities to declare an AQMA at sensitive receptor locations where an objective concentration has been predicted to be exceeded. In setting an AQMA, the local authority must then formulate an Air Quality Action Plan (AQAP) to seek to reduce pollution concentrations to values below the AQS levels.

2.4 No AQMAs have been declared by WDC.

1 Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volumes 1 and 2) July 2007.
2 The Air Quality (England) (Amendment) Regulations 2002 - Statutory Instrument 2002 No.3043.

National Planning Policy Framework (NPPF)

2.5 The NPPF, which was published in March 2012, sets out the Government's planning policy for England. At its heart is an intention to promote more sustainable development. A core principle in the NPPF that relates to air quality effects from development is that planning should "contribute to conserving and enhancing the natural environment and reduce pollution". In achieving this, it states in paragraph 109 that:

"The planning system should contribute to and enhance the natural and local environment by: [...]

preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability [...]".

2.6 With regard to assessing cumulative effects the NPPF states the following at paragraph 120:

"To prevent unacceptable risks from pollution and land instability, planning policies and decisions should ensure that new development is appropriate for its location. The effects (including cumulative effects) of pollution on health, the natural environment or general amenity, and the potential sensitivity of the area or Proposed Development to adverse effects from pollution, should be taken into account".

2.7 The NPPF offers a broad framework, but does not afford a detailed methodology for assessments. Specific guidance for air quality continues to be provided by organisations such as the Department for Environment, Food and Rural Affairs (Defra), Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM).

National Planning Practice Guidance (PPG)

2.8 Reference ID 32 (Air Quality) of the National Planning Practice Guidance (PPG)[3], which was updated in March 2014, provides guiding principles on how planning can take account of the impact of new development on air quality. The PPG summarises the importance of air quality in planning and the key legislation relating to it.

2.9 As well as describing the importance of International, National and Local Policies (detailed elsewhere in this report), it summarises the key sources of air quality information. It also explains when air quality is likely to be relevant to a planning decision:

"Whether or not air quality is relevant to a planning decision will depend on the Proposed Development and its location. Concerns could arise if the development is likely to generate air quality impact in an area where air quality is known to be poor. They could also arise where the development is likely to adversely impact upon the implementation of air quality strategies and action plans and/or, in particular, lead to a breach of EU legislation (including that applicable to wildlife) […]

When deciding whether air quality is relevant to a planning application, considerations could include whether the development would:

- *Significantly affect traffic in the immediate vicinity of the Proposed Development site or further afield. This could be by generating or increasing traffic congestion; significantly changing traffic volumes, vehicle speed or both; or significantly altering the traffic composition on local roads. Other matters to consider include whether the proposal involves the development of a bus station, coach or lorry park; adds to turnover in a large car park; or result in construction sites that would generate Heavy Goods Vehicle flows over a period of a year or more.*

- *Introduce new point sources of air pollution. This could include furnaces which require prior notification to local authorities; or extraction systems (including chimneys) which require approval*

3 Planning Practice Guidance (PPG) 32. (2014). Air Quality. http://planningguidance.planningportal.gov.uk/blog/guidance/air-quality/.

under pollution control legislation or biomass boilers or biomass-fuelled CHP plant; centralised boilers or CHP plant burning other fuels within or close to an air quality management area or introduce relevant combustion within a Smoke Control Area.

- *Expose people to existing sources of air pollutants. This could be by building new homes, workplaces or other development in places with poor air quality.*

- *Give rise to potentially unacceptable impact (such as dust) during construction for nearby sensitive locations.*

- *Affect biodiversity. In particular, this is likely to result in deposition or concentration of pollutants that significantly affect a European-designated wildlife site, and is not directly connected with or necessary to the management of the site, or does it otherwise affect biodiversity, particularly designated wildlife sites."*

2.10 Details are also provided of what should be included within an air quality assessment. Key considerations include:

- Baseline local air quality;
- Whether the proposed development could significantly affect local air quality during construction/operation; and
- Whether the development is likely to expose more people to poor air quality.

2.11 Examples of potential air quality mitigation measures are also provided in the PPG.

Local Planning Policy

2.12 WDC are currently working on producing a revised Wealden Local Plan which will direct planning permission in the district. Currently, local planning policy follows Sussex Air Quality Partnership (SAQP) air quality guidance, of which WDC are a member.

2.13 The Air Quality and Emissions Mitigation Guidance for Sussex (2013)[4] support the principles of the SAQP to improve air quality across Sussex and encourage emissions reductions to improve the environment and health of the population. This guidance aims to:

- *Enable early engagement, highlighting the points that need to be considered and addressed prior to making a planning application and therefore minimise any potential delays during the decision making process.*

- *Offer clear and consistent guidance to developers on the level of information that will be required to be submitted with planning applications for developments that are likely to have an impact on local air quality.*

- *Ensure better regulation by setting out the approach to undertaking air quality assessments and determining mitigation, and applying these consistently in planning decisions.*

2.14 WDC is committed to protecting the Ashdown Forest Special Area of Conservation (SAC), and they are currently formulating new guidelines for those submitting planning applications for developments within the district. WDC explain, via their website[5], that they are currently:

"...obliged to assess all development which would, either alone or in combination with other development, increase the level of nitrogen deposition on the Ashdown Forest SAC. When considering nitrogen deposition the focus will be on the emissions from motorised vehicular traffic."

[4] Sussex Air Quality Partnership. (2014). Air quality and emissions mitigation guidance for Sussex (2013).
[5] Wealden District Council. http://www.wealden.gov.uk/Wealden/Planning_and_Building_Control/Planning_Development_Management/Agents_and_Parish_Council_Information/Planning_Agents_Ashdown_Forest.aspx (accessed 12/02/2018)

3. Baseline

3.1 This chapter is intended to establish prevailing air quality conditions in the vicinity of the application site.

UK-AIR Background Pollution

3.2 Defra provides estimated background concentrations of the UKAQS pollutants at the UK Air Information Resource (UK-AIR) website[6]. These estimates are produced using detailed modelling tools and are presented as concentrations at central 1km^2 National Grid square locations across the UK. At the time of writing, the most recent background maps were from November 2017 and based on monitoring data from 2015.

3.3 Being background concentrations, the UK-AIR data are intended to represent a homogenous mixture of all emissions sources in the general area of a particular grid square location. Concentrations of pollutants at various sensitive receptor locations can, therefore, be calculated by modelling the emissions from a nearby pollution source, such as a busy road, and then adding this to the appropriate UK-AIR background datum.

3.4 The predicted background pollution concentrations for nitrogen dioxide (NO_2) and particulates (PM_{10}) for 2016 to 2018 are presented in Table 3.1. These data were taken from the central grid square location closest to the application site (i.e. grid reference: 558500, 116500) and are compared to the required AQS concentrations.

Table 3.1: 2016 to 2018 background concentrations of pollutants at the application site

Pollutant	Predicted background concentration (µg.m^{-3})			Averaging period	Air quality standard concentration (µg.m^{-3})
	2016	2017	2018		
NO_2	7.4	7.2	7.0	annual mean	40
PM_{10}	11.5	11.4	11.3	(gravimetric) annual mean	40

6 Defra: UK-AIR. www.uk-air.defra.gov.uk (accessed 09/02/2018).

3.5 The data in Table 3.1 show that annual mean background concentrations of NO_2 and PM_{10} in the vicinity of the application site between 2016 and 2018 were predicted to be well below their respective AQSs. The data show that in 2018, NO_2 and PM_{10} concentrations were predicted to be below the AQS by 82% and 72%, respectively.

3.6 Concentrations of both pollutants were predicted to decline each year, which is principally due to the forecast effect of cleaner, more efficient vehicles being introduced to the national fleet. It is noted that such improvements have not been universally realised.

Local Sources of Monitoring Data

3.7 Monitoring at background locations is considered an appropriate source of data for the purposes of describing baseline air quality.

Automatic Monitoring

3.8 There are two continuous automatic Air Quality Monitoring Station (AQMS) sites in Wealden District. WDC operate one rural background site in Isfield which only monitors ozone (O_3) and there is also a national Automatic Urban and Rural Network (AURN) AQMS at Lullington Heath. The Lullington Heath AURN AQMS is a rural background site which measures NO_2, O_3 and Sulphur dioxide (SO_2).

3.9 The closest relevant urban background AQMS which monitors NO_2 and PM_{10} are to the south in Eastbourne. The sites are Holly Place AURN (EB3) AQMS and Devonshire Park (EB1) AQMS.

3.10 The most recent data available from Holly Place AURN (EB3) and Devonshire Park (EB1) are included in Table 3.2 and Table 3.3. Note that data from EB1 was not available in 2015.

Table 3.2: NO_2 data from urban background AQMS

Monitor	Type	Distance from the application site (km)	NO_2 annual mean concentration ($\mu g.m^{-3}$)		
			2013	2014	2015
Holly Place AURN (EB3)	UB	13.8	17	12	10.6
Devonshire Park (EB1)	UB	18.6	13	14	-

Note: "UB" = urban background.

3.11 The data in Table 3.2 show that annual mean concentrations of NO_2, in recent years at the above monitoring sites, have been consistently well below the 40µg.m^{-3} AQS. The most recent results were below the AQS by 73%. Holly Place AURN measures the 'urban background' and is comparable to, but higher than, the predictions made by UK-AIR in Table 3.1. The monitor is, however, located around 13.8km from the application site, in a more urban setting.

Table 3.3: PM_{10} data from urban background automatic monitors AQMS

Monitor	Type	Distance from the application site (km)	PM_{10} annual mean concentration (µg.m^{-3})		
			2013	2014	2015
Holly Place AURN (EB3)	UB	13.8	23	19	18.1
Devonshire Park (EB1)	UB	18.6	26	20	-

Note: "UB" = urban background.

3.12 The data in Table 3.3 show that annual mean concentrations of PM_{10}, in recent years at the above monitoring sites, has been consistently well below the 40µg.m^{-3} AQS. The most recent results were below the AQS by at least 55%. The data from both sites are comparable to the predictions made by UK-AIR; however, neither site is reflective of the conditions at the application site, which is more akin to a "rural" location.

Non-Automatic Monitoring

3.13 WDC operates an extensive non-automatic, NO_2 diffusion tube monitoring network across the area. With the exception of two urban background sites, all diffusion tubes are situated at roadside locations. The most recent available monitoring data for diffusion tubes run by WDC are included in Table 3.4.

Table 3.4: Monitoring data from WDC NO_2 diffusion tubes

Monitor (Site ID)	Type	Distance from the application site (km)	NO_2 annual mean concentration ($\mu g.m^{-3}$)		
			2013	2014	2015
A267 E of Cross in Hand (W7)	R	5.1	**45.9**	**44.4**	38.4
A22 W of Boship roundabout (W8)	R	5.8	36.7	35.7	31.3
London Road, Hailsham (W6)	R	6.9	22.3	28.3	26.1
Uckfield Background (W3)	UB	11.6	12.8	14.9	14.6
Uckfield Town Centre (W4)	R	11.8	22.8	28.9	29.9
Eastbourne Road, Polegate (W5)	R	12.2	25.4	30.5	30.0
Crowborough Background (W1)	UB	14.8	12.1	13.1	13.1
Crowborough Town Centre (W2)	R	15.6	20.4	25.9	22.5

Note: "R" = roadside, "UB" = urban background; **Bold** denotes exceedance of the AQS.

3.14 The data in Table 3.4 show that annual mean concentrations of NO_2 vary greatly at roadside locations throughout Wealden. Between 2013 and 2015, annual mean concentrations of NO_2 ranged from 70% below to 14% above the $40\mu g.m^{-3}$ AQS. None of these monitors are considered to be representative of conditions at the application site due to the distance between monitors and the site, and the sites rurality.

3.15 The nearest background measurement site, W3, is located 11.6km from the site. Although recorded concentrations are higher than the background figures predicted by UK-AIR, it does not represent background conditions at the site. This is due to the monitor being a significant distance from the site and monitoring in a more urban location than the site.

3.16 To ensure conservative predictions of pollutant concentrations, no reduction has been applied to the annual mean background NO_2 and PM_{10} concentrations used in this assessment for future years.

3.17 WDC monitoring data was concluded to be too unrepresentative of the application site; as such background concentrations from UK-AIR have been used in this assessment and are included in Table 3.5.

Table 3.5: Background annual mean concentrations used in this assessment

Pollutant	Concentration ($\mu g.m^{-3}$)	Data Source
NO_2	7.0	UK-AIR (2018)
PM_{10}	11.3	UK-AIR (2018)

4. Assessment Methodology

Guidance

4.1 Local Air Quality Management Technical Guidance 2016 (LAQM.TG(16))[7] was followed in carrying out this assessment. Guidance published by the IAQM[8] on the *'Assessment of Dust from Demolition and Construction'* was also used when assessing the construction phase of the proposed development. The Greater London Authority (GLA) Supplementary Planning Guidance[9] on the control of dust from construction has also been referred to, which, although primarily intended for use in London, is considered best practice guidance for the UK. It details a number of mitigation measures that should be adopted to minimise impacts of dusts and fine particles.

4.2 The latest Environmental Protection UK (EPUK) & IAQM guidance on *'Planning for Air Quality'*[10] was also referred to for the operational phase assessment. The criteria used to determine the significance of impact were derived from this guidance, and have been included in Appendix A.

Construction Phase

4.3 The construction phase of the proposed development will involve a number of activities that could potentially produce polluting emissions to air. Predominantly, these will be emissions of dust. However, they could also include releases of odours and/or more harmful gases and particles.

7 Defra. 2016. Part IV of the Environment Act 1995, Environment (Northern Ireland) Order 2002 Part III, Local Air Quality Management, Technical Guidance LAQM. TG(16). London: Defra.
8 IAQM. (2014). Guidance on the assessment of dust from demolition and construction.
9 Greater London Authority. (2014). The Control of Dust and Emissions During Construction and Demolition.
10 EPUK & IAQM. (2017). Land-Use Planning & Development Control: Planning For Air Quality.

4.4 The IAQM's guidance to assess the impacts of construction on human and ecological receptors has been followed in carrying out this air quality assessment. The guidance suggests that where a receptor is located within 350m of a site boundary and/or 100m of a route used by construction vehicles, up to 500m from the site entrance, a dust assessment should be undertaken. Highly sensitivity receptors are considered particularly sensitive when located within 20m of a works area. Figure 2 shows receptors that could be sensitive to dust that are located within 350m of the boundaries of the site.

4.5 Review of the Multi Agency Geographic Information for the Countryside (MAGIC) website[11], which incorporates Natural England's interactive maps, has identified one ecological sensitive receptor within 1km of the application site, the High Weald area of outstanding natural beauty (AONB). There are however, a number of SSSI's located within the AONB due north of the site, namely Sapperton Meadows, St. Dunstan's Farm Meadows, Heathfield Park, Binglett's Wood, Dallington Forest and Willingford Meadows. The closest of these sites is approximately 2.75km north, whilst the furthest away is approximately 9km north-east. It can be concluded, based on distance alone, that the proposed development will have a *Negligible* impact on the AONB and the SSSI's.

4.6 The annual mean concentration of PM_{10} is well below the AQS, according to the UK-AIR background maps. This provides a good indication that PM_{10} concentrations for both annual mean and daily mean concentrations are likely to be below the respective AQSs at the application site and adjacent uses.

4.7 The IAQM guidance suggests that Demolition, Earthworks, Construction and Trackout should all be assessed individually to determine the overall significance of the construction phase.

Construction Significance

4.8 In the IAQM dust guidance, the first step in assessing the risk of impacts is to define the potential dust emission magnitude. This can be considered 'Negligible', 'Small', 'Medium' or 'Large' for each of the construction stages. Whilst the IAQM provides examples of criteria that may be used to assess these magnitudes, the vast number of potential variables mean that every site is different and therefore professional judgement must be applied by what the IAQM refer to as a "technically competent assessor". The construction phase assessment therefore relies on the experience of the appraiser.

4.9 As such, attempts to define precisely what constitutes a negligible, small, medium or large dust emission magnitude should be treated with caution. Factors such as the scale of the work, both in terms of size and time, the construction materials and the plant to be used must be considered.

11 Natural England and MAGIC partnership organisations. Multi Agency Geographic Information for the Countryside. http://www.magic.gov.uk/ (accessed 07/02/2018).

4.10 The second step is to define the sensitivity of the area around the construction site. As stated in the IAQM guidance:

"the sensitivity of the area takes into account a number of factors:

- *the specific sensitivities of receptors in the area;*
- *the proximity and number of those receptors;*
- *in the case of PM_{10}, the local background concentrations; and*
- *site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust."*

4.11 Based on these factors, the area is categorised as being of 'Low', 'Medium' or 'High' sensitivity.

4.12 When dust emission magnitudes for each stage and the sensitivity of the area have been defined, the risk of dust impacts can be determined. The IAQM provides a risk of impacts matrix for each construction stage. The overall significance for the construction phase can then be judged from the stages assessed. Again, this is subject to professional judgement.

4.13 Combustion exhaust gases from diesel-powered plant and construction vehicles accessing the application site will also be released. However, the volumes and periods over which these releases will occur are unlikely to result in any significant peaks in local air pollution concentrations and therefore this has been scoped out of the assessment.

Operational Phase

Vehicle Emissions

4.14 Vehicle emissions will arise from the combustion of fossil fuels in vehicle engines and their subsequent release to atmosphere via tailpipe exhausts. The most significant pollutants released by cars and other vehicles are oxides of nitrogen (NO_2 + NO known as NO_x) and fine particulate matter (PM_{10} and $PM_{2.5}$). Releases of carbon monoxide (CO) and some volatile hydrocarbons (e.g. benzene and 1,3-butadiene) are of less significance and are not assessed further in this report.

4.15 As it is elevated annual mean concentrations of NO_2 and PM_{10} that have resulted in the declaration of most AQMAs across the UK, these are the pollutants of most concern and they have therefore been the focus of this air quality assessment.

ADMS-Roads Assessment

4.16 In order to determine the potential exposure of existing receptors in the opening year of 2019, emissions from local roads have been assessed using a detailed air dispersion model. The model used was ADMS-Roads (version 4.1.1), which is produced by CERC and has been validated and approved by Defra for use as an assessment tool for calculating the dispersion of pollutants from traffic on UK roads. The latest Defra Emissions Factor Toolkit (EFT)[12] was used within the model to estimate vehicle emissions.

4.17 Detailed, hourly sequential, meteorological data are used by the model to determine pollutant transportation and levels of dilution by the wind and vertical air movements. Meteorological data used in the model were obtained from Herstmonceaux in East Sussex, as it was considered to provide the most representative data of similar conditions to the application site. The meteorological data used for this assessment were from 2016, and the surface roughness applied to the model for the meteorological station and application site was 0.5m, which is typically used for suburban areas.

4.18 Modelled receptor locations are indicated on Figure 3. Discrete model receptors were positioned at the façades of existing sensitive receptors closest to the main pollution sources. These are considered worst-case locations, as pollutant concentrations would be expected to reduce further inside the properties with increased distance from the roads.

4.19 Details of the receptors are included in Table 4.1, below. All receptors were modelled at "breathing height", which is by convention 1.5m above ground level. The modelled receptor points are indicated in Figure 3 and detailed in Table 4.1 below.

Table 4.1: Modelled receptors

Receptor ID	Location	UK Grid Reference (m)		Modelled Height (m)
		x	y	z
R1	House opposite Laundry Lane - Horebeech Lane junction	558610.25	116817.28	1.5

[12] Defra. (2017). Emissions Factor Toolkit v8.0.1

R2	House on Horebeech Lane (next to site)	558350.13	116897.14	1.5
R3	Old Farm, Horebeech Lane	558094.36	116986.74	1.5
R4	Opposite Old Farm, Horebeech Lane	558065.95	116979.11	1.5
R5	Junction of Horebeech Lane and A267	557689.11	117161.78	1.5
R6	House on A267, opposite Horam Manor Farm	557683.11	117230.91	1.5
R7	Opposite junction of Horebeech Lane and A267	57659.09	117176.70	1.5
R8	House on A267, opposite Horam Village Hall	557601.24	116982.96	1.5

Note: Grid references are indicative as the model layout is based on Ordnance Survey base mapping which does not accurately portray the width or position of roads. The receptor points are adjusted to be the correct distance from the kerb of the modelled roads.

4.20 Traffic data used in the assessment were provided by the project's Transport Consultant, Russell Giles Partnership Limited (RGP). All modelled road links are shown in Figure 3 with traffic data presented as annual average daily traffic (AADT) presented in Table 4.2.

Table 4.2: Traffic data

Road Name	AADT 2016	AADT 2019
Horebeech Lane (east of development)	909	936
Horebeech Lane (west of development)	909	1,128
A267 (North of Horebeech Lane)	6,264	6,384
A267 (South of Horebeech Lane)	6,264	6,360

Note: The 2016 data represents AADT volumes for 2016 baseline and 2019 "without development" AADT volumes as recommended by RGP.

4.21 The traffic data provided by RGP indicated the developments contribution to the local road network reflected typical trip contributions for this type of residential development. See Figure 4 for the daily traffic flow diagram for the development.

4.22 Further modelled traffic analysis undertaken by RGP indicated that only 3 daily trips in and out of the development would be added to the A26 toward the Ashdown Forest SAC. This contribution of traffic to the A26 is extremely low and considered unlikely to impact on the SAC.

4.23 The following traffic scenarios were modelled:

- 2016 Model Verification;
- 2016 Baseline; and
- 2019 With Development

4.24 It should be noted that a future scenario without the development has not been modelled as there are no committed developments in close proximity that could have the potential to cause a cumulative impact.

Model Verification

4.25 It is recommended, following guidance set out in LAQM.TG(16)[7], that the model results be compared with measured data to determine whether they need adjusting to more accurately reflect local air quality. This process is known as verification and reduces the uncertainty associated with local effects on pollution dispersion and allows the model results to be more site-specific.

4.26 A verification study has been undertaken using local authority monitoring data from around Wealden. Full details of this study are included in Appendix B. The model was found to be under-predicting concentrations, which is not unusual, and therefore an adjustment factor of 2.60 was applied to the model results.

Consultation

4.27 An email was sent to WDC's Senior Pollution Control Officer (SPCO) in February 2018 regarding the proposed scope of assessment. The SPCO confirmed that the proposed scope was acceptable, based the size and location of the development site.

5. Construction Phase Impacts

5.1 The construction phase of the proposed development will involve a number of activities that could produce polluting emissions to air. Predominantly, these will be emissions of dust.

5.2 The estimates for the dust emission magnitude for demolition, earthworks, construction and trackout below are, where appropriate, based on the construction information provided by the client and professional experience of Phlorum staff.

Dust Emission Magnitude

Demolition

5.3 The proposed development does not require any demolition works to be undertaken. As such, the potential dust emission magnitude of this activity does not need to be considered.

Earthworks

5.4 The site is considered 'Large' with reference to the IAQM guidance, as it has an area of >10,000m^2.

5.5 The amount of earth proposed to be moved during the earthworks is <10,000 tonnes, with less than 5 earth moving vehicles operating on site at any one time. These both fall into the IAQM's 'Small' category.

5.6 No bunds are to be formed onsite during this phase of the development.

5.7 When taking into account the small amount of earth that is expected to be moved and the low number of heavy earth moving vehicles, coupled with the size of the site, the overall dust emission magnitude for the earthworks stage is considered to be *Medium*.

5.8 The site is not known to be contaminated. However, the potential impacts of any contamination will be covered in a separate report if required.

Construction

5.9 During construction, activities that have the potential to cause emissions of dust may include concrete batching and sandblasting; although it has not been stated whether any of these are anticipated for the proposed development. Localised use of cement powder and general handling of construction materials will also have the potential to generate dust. Furthermore, windblow from stockpiles of friable materials also has the potential to cause dust emissions.

5.10 The primary construction methods will include traditional concrete trench fill foundations, cavity masonry walls and pitched roofs. These methods and construction materials have a low to medium potential for releasing dust emissions.

5.11 The total building volume across the site will be less than 25,000m^3; this falls into the IAQM's 'Small' dust emission category. The overall dust emission magnitude for the construction stage is considered to be *Small.*

Trackout

5.12 Construction traffic, when travelling over soiled road surfaces, has the potential to generate dust emissions and to also add soil to the local road network. During dry weather, soiled roads can lead to dust being emitted due to physical and turbulent effects of vehicles. It is not thought that any unpaved road surfaces will be utilised during construction. The main entrance to the site will be via Horebeech Lane on the south side of the road, adjacent to Old Orchard House.

5.13 As well as the type of road surface, the number of daily heavy duty vehicles (HDVs) accessing the site is used to determine dust emission magnitude during construction: <10 Small; 10-50 Medium; and >50 Large. The number of HDVs accessing the site is expected to be <10, falling into the 'Small' IAQM category. Overall the dust emission magnitude for the trackout phase is considered to be *Small*.

Emission Magnitude Summary

5.14 A summary of the dust emission magnitude as a result of the activities of Earthworks, Construction and Trackout as specified in the IAQM guidance, and discussed above, are listed in Table 5.1 below. Overall, the dust emission magnitude is considered to be *Small.*

Table 5.1: Dust Emission Magnitude for the construction activities, based on the IAQM's guidance

Activity	Dust Emission Magnitude
Earthworks	Medium
Construction	Small
Trackout	Small

Sensitivity of the Area

5.15 Having established the emission magnitude for dust above, the sensitivity of the area must be considered to establish the significance of effects. The effect of dust emissions depends on the sensitivity of each receptor. High sensitivity human receptors include residential dwellings, schools and hospitals.

5.16 The impacts of dust emissions from the sources discussed above have the potential to cause an annoyance to human receptors living in the local area. Within distances of 20m of the site boundary there is a high risk of dust impacts, regardless of the prevailing wind direction. Up to 100m from the construction site, there may still be a high risk, particularly if the receptor is downwind of the dust source.

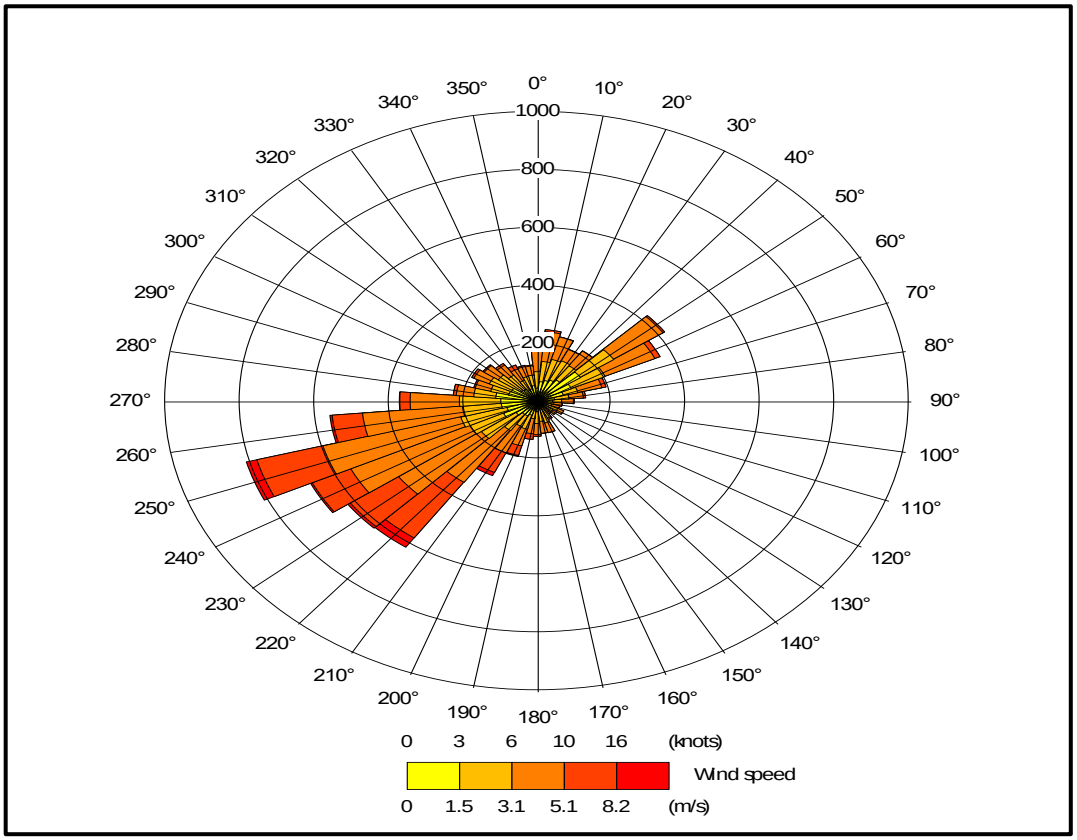
5.17 With the exponential decline in dust with distance from dust generating activities, it is considered that for receptors more than 350m from the site boundary, the risk is negligible. Furthermore, the risks at over 100m only have the potential to be significant in certain weather conditions, e.g. downwind of the source during dry periods.

5.18 The approximate number of high sensitivity human receptors in the vicinity of the application site is detailed in Table 5.2 below and shown in Figure 2.

Table 5.2: Approximate number of High Sensitivity Human Receptors close to the application site

Distance to site (m)	Approximate number of receptors	Receptor Details
<20	1	Single residential dwelling on Horebeech Lane (east)
20-100	10	Residential dwellings on Horebeech Lane, east and west
100-350	120	Various residential, including Woodland View Touring Park

Plate 5.1: Wind Rose for Herstmonceux, 2016



5.19 Plate 5.1 shows that the prevailing wind is from the south-west. As shown in Figure 2, there are few residential dwellings to the north-east, downwind, of the application site. There are less than 10 receptors within 50m of the site, this falls into the IAQM 'low' category for sensitivity of the area. As such, the sensitivity of the area to dust soiling impacts is defined as *Low*.

5.20 With regard to the SSSI's in the area, ecological receptors are not considered to be as sensitive to dust as human receptors. Furthermore, the closest of these sites is 2.75km from the application site. As such, the ecological sensitivity of the area to dust soiling impacts is considered *Negligible.*

Risk of Impacts

5.21 Having established the likely dust emission magnitudes and sensitivity of the area, the risk of impacts can be determined in accordance with the IAQM guidance. These are summarised in Table 5.3.

Table 5.3: Summary of Impact Risk by Construction Stage based on the IAQM's dust guidance

Stage	Impact Risk		
	Nuisance Dust	Ecology	PM_{10}
Earthworks	Low	Negligible	Low
Construction	Low	Negligible	Low
Trackout	Low	Negligible	Low

5.22 Overall, the development is considered to be *Low Risk* for nuisance dust soiling effects, *Low Risk* for PM_{10} health effects and to be of Negligible Risk for ecology, in the absence of mitigation.

Site Specific Mitigation

5.23 The GLA guidance suggests a number of mitigation measures that should be adopted in order to minimise impacts from dusts and fine particles. Appropriate measures that could be included in the construction of the proposed development include:

- ideally cutting, grinding and sawing should not be conducted on-site and pre-fabricated material and modules should be brought in where possible;
- where such work must take place, water suppression should be used to reduce the amount of dust generated;
- skips, chutes and conveyors should be completely covered and, if necessary, enclosed to ensure that dust does not escape;
- no burning of any materials should be permitted on site;
- any excess material should be reused or recycled on-site in accordance with appropriate legislation;
- developers should produce a waste or recycling plan;
- following earthworks, exposed areas and soil stockpiles should be re-vegetated to stabilise surfaces, or otherwise covered with hessian or mulches;
- stockpiles should be stored in enclosed or bunded containers or silos and kept damp where necessary;
- hard surfaces should be used for haul routes where possible;

- haul routes should be swept/washed regularly;
- vehicle wheels should be washed on leaving the site;
- all vehicles carrying dusty materials should be securely covered; and
- delivery areas, stockpiles and particularly dusty items of construction plant should be kept as far away from neighbouring properties as possible.

5.24 In addition, the IAQM lists recommended mitigation measures for low, medium and high Dust Impact Risks. The highly recommended mitigation measures for Low Risk sites are included in Appendix C of this report.

5.25 Where dust generation cannot be avoided in areas close to neighbouring properties, additional mitigation measures should be put in place, such as: windbreaks, sprinklers, and/or time/weather condition limits on the operation of some items of plant or the carrying out of activities that are likely to generate a particularly significant amount of dust.

5.26 There is only one residential property in close enough proximity to the site to render this worthwhile, and that house is situated on the north-eastern corner of the proposed development. As such, if potential dust emitting activities cannot be avoided, it is recommended that they occur as far away from the north-eastern corner as possible.

Residual Effects

5.27 After the implementation of the mitigation measures listed above and in Appendix C, the significance of each phase of the construction programme will be reduced and the residual significance of impact for the construction phase is expected to be *Negligible*.

6. Operational Phase Impacts

Air quality modelling

6.1 A comparison of modelled and monitored air quality data, as laid out in LAQM.TG(16), has been undertaken. This ensures that the assessment provides a more realistic estimate of pollution concentrations rather than using unadjusted modelling results. As the model was found to be under-predicting concentrations; road contributions of both NO_x and PM_{10} were adjusted by a factor of 2.60. Full details of this are provided in Appendix B.

6.2 Results from the ADMS-Roads assessment of the proposed development are presented below. Modelled road links and receptor points are displayed in Figure 3.

Modelled existing receptors

6.3 Tables 6.1 and 6.2 show predicted annual mean NO_2 and PM_{10} concentrations, respectively, at existing receptors.

Table 6.1: Predicted Annual Mean Concentrations of NO_2

Receptor No	Predicted Concentration ($\mu g.m^{-3}$)		Change in Annual Mean Concentration ($\mu g.m^{-3}$)	Change as a % of the AQS	EPUK & IAQM Significance Criteria
	2016 Baseline	2019 With	B-A		
	A	B			
R1	8.3	8.33	0.03	0.05	Negligible
R2	7.9	8.03	0.13	0.35	Negligible
R3	8.4	8.52	0.12	0.43	Negligible
R4	8.7	8.89	0.12	0.53	Negligible
R5	13.9	14.26	0.38	0.95	Negligible

R6	16.8	16.91	0.15	0.37	Negligible
R7	14.1	14.19	0.13	0.32	Negligible
R8	17.1	17.22	0.11	0.27	Negligible

6.4 The data in Table 6.1 show that annual mean concentrations of NO_2 are predicted to be well below the 40µg.m^{-3} AQS at all receptors, once the development has been finished. A maximum annual mean NO_2 concentration of 17.22µg.m^{-3} is predicted at R8 in the 'With' scenario. This is below the AQS by 57%.

6.5 The largest increase in annual mean NO_2 concentrations as a result of the proposed development is 0.38µg.m^{-3}; this was predicted at receptor R5. This is an increase of 0.95% with respect to the AQS and is considered to be *Negligible*, with reference to the EPUK & IAQM impact descriptors.

6.6 The overall impact of the proposed development on annual mean NO_2 concentrations is considered to be *Negligible* in significance.

6.7 With regard to the hourly AQS for NO_2 (i.e. 200µg.m^{-3} not to be exceeded more than 18 times a year), LAQM.TG(16) states that if the annual mean is below 60µg.m^{-3} then this AQS should be met. The data in Table 6.1 show that all predicted concentrations of NO_2 are well below this threshold in all scenarios and at all receptor points. Therefore, it is considered highly unlikely that the hourly AQS would be exceeded.

Table 6.2: Predicted Annual Mean Concentrations of PM_{10}

Receptor No	Predicted Concentration (µg.m^{-3})		Change in Annual Mean Concentration (µg.m^{-3})	Change as a % of the AQS	EPUK & IAQM Significance Criteria
	2016 Baseline	2019 With	B-A		
	A	B			
R1	11.81	11.81	0	0	None
R2	11.74	11.76	0.02	0.05	Negligible
R3	11.79	11.82	0.03	0.08	Negligible
R4	11.84	11.88	0.04	0.10	Negligible
R5	12.49	12.55	0.06	0.15	Negligible

R6	13.17	13.19	0.02	0.05	Negligible
R7	12.69	12.72	0.03	0.08	Negligible
R8	13.23	13.25	0.02	0.05	Negligible

6.8 The data in Table 6.2 shows that annual mean PM_{10} concentrations at all receptors, in all scenarios, are expected to be 76% or more below the 40µg.m^{-3} AQS.

6.9 The proposed development is expected to result in maximum increase of 0.15% at R5. This is considered a *Negligible* impact with regard to EPUK & IAQM impact descriptors. As such, the overall impact on annual mean PM_{10} concentrations is considered to be *Negligible* in significance.

6.10 For PM_{10}, the following equation can be used to derive the number of days that the daily mean AQS limit of 50µg.m^{-3} is likely to be exceeded:

$$\text{No. 24 hour exceedances} = -18.5 + 0.00145 \times \text{annual mean}^3 + \left(\frac{206}{\text{annual mean}}\right)$$

6.11 The data in Table 6.2 show that the highest annual mean PM_{10} concentration predicted in the model was 13.25µg.m^{-3}. Based on the above formula, this would lead to 0.4 exceedance days, which is more than 98% below the 35-day limit.

Proposed receptors

6.12 Proposed receptors have not been modelled and accounted for with regards to this development. This is based on the fact that according to the developer's site plans, the closest receptor to the road will be set further back than the existing R2 receptor currently is.

6.13 As such, it is not anticipated that occupants of the proposed dwellings would be exposed to worse air quality than those at R2. Therefore, the site is considered suitable for residential use.

Emissions mitigation

6.14 WDC require developments to provide an emissions mitigation cost calculation to estimate a developments emissions contribution to the environment following the Sussex Air Quality Guidance. An emissions mitigation calculation is used to quantify potential emissions from a development and provide a suggested mitigation value for proportionate mitigations to be integrated into a development.

6.15 The emissions mitigation cost calculation uses the Defra EFT to estimate the mass of pollutants emitted for total oxides of nitrogen (NO_x) and PM_{10}. It thereafter calculates the cost of the emissions using Defra current damage cost values[13]. The calculation inputs are provided in Table 6.3 with the damage cost calculation set-out in 6.16 (Emissions "damage" cost calculation).

Table 6.3: Emissions Factor Toolkit Input Factors

EFT Input Factors	
Trip Rate	237 (0% HDV)
Average Speed	50kph
Link Length	10km
Road Type	Rural (not London)

6.16 Emissions "damage" cost calculation

$$\text{NOx emission 'damage'(cost, £)} = 18{,}182 \times 0.34 \times 5\ years = £30{,}962$$

$$\text{PM10 emission 'damage'(cost, £)} = 41{,}850 \times 0.02 \times 5\ \text{years} = £4{,}873$$

$$TOTAL\ (cost, £) = £\mathbf{35{,}836}$$

6.17 The total emissions "damage" cost was calculated as £35,836. The Sussex guidance suggests this to be the indicative value of a package of mitigation measures (options) that may be introduced to reduce emissions. The calculation is based on a number of assumptions and is believed to present a worst case scenario. Mitigation options include:

[13] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/460398/air-quality-econanalysis-damagecost.pdf (updated on 12 September 2015)

- EV recharging infrastructure within the development (wall mounted or free standing in-garage or off-street points).
- Car club provision or support to local car club/eV car club.
- Designation of parking spaces for low emission vehicles
- Differential parking charges depending on vehicle emissions
- All commercial vehicles should comply with either current or previous European Emission Standard
- Fleet operations should provide a strategy for considering reduced emissions, low emission fuels and technologies
- Use of ultra-low emission service vehicles
- Support local walking and cycling initiatives
- On-street EV recharging
- Contribution to low emission vehicle refuelling infrastructure
- Low emission bus service provision or waste collection services
- Bike/e-bike hire schemes Contribution to renewable fuel and energy generation projects
- Incentives for the take-up of low emission technologies and fuels.

6.18 It should be taken into account that the above list is not exhaustive and further options may be suggested where authorities feel it is appropriate. Mitigation measures should always be relevant and appropriate to a development, based on:

- The type, size and primary use of the development
- Any local air quality concerns; to assist in the remediation of potential cumulative air pollution impacts of the development on the local community.
- Any local policies which may determine mitigation priorities for a scheme that the local authority may wish to see be incorporated within a particular scheme.

7. Discussion

7.1 WDC has no declared AQMAs across the District, as there have been no measured exceedances of AQS's. Whilst pollution concentrations adjacent to the District's busiest roads can be high, data from UK-AIR suggest that background concentrations in the vicinity of the application site are well below the key AQSs for both NO_2 and PM_{10}.

7.2 A detailed dispersion model has been utilised to predict pollutant concentrations at existing receptors adjacent to roads where the greatest changes in traffic flows are expected. It has been shown that small increases in NO_2 and PM_{10} concentrations are expected. Overall, the development is expected to have a *Negligible* impact on air quality.

7.3 The construction of the proposed development could give rise to emissions that may cause some dust soiling effects on adjacent land. However, by adopting appropriate mitigation measures to reduce emissions and their potential impact, there should be minimal significant residual effects.

7.4 The proposed development is expected to comply with the requirements of all national and local planning policy documents, including the NPPF and SAQP guidance.

8. Conclusions

8.1 This report has assessed the current air quality at the proposed development site at Horebeech Lane, Horam, East Sussex, and the potential for pollution from changes to the patterns of vehicle movements associated with the development of the site to affect air quality in the vicinity.

8.2 Site-specific background UK-AIR and monitoring results from the wider area suggest that pollution concentrations across the majority of the application site are likely to be well below the relevant UK Air Quality Strategy Standard concentrations.

8.3 The proposed development is expected to have a minimal impact on pollution concentrations at nearby existing receptors. Overall this impact is predicted to be Negligible, which is not significant.

8.4 Mitigation measures have been suggested in line with an emissions cost calculation for the development.

8.5 During construction, adopting appropriate mitigation measures should prevent any significant air quality effects on the surrounding area. Although it should be noted that the surrounding area is sparsely populated.

8.6 Considering the above, the proposed development has been determined to be acceptable in terms of its impact on, and sensitivity to, local air quality.

Figures and Appendices

Figure 1: Site Location Plan



Figure 1: Site Location Plan

Contains Ordnance Survey data © Crown copyright and database right 2018

Job No.: 7257.S
Drawn by: PN
Date: 15-Feb-18
www.phlorum.com

Figure 2: Construction Phase Receptors

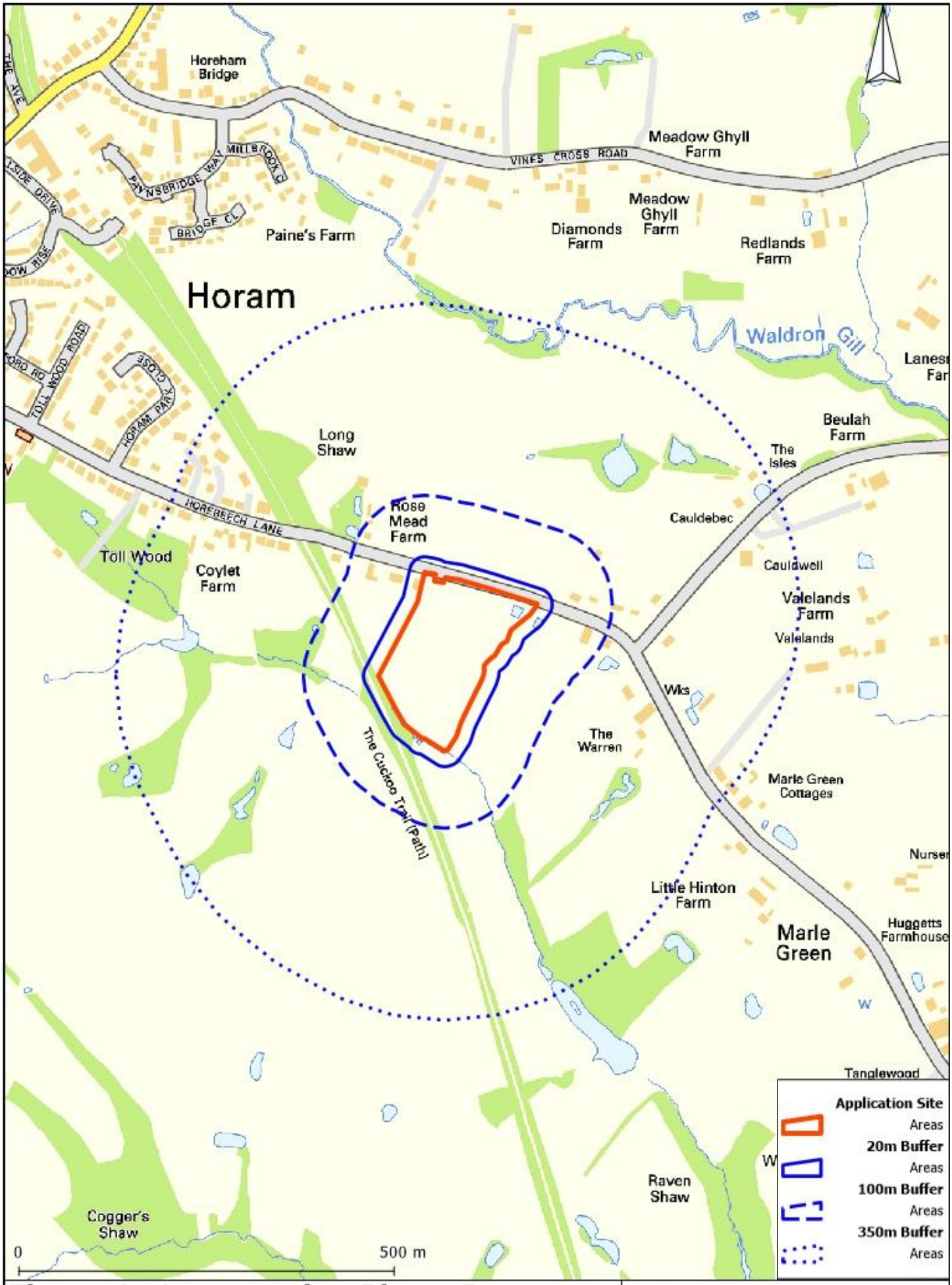


Figure 2: Construction Phase Receptors

Contains Ordnance Survey data © Crown copyright and database right 2018

phlorum

Job No.: 7257.S
Drawn by: PN
Date: 15-Feb-18
www.phlorum.com

Figure 3: Operational Phase Receptor

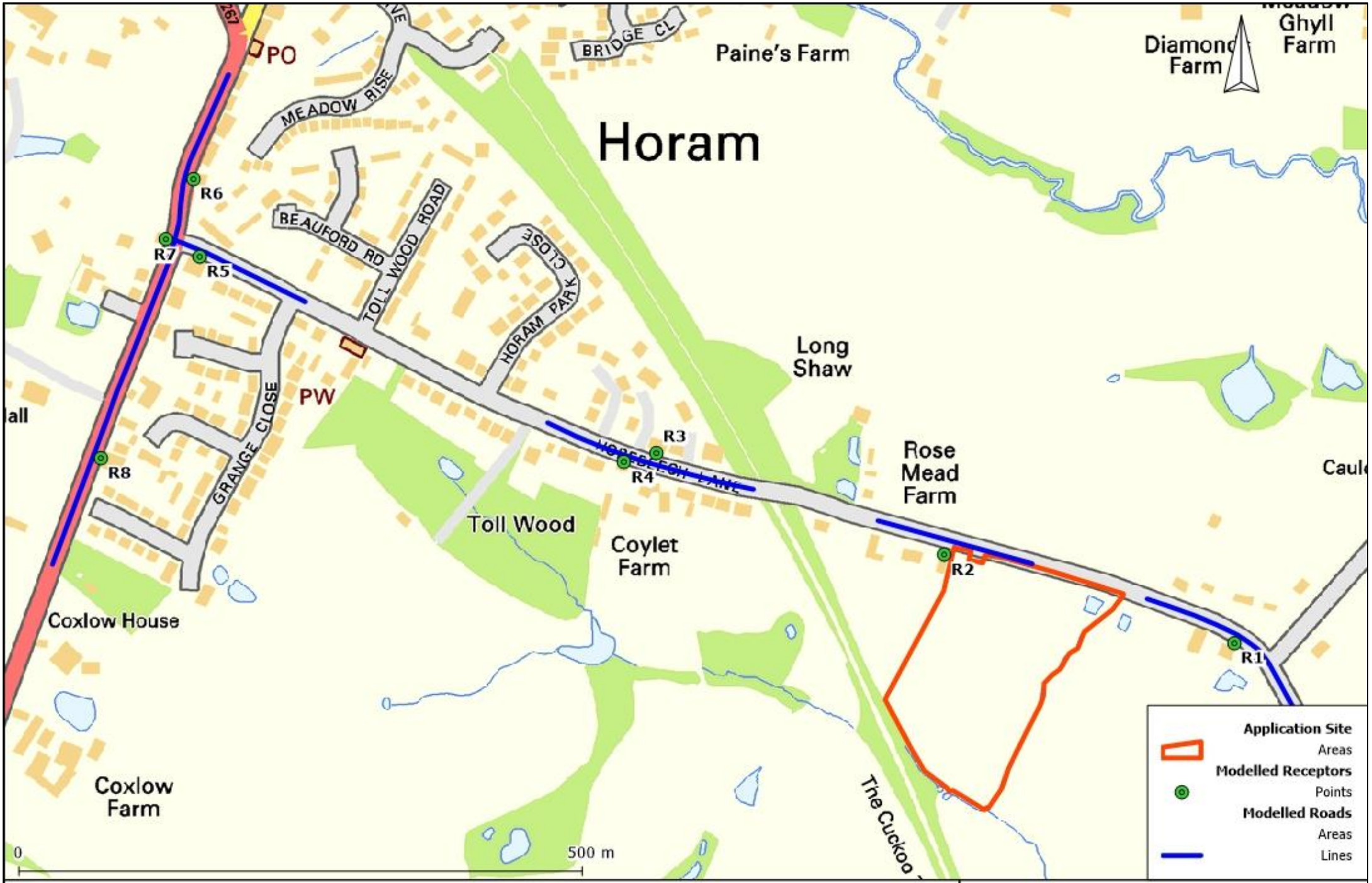


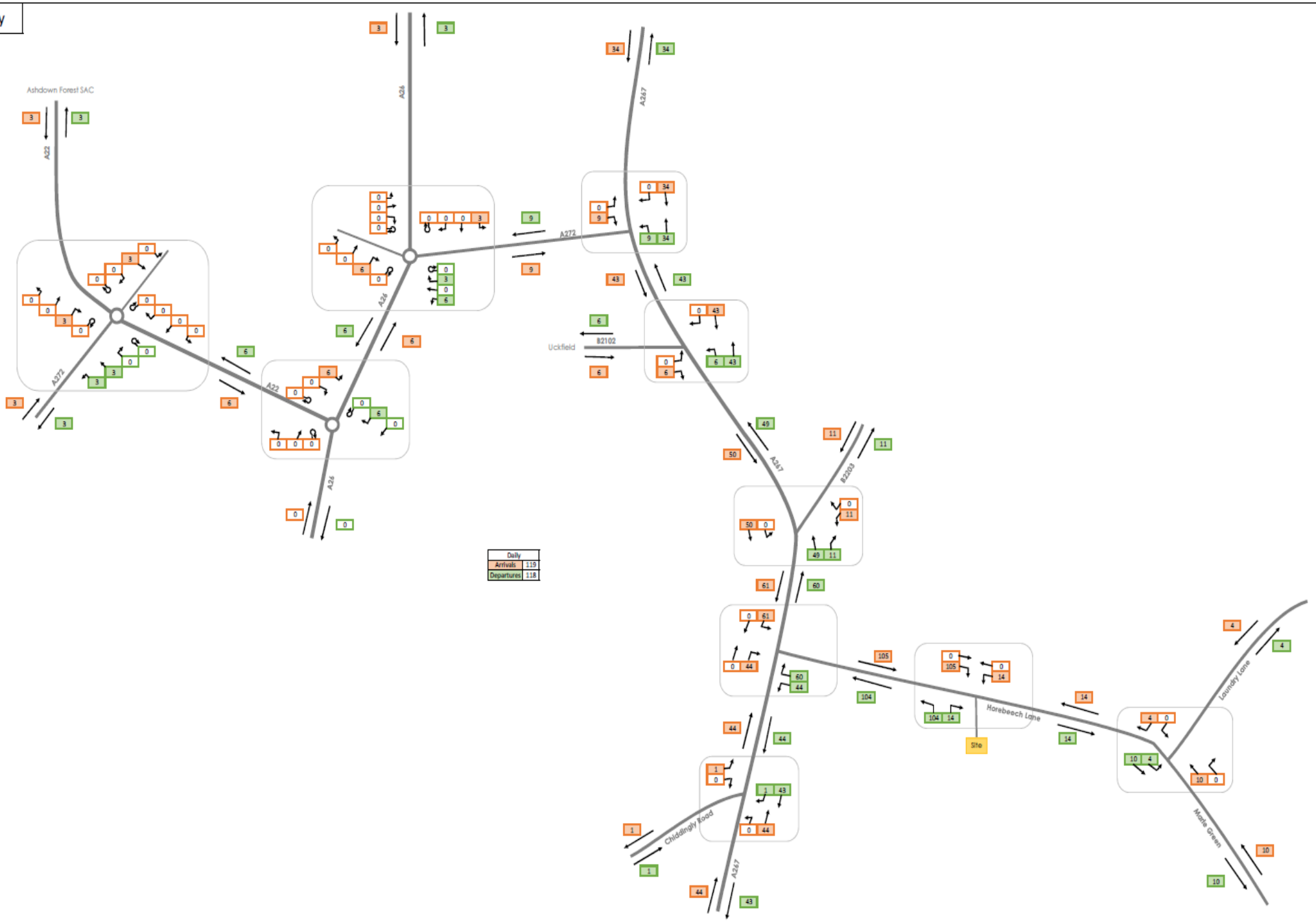
Figure 3: Operational Phase Receptors

Contains Ordnance Survey data © Crown copyright and database right 2018

Job No.: 7257.S
Drawn by: PN
Date: 15-Feb-18
www.phlorum.com

Figure 4: Daily Traffic Flow Diagram

Daily


Ashdown Forest SAC
A22
A26
A267
A272
A22
A26
A272
82102
Uckfield
A267
B2203
Horebeech Lane
Site
Laundry Lane
Chiddingly Road
A267
Mott's Green
Daily
Arrivals 119
Departures 118

Appendix A: EPUK & IAQM Significance Criteria

Long term average Concentration at receptor in assessment year	% Change in concentration relative to Air Quality Assessment Level (AQAL)			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

Explanation

1. AQAL = Air Quality Assessment Level, which may be an air quality objective, EU limit or target value, or an Environment Agency 'Environmental Assessment Level (EAL)'.
2. The Table is intended to be used by rounding the change in percentage pollutant concentration to whole numbers, which then makes it clearer which cell the impact falls within. The user is encouraged to treat the numbers with recognition of their likely accuracy and not assume a false level of precision. Changes of 0%, i.e. .less than 0.5% will be described as Negligible..
3. The Table is only designed to be used with annual mean concentrations.
4. Descriptors for individual receptors only; the overall significance is determined using professional judgement (see Chapter 7). For example, a 'moderate' adverse impact at one receptor may not mean that the overall impact has a significant effect. Other factors need to be considered.
5. When defining the concentration as a percentage of the AQAL, use the 'without scheme' concentration where there is a decrease in pollutant concentration and the 'with scheme;' concentration for an increase.
6. The total concentration categories reflect the degree of potential harm by reference to the AQAL value. At exposure less than 75% of this value, i.e. well below, the degree of harm is likely to be small. As the exposure approaches and exceeds the AQAL, the degree of harm increases. This change naturally becomes more important when the result is an exposure that is approximately equal to, or greater than the AQAL.
7. It is unwise to ascribe too much accuracy to incremental changes or background concentrations, and this is especially important when total concentrations are close to the AQAL. For a given year in the future, it is impossible to define the new total concentration without recognising the inherent uncertainty, which is why there is a category that has a range around the AQAL, rather than being exactly equal to it.

Appendix B: Model Verification Study

Model verification studies are undertaken in order to check the performance of dispersion models and, where modelled concentrations are significantly different to monitored concentrations, a factor can be established by which the modelled results can be adjusted in order to improve their reliability. The model verification process is detailed in LAQM.TG(16).

According to LAQM.TG(16), no adjustment factor is necessary where the results of the model all lie within 25% of the monitored concentrations.

Model verification can only be undertaken where there is sufficient roadside monitoring data in the vicinity of the subject scheme being assessed. LAQM.TG(16) recommends that a combination of automatic and diffusion tube monitoring data is used; although this may be limited by data availability. Two monitoring locations in Wealden with appropriate DfT traffic data were selected for this study. These locations are referred to by WDC as W5 and W8, and can be found at Eastbourne Road, Polegate, and A22 West of Boship Roundabout.

Table B.1 compares monitored and modelled NO_2 concentrations at the two monitoring locations.

Table B.1: Monitored and Modelled Road Contributions of NO_2 at Roadside Monitoring Sites

Monitor ID	Type	Concentrations (µg.m^{-3})		
		Modelled	Monitored	% Difference
W5	DT	30.0	17.9	-40.3%
W8	DT	31.3	18.7	-40.2%

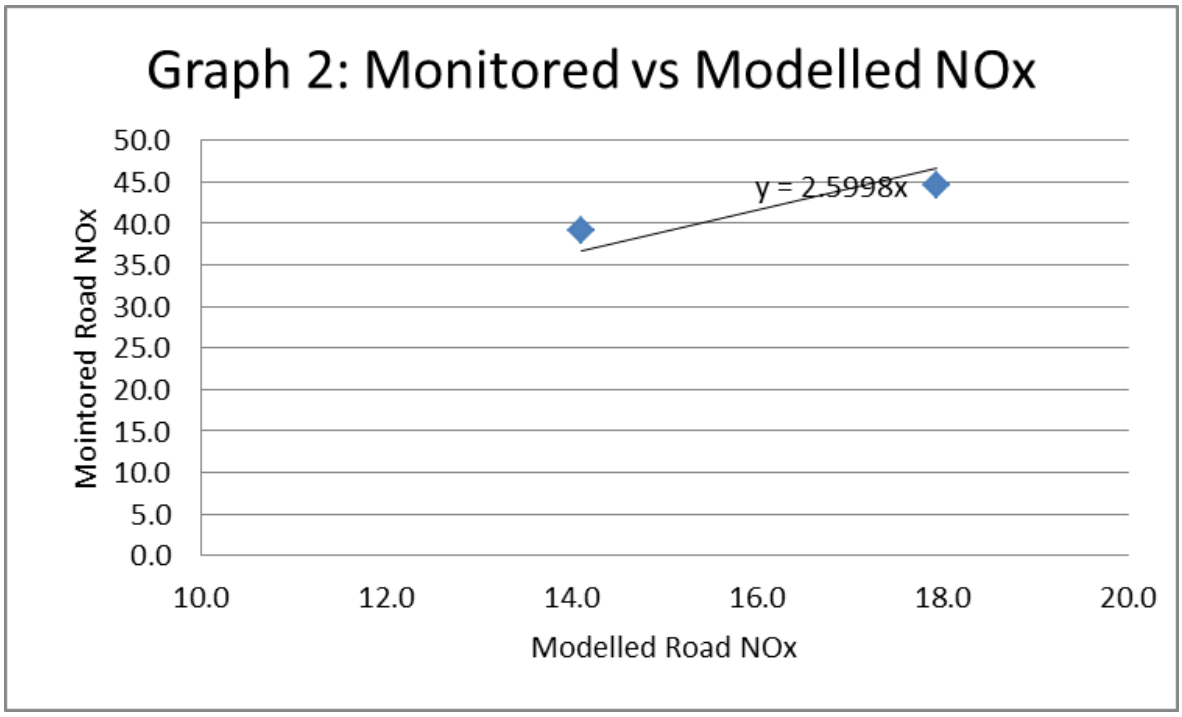
Note: DT = Diffusion Tube

The data in Table C.1 shows that the model is under-predicting concentrations at all locations to a varying degree. This is a pattern frequently seen in model verification studies, and is likely to be the result of local dispersion characteristics. As the modelled results were more than 25% outside of the monitored results, it was decided to proceed with adjustment as the model was systematically under predicting NO_2 concentrations. This was done in order to ensure conservative results.

As it is primary NO_x, rather than secondary NO_2, emissions that are modelled, an adjustment factor must be derived for the road contribution of NO_x.

A plot of modelled versus monitored NO_x concentrations on a graph shows a positive correlation. This graph is included in Figure B.1 below.

Figure B.1 Monitored vs Modelled Road NO_x



By plotting a trend line through the points on the graph, a factor of 2.60 was derived. Table B.2 shows total monitored versus modelled NO_2 following the adjustment of the road contribution of NO_x by this factor. It shows that, following this adjustment, all modelled concentrations of NO_2 are within 25% of monitored concentrations at these locations. As a result, the factor of 2.60 was considered appropriate for the adjustment of all modelled road contributions of NO_x for the proposed development.

Table B.2: Monitored and Adjusted Modelled Total NO at Roadside Monitoring Sites

Monitor ID	Type	Concentrations ($\mu g.m^{-3}$)		
		Modelled	Monitored	% Difference
W5	DT	34.4	30.0	14.50%
W8	DT	38.9	31.3	24.28%

Appendix C: IAQM Highly Recommended Mitigation Measures

Appendix C: IAQM Highly Recommended Mitigation Measures for sites with a Low Risk of Dust Impacts

Please refer to the IAQM's Construction Dust Guidance for further, "desirable", mitigation measures.

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.

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.

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.
- Avoid site runoff of water or mud.

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.

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.

Waste Management

- Avoid bonfires and burning of waste materials.



Phlorum Limited

Head Office & Registered Office:
Unit 12
Hunns Mere Way
Woodingdean
Brighton
East Sussex
BN2 6AH
T: 01273 307 167

Northern Office:
Ground Floor
Adamson House
Towers Business Park
Wilmslow Road
Didsbury
Manchester
M20 2YY
T: 0161 955 4250

Western Office:
One Caspian Point
Pierhead Street
Cardiff Bay
Cardiff
CF10 4DQ
T: 029 2092 0820

Maidenhead Office:
Meliora
Briar Glen
Cookham
Maidenhead
Berkshire
SL6 9JP
M: 07736 292 106

info@phlorum.com
www.phlorum.com

Registered in England & Wales. Reg No. 4967256