

Local Air Quality

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12 Local Air Quality

12.1 Introduction

12.1.1 This chapter presents the findings of a detailed air quality assessment of the potential impacts effects of the proposed development on local air quality during both construction and operational phases. For both phases the type, source and significance of potential impacts are identified and the measures that should be employed to minimise these impacts are described.

12.1.2 A glossary of common air quality terminology is provided in Appendix 12.1.

12.2 Legislation and Policy

Air Quality Strategy for England, Scotland, Wales and Northern Ireland

12.2.1 The Government's policy on air quality within the UK is set out in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland (AQS) published in July 2007¹, pursuant to the requirements of Part IV of the Environment Act 1995. The AQS sets out a framework for reducing hazards to health from air pollution and ensuring that international commitments are met in the UK. The AQS is designed to be an evolving process that is monitored and regularly reviewed. The AQS sets standards and objectives to protect health, vegetation and ecosystems.

12.2.2 The air quality standards are long-term benchmarks for ambient pollutant concentrations which represent negligible or zero risk to health, based on medical and scientific evidence reviewed by the Expert Panel on Air Quality Standards (EPAQS) and the World Health Organisation (WHO). These are general concentration limits, above which sensitive members of the public (e.g. children, the elderly and the unwell) might experience adverse health effects.

12.2.3 The air quality objectives are medium-term policy based targets set by the Government which take into account economic efficiency, practicability, technical feasibility and timescale. Some objectives are equal to the EPAQS recommended standards or WHO guideline limits, whereas others involve a margin of tolerance, i.e. a limited number of permitted exceedences of the standard over a given period.

12.2.4 For some pollutants there is both a long-term (annual mean) standard and a short-term standard. In the case of NO₂, the short-term standard is for a 1-hour averaging period, whereas for PM₁₀ it is for a 24-hour averaging period. These periods reflect the varying effects on health of differing exposures to pollutants (e.g. temporary exposure on the pavement adjacent to a busy road, compared with the exposure of residential properties adjacent to a road).

12.2.5 The current statutory standards and objectives relative to this assessment, including those related to the protection of human health and vegetation, are set out in Appendix 12.2.

12.2.6 Of the pollutants included in the AQS, NO₂, PM₁₀ and PM_{2.5} will be particularly relevant to the assessment, as these are the primary pollutants associated with road traffic.

Local Air Quality Management

12.2.7 Part IV of the Environment Act 1995 also requires local authorities to periodically Review and Assess the quality of air within their administrative area. The Reviews have to consider the present and future air quality and whether any air quality objectives prescribed in Regulations are being achieved or are likely to be achieved in the future.

12.2.8 Where any of the prescribed air quality objectives are not likely to be achieved the authority concerned must designate that part an Air Quality Management Area (AQMA).

12.2.9 For each AQMA, the local authority has a duty to draw up an Air Quality Action Plan (AQAP) setting out the measures the authority intends to introduce to deliver improvements in local air quality in pursuit of the air quality objectives. Local authorities are not statutorily obliged to meet the objectives, but they must show that they are working towards them.

12.2.10 The Department of Environment, Food and Rural Affairs (DEFRA) has published technical guidance for use by local authorities in their Review and Assessment work². This guidance, referred to in this chapter as LAQM.TG(09), has been used where appropriate in the assessment.

National Planning Policy Framework (March 2012)

12.2.11 The NPPF³ identifies 12 core planning principles that should underpin both plan-making and decision-taking, including a requirement for planning to *"contribute to conserving and enhancing the natural environment and reducing pollution"*.

12.2.12 Paragraph 109 of the NPPF requires the planning system to *"prevent both new and existing developments from contributing to or being put at unacceptable risk or being adversely affected by unacceptable levels of air pollution"*.

12.2.13 In dealing specifically with air quality the NPPF states that:

"Planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative effects on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan".

12.2.14 The air quality component of the National Planning Practice Guidance (NPPG) has subsequently been published⁴ which sets out the procedures for identifying why and when an air quality assessment is required, the process of undertaking an air quality assessment identifying appropriate mitigation for air quality effects.

Control of Dust and Particulates Associated with Construction

12.2.15 Section 79 of the Environmental Protection Act (1990) states that where a statutory nuisance is shown to exist, the local authority must serve an abatement notice. Statutory nuisance is defined as:

- *"any dust or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance; and*
- *any accumulation or deposit which is prejudicial to health or a nuisance."*

12.2.16 Failure to comply with an abatement notice is an offence and if necessary, the local authority may abate the nuisance and recover expenses.

12.2.17 In the context of the proposed development, the main potential for nuisance of this nature will arise during the construction phase - potential sources being the clearance, earthworks, construction and landscaping processes.

12.2.18 There are no statutory limit values for dust deposition above which 'nuisance' is deemed to exist - 'nuisance' is a subjective concept and its perception is highly dependent upon the existing conditions and the change which has occurred. However, research has been undertaken by a number of parties to determine community responses to such effects and correlate these to dust deposition rates.

St Edmundsbury Core Strategy 2010

12.2.19 The St Edmundsbury Core Strategy⁵ Policy CS2 'Sustainable Development' states that:

"A high quality, sustainable environment will be achieved by designing and incorporating measures appropriate to the nature and scale of development including conserving and, where possible, enhancing other natural resources including air quality". The policy also requires the use of sustainable design and construction to 'remedy existing pollution and prevent further pollution arising from development proposals."

Forest Heath and St Edmundsbury Development Management Policies

12.2.20 The Joint Development Management Policies Document⁶ Policy DM2 requires all development proposals to ensure that whilst taking mitigation measures into account they would not adversely affect pollution. In dealing with air quality Policy DM14 indicates that *"development will not be permitted, individually or cumulatively, there are likely to be unacceptable impacts on air quality"*.

12.3 Methodology

Scope of Assessment

12.3.1 The scope of the assessment has been determined in the following way:

- Consultation with St Edmundsbury Borough Council Environmental Health Department;
- Review of air quality data for the area surrounding the site and background pollutant maps; and
- Review of the traffic flows data, which has been used as an input to the air quality modelling assessment.

12.3.2 There is the potential for impacts on local air quality during both the construction and operational phases of the development. Details of the assessment methodology and the specific issues considered are provided below.

Demolition and Construction Phase

Construction Traffic

12.3.3 During construction of the proposed development, lorries will require access to the proposed development site to deliver and remove materials; earthmoving plant and other mobile machinery may also work on site including generators and cranes. These machines produce exhaust emissions; of particular concern are

emissions of nitrogen dioxide (NO₂) and particulate matter with an aerodynamic diameter of 10 µm or less (PM₁₀).

12.3.4 As set out in the Transport Chapter the development would generate an additional 20 heavy goods vehicle (HGV) movements on the adjacent road network per day.

12.3.5 Recently published guidance by Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM)⁷ sets out criteria for identifying when significant impacts on air quality are likely to occur. The guidance indicates that where a development results in less than 100 HGV movements per day in locations outside of an AQMA impacts on local air quality are unlikely to be significant. Although the construction of the proposed development will occur over several years, as the average number of construction vehicles generated during this period would be 20 per day the effect on local NO₂ and PM₁₀ concentrations is considered to be negligible and has not been considered any further in this assessment.

Construction Dust

12.3.6 To assess the potential impacts associated with dust and PM₁₀ releases during the construction phase and to determine any necessary mitigation measures, an assessment based on the latest guidance from the Institute of Air Quality (IAQM)⁸ has been undertaken.

12.3.7 This approach divides construction activities into the following four categories:

- Demolition;
- Earthworks;
- Construction; and
- Trackout.

12.3.8 The assessment methodology requires consideration of dust effects arising from three potential impacts:

- Annoyance due to dust soiling;
- Harm to ecological receptors; and
- The risk of health effects due to a significant increase in exposure to PM₁₀.

12.3.9 The three impacts are assessed taking into account the sensitivity of the area likely to experience these effects, with the results of the assessment being used to define appropriate mitigation measures to prevent any significant effects at nearby receptors.

12.3.10 The IAQM guidance sets out the assessment into a number of steps. The first is an initial screening assessment to determine if there are any sensitive human receptors within 350m of the site boundary or 200m of the construction haulage routes and ecological receptors within 50m of the proposed construction activities, thus determining the requirement for a more detailed evaluation.

12.3.11 Step two of the methodology assesses the risk of dust effects for each construction activity and takes account of:

- The scale and nature of the works, which determines the potential dust emission magnitude (step 2a); and
- The sensitivity of the area (step 2b).

12.3.12 Risks are described in terms of there being a low, medium or high risk of dust effects for each of the four separate potential activities. This assessment is based on both IAQM criteria and professional judgement.

12.3.13 The outcome of the above two steps are then combined (step 2c) to identify the risk of dust effects, which are described in terms of there being a low, medium or high risk of dust effects for each of the four activity groups and assuming no mitigation measures are in place.

12.3.14 Based on the identified risk, appropriate mitigation measures are identified as set out in the IAQM guidance.

12.3.15 All construction sites are different and the potential for dust effects are dependent on a number of local factors. The methodology set out in the IAQM guidance is therefore considered as a framework for assessing dust effects and a certain level of professional judgement is required in determining the effects from each site.

12.3.16 The significance of identified effects is evaluated post mitigation using professional judgement and assuming that the mitigation measures identified and set out within the assessment are implemented by way of a Dust Management Plan (DMP).

Operational Phase

12.3.17 The ADMS Roads dispersion model has been used to predict potential effects on air quality due to local traffic emissions. The model uses detailed information regarding traffic flows on the local road network and local meteorological conditions to predict pollution concentrations at specific locations selected by the user. Meteorological data from Andrews Field Meteorological Station for 2013 has been used for the assessment.

12.3.18 The model has been used to predict road specific concentrations of NO_x, PM₁₀ and PM_{2.5}. The predicted concentrations of NO_x have been converted to NO₂ using the LAQM calculator available on the DEFRA air quality website (<http://uk-air.defra.gov.uk>).

12.3.19 Base traffic flows have been provided for the 2014 assessment year. These flows have been used to predict concentrations in 2013 to allow verification of the model results.

12.3.20 The 2014 base flows have been used, assuming no change in flows, to provide a base scenario in 2029 to allow a cumulative assessment of the proposed development in conjunction with the nearby consented North West Haverhill development and associated relief road. The traffic flows associated with the North West Haverhill development have been added to the base flows, followed by traffic generated by the proposed development.

12.3.21 Based on the traffic data provided the following scenarios have been assessed:

- 2013 Base - for verification of the model only;

- 2029 Base;
- 2029 Base + North West Haverhill development and Relief Road; and
- 2029 Base + North West Haverhill development and Relief Road + Development.

12.3.22A summary of the traffic data used in the assessment can be found in Appendix 12.3. The data includes details of annual average daily traffic flows (AADT), vehicle speeds and percentage HGV for the assessment years considered.

12.3.23The emission factors released by DEFRA in July 2014, provided in the emissions factor toolkit EFT2014_6.0.1 and built into the ADMS model (Version 3.4, released January 2015) have been used to predict existing and future traffic related emissions. These are the latest emission factors available.

12.3.24To predict local air quality, traffic emissions predicted by the model must be added to local background concentrations. Background concentrations of NO₂ have been taken from the background monitoring site located on Shetland Road in Haverhill. Data for 2013 has been used to predict concentrations in 2029. Future estimates predict a decline in background concentrations in future years therefore the use of 2013 background data is considered to represent a worst-case prediction of future NO₂ concentrations. The data used in the assessment is set out in Table 12.7.

12.3.25Background PM₁₀ and PM_{2.5} concentrations have been taken from the 2011 DEFRA background maps. Data has been extracted from the 2013 background maps with an average being taken from the grid squares representing Haverhill. The data used in the assessment are set out in Table 12.8. As with NO₂, 2013 background PM₁₀ and PM_{2.5} concentrations have been used to predict air quality in 2029 to ensure a worst-case predicting of future impacts.

12.3.26It is recommended, following guidance set out in LAQM.TG (09), that the model results are compared with measured data to determine whether the model results need adjusting to more accurately reflect local air quality. This process is known as verification.

12.3.27LAQM.TG (09) recommends that model predictions should be within 25% (preferably 10%) of monitored concentrations for the model to be predicting with any degree of accuracy. There is only one monitoring site located within Haverhill which can be used for verification. The site is located on Withersfield Road.

12.3.28The results of the comparison are presented below in Table 12.2.

Table 12.2: Comparison of Modelled and Monitored NO₂ Concentrations (µg/m³)

Monitoring Locations	Measured Concentrations	Modelled Concentrations	% Difference
HH1 Withersfield Road	36.9	24.3	-47.2

12.3.29The comparison of monitored and modelled concentrations indicates that the model is under-predicting annual mean NO₂ concentrations by an average of 47%. It is therefore considered necessary to adjust the model results to better represent local concentrations. The results of the modelling assessment have been adjusted using the methodology given in LAQM.TG(09). Full details of the verification and calculation of adjustment factors are provided in Appendix 12.3.

12.3.30 There is no suitable monitoring of PM₁₀ or PM_{2.5} data to allow verification of the PM model results. However, LAQM.TG (09) suggests applying the NO₂ adjustment factor to modelled road-PM₁₀ where no appropriate verification against PM₁₀ data can be carried out. Therefore, the adjustment applied to predicted NO_x concentrations has also been applied to the modelled PM₁₀ and PM_{2.5} concentrations.

12.3.31 LAQM.TG (09) does not provide a method for the conversion of annual mean NO₂ concentrations to 1-hour mean NO₂ concentrations. However, research⁹ has concluded that exceedences of the 1-hour mean objective are generally unlikely to occur where annual mean concentrations do not exceed 60µg/m³. Care has been taken to ensure that locations where the 1-hour mean objective is relevant are included in the assessment.

12.3.32 Quantitative assessment of the effects on local air quality from road traffic emissions associated with the operation of the development have been completed against the current statutory standards and objectives set out in Appendix 12.2 for NO₂, PM₁₀ and PM_{2.5}.

Receptors

12.3.33 LAQM.TG (09) describes in detail typical locations where consideration should be given to pollutants as defined in the Regulations. Generally, the guidance suggests that all locations "*where members of the public are regularly present*" should be considered. At such locations, members of the public will be exposed to pollution over the time that they are present, and the most suitable averaging period of the pollutant needs to be used for assessment purposes.

12.3.34 For instance, on a footpath, where exposure will be transient (for the duration of passage along that path) comparison with short-term standards (i.e. 15 minute mean or 1 hour mean) may be relevant. In a school, or adjacent to a private dwelling, however; where exposure may be for longer periods, comparison with long-term standards (such as 24 hour mean or annual mean) may be most appropriate. In general terms, concentrations associated with long-term standards are lower than short-term standards owing to the chronic health effects associated with exposure to low level pollution for longer periods of time.

12.3.35 For the completion of this assessment, consideration of the potential effects of the development on local air quality has been undertaken by predicting pollutant concentrations at 25 existing sensitive receptors located adjacent to the road network in the vicinity of the proposed development site.

12.3.36 In addition, concentrations of NO₂, PM₁₀ and PM_{2.5} have been predicted at the boundaries of the Site representing proposed residential properties closest to the adjacent road links.

12.3.37 All the receptor locations have been selected to represent worst-case exposure to local traffic emissions.

12.3.38 Details of the receptor locations are provided in Table 12.3 and their locations shown in Figures 12.1.

Table 12.3: Details of Receptors Used in Modelling Assessment

Receptor Number	Receptor Location	OS Grid Reference
1	Jessimine Cottage	568315, 246966
2	The Fox Pub	567880, 246753
3	4 Wrattling Road	567646, 246476
4	36 Wrattling Road	567410, 246169
5	8 Kirtling Place	567885, 245812
6	47 Kingfisher Close	568275, 245572
7	105 Shetland Road	568554, 245252
8	Coupals Primary	568530, 245184
9	1 Charrington Close	568188, 244690
10	6 Spring Cottages	568485, 244571
11	Jasmine Cottage	569437, 244079
12	Rowley Hill	569779, 243939
13	Well Cottage	569774, 244913
14	Roman Way	568896, 244865
15	Duddery Road	567539, 245350
16	13 Lords Croft Lane	567202, 245669
17	1 Prince of Wales Cottages	567111, 245770
18	Cangle Road	567042, 245747
19	14 Withersfield Road	566950, 245839
20	32 Withersfield Road (Façade closest to HH1 monitoring site)	566889, 245890
21	Watersedge	566680, 246154
22	The Villas, Withersfield Road	566149, 246485
23	Laurel Close	565929, 246562
24	Belling Road	566034, 246782
25	Hanchet House	564760, 246559
26	Proposed Residential	568022, 246841
27	Proposed Residential	568182, 245683

Figures 12.1: Receptor locations



Significance Criteria

Construction Impacts

12.3.39 The assessment of construction effects identifies whether there is a low, medium or high risk of effects occurring at adjacent sensitive receptors as a result of dust and PM₁₀ emissions emitted by specific construction activities. The mitigation strategy is defined based on the level of risk identified during the assessment process.

12.3.40 To allow consistency with the rest of the assessment the criteria set out in Table 12.4 have been used to assign a level of significance to the identified risk of effects. In terms of the EIA regulations a moderate or major impact is considered to be significant.

Table 12.4: Details of Receptors Used in Modelling Assessment

Risk of Effect	Significance of Effect
High Risk	Major Adverse
Medium Risk	Moderate Adverse
Low Risk	Minor Adverse
Negligible Risk	Negligible

Operational Impacts

12.3.41 The EPUK guidance relates to air quality considerations within the planning process and sets criterion which identify the need for an air quality assessment, the type of air quality assessment required, and the significance of any predicted effect.

12.3.42 The guidance also sets out criteria for assessing air quality impact magnitude and places significant emphasis on judging overall effects by means of professional judgement, whilst taking into account the impact magnitude descriptors.

12.3.43 The determination of impact significance is very dependent on the magnitude of change in relation to existing air quality i.e. a minor change is considered as insignificant outside an AQMA but as significant within an AQMA or where an air quality objective is being exceeded. The significance of the effects therefore considers both the impact descriptors and the professional judgement of the author. The significance criteria used are therefore specific to this discipline and do not fit into generic EIA criteria.

12.3.44 Tables 12.5 and 12.6 identify the assessment criteria from this guidance.

Table 12.5: Definition of Impact Magnitude for Changes in Ambient Annual Mean NO₂ and PM₁₀

Magnitude of Change	Annual Mean
Large	Increase/Decrease >4 µg/m ³ (>10%)
Medium	Increase/Decrease 2-4 µg/m ³ (5-10%)
Small	Increase/Decrease 0.4 - 2 µg/m ³ (1-5%)
Imperceptible	Increase/Decrease >0.4 µg/m ³ (>1%)

12.3.45 Once the magnitude of the impact is known based on the criteria set out in Table 12.4, the next step is to describe the effect. The EPUK guidance therefore presents a set of descriptors as a means of describing effects. These are identified in Table 12.5 below.

Table 12.6: Air Quality Effect Descriptors for Changes to Annual Mean NO₂ and PM₁₀ Concentrations at a Receptor

Absolute Concentration in Relation to Objective/Limit Value	Change in Concentration		
	Small	Medium	Large
Increase with Development			
Above Objective/Limit Value With Development (> 40 µg/m ³)	Minor Adverse	Moderate Adverse	Major Adverse
Just Below Objective/Limit Value With Development (36-40 µg/m ³)	Minor Adverse	Moderate Adverse	Moderate Adverse
Below Objective/Limit Value With Development	Negligible	Minor Adverse	Minor Adverse
Well Below Objective/Limit Value With Development (<30 µg/m ³)	Negligible	Negligible	Minor Adverse
Decrease With Development			
Above Objective/Limit Value Without Development (> 40 µg/m ³)	Minor Beneficial	Moderate Beneficial	Major Beneficial

Absolute Concentration in Relation to Objective/Limit Value	Change in Concentration		
	Small	Medium	Large
Just Below Objective/Limit Value Without Development (36-40 µg/m ³)	Minor Beneficial	Moderate Beneficial	Moderate Beneficial
Below Objective/Limit Value Without Development	Negligible	Minor Beneficial	Minor Beneficial
Well Below Objective/Limit Value Without Development (<30 µg/m ³)	Negligible	Negligible	Minor Beneficial

12.3.46 Other factors taken into account in determining the significance of the effects predicted are summarised in Table 12.7 below.

Table 12.7: Factors Taken into Account in Determining Air Quality Significance

Factors
<p>The number of properties affected by minor, moderate or major air quality effects.</p> <p>The number of people exposed to levels above the objective or limit value.</p> <p>The magnitude of the changes and the description of the effects at relevant receptors.</p> <p>Whether or not an exceedance of an objective or limit value is predicted to arise in the study area where none existed before or an exceedance area is substantially increased.</p> <p>Whether or not the study area exceeds an objective or limit value and this exceedance is removed or the exceedance area is reduced.</p> <p>Uncertainty, including the extent to which worst-case assumptions have been made.</p> <p>The extent to which an objective or limit value is exceeded, e.g. an annual mean NO₂ of 41 µg/m³ should attract less significance than an annual mean of 51 µg/m³.</p>

12.4 Baseline Conditions

St Edmundsbury Review and Assessment of Air Quality

12.4.1 The Borough Council has carried out detailed assessments of air quality in the Borough, the latest being the 2014 Progress Report (PR)^A and as a result has found that all the relevant air quality objectives are being met in locations of relevant exposure. A number of AQMA were declared adjacent to the A14 in 2001 however as a result of monitoring carried out in these locations, which shows NO₂ concentrations to be below the relevant objectives, these AQMA were revoked.

12.4.2 Exceedance of the NO₂ annual mean objective has also been identified adjacent to the Post Office in Great Barton, however as there is no relevant exposure no AQMA has been declared.

12.4.3 Air quality within Haverhill has been found to meet the relevant air quality objectives in all locations.

Automatic Monitoring

12.4.4 The Borough Council does not operate any automatic monitoring sites within the Borough.

^A St Edmundsbury Borough Council (2014) 2014 Air Quality Progress Report for St Edmundsbury Borough Council

Non-automatic Monitoring

- 12.4.5 The Borough Council operates an extensive network of diffusion tubes across the borough monitoring NO₂ concentrations. There are two sites in Haverhill, a roadside site on Withersfield Road and a background site on Shetland Road. The other monitoring sites are located in Bury St Edmunds and Great Barton and are therefore not considered relevant to this assessment.
- 12.4.6 Details of the two Haverhill sites are presented in Table 12.7 along with annual mean NO₂ concentrations recorded since 2009.
- 12.4.7 The data provided below has been adjusted by the Borough Council using bias adjustment factors provided in the National Bias Adjustment Spreadsheet available on the DEFRA website¹⁰ for Environmental Services Group (ESG) 50% TEA. The bias correction factor for 2013 was 0.80.
- 12.4.8 The data recorded at both sites shows annual mean NO₂ concentrations within Haverhill to be below the objective limit of 40µg/m³. Concentrations along Withersfield Road were 'just below' (36-40 µg/m³, Table 12.3) the objective during 2014 with the data showing an overall decrease in concentrations since 2009, although the data does not indicate a significant trend during this period.
- 12.4.9 Background concentrations recorded at Shetland Road have been consistently 'well below' the objective since 2009, although overall concentrations have increased slightly over the 6 year period.
- 12.4.10 The proposed development site is located on the northern edge of Haverhill therefore the majority of the site would be similar to background locations. NO₂ concentrations across the majority of the proposed development site are therefore expected to be similar to concentrations recorded at the Shetland Road site, 'well below' the objective. The highest concentrations would occur along the western and southern boundaries adjacent to Haverhill Road and Chalkstone Way.
- 12.4.11 Diffusion tubes cannot record short-term NO₂ concentrations. However, the LAQM.TG(09) guidance indicates that where the annual mean is below 60µg/m³ it can be assumed that exceedances of the 1 hour objective for NO₂ are unlikely to occur. Based on the information provided in Table 12.8, it is unlikely that the short-term NO₂ objective would be exceeded at any locations within Haverhill including at the proposed development site.

Table 12.8: Annual Mean NO₂ Concentrations Recorded at Haverhill Diffusion Tube Sites (µg/m³)

Site	Location Type	OS Grid Ref	Year					
			2009	2010	2011	2012	2013	2014
HH1 – Withersfield Road	Roadside	566961, 245824	38.3	35.6	34.8	38.9	36.9	37.7
HH2 – Shetland Road	Background	568589, 245581	16.6	11.6	15.1	13.7	14.5	15.5

DEFRA Background Maps

- 12.4.12 Additional information on background concentrations in the vicinity of the proposed development site has been obtained from the 2011 DEFRA background pollutant maps which provide an estimate of concentrations between 2011 and 2030. The average background concentration from the grid squares which represent the proposed development site and adjacent road network are provided in Table 12.9.

12.4.13 The data shows that during 2013 and 2029 annual mean background concentrations of NO₂, PM₁₀ and PM_{2.5} are estimated to be 'well below' the relevant objective limits in the vicinity of the Site.

Table 12.9: Definition of Impact Magnitude for Changes in Ambient Annual Mean NO₂ and PM₁₀

Pollutant	2013	2029
NO _x	19.6	14.3
NO ₂	13.1	10.0
PM ₁₀	18.0	16.6
PM _{2.5}	11.8	10.5

12.5 Predicted Effects

Demolition and Construction Effects

Site and Surroundings

- 12.5.1 The proposed development site consists of open grassland, agricultural land and areas of woodland. There are no buildings on the site requiring demolition therefore impacts associated with demolition activities have not been considered within this assessment.
- 12.5.2 There are sensitive residential receptors located within 350m of the proposed development site. The closest being located to the south-west along Chalkstone Way, Biscay Close, Fastnet Close, Forties Close and Marcus Close, many of which are within 20m of the site boundary. There are also properties to the east within close proximity to the site along the B1061 and to the north and north-west along Haverhill Road. An assessment of construction related effects in relation to human receptors is therefore considered necessary.
- 12.5.3 Dust emissions from construction activities are unlikely to result in significant effects on ecologically sensitive receptors beyond 50m from the site boundary. There are no designated sites for wildlife conservation within 50m of the proposed development site boundary. The sensitivity of the surrounding area in relation to ecological receptors is therefore considered to be low. However, there are a number of ecological sites located within the site itself and which would be within 50m of construction activities. Impacts on ecological receptors has therefore been considered within the assessment.
- 12.5.4 As detailed in Section 12.4, PM₁₀ concentrations are not monitored at any location within the Borough. The data presented in Table 12.8 indicates background PM₁₀ concentrations in the vicinity of the proposed development site to be in the region of 18µg/m³. Based on professional judgement and experience from other sites in similar rural locations, PM₁₀ concentrations at roadside locations in the vicinity of the site are unlikely to be much higher than background concentrations. PM₁₀ concentrations are therefore expected to be below 24µg/m³ at all nearby sensitive receptors.
- 12.5.5 The precise behaviour of the dust, its residence time in the atmosphere, and the distance it may travel before being deposited would depend upon a number of factors. These include wind direction and strength, local topography and the presence of intervening structures (buildings, etc.) that may intercept dust before it reaches sensitive locations. Furthermore, dust would be naturally suppressed by rainfall.

12.5.6 A windrose from the Andrews Field Meteorological Station (2013) is provided in Figure 12.2, which shows that the prevailing winds are from the south-west, although some strong winds also occurred from the north-east during the year. Properties to the north-east are therefore most likely to experience significant effects as a result of dust generated during the construction process which includes properties along the B1061, however, if a similar wind pattern is experienced in the preceding years there may also be a higher risk of impacts at properties to the south-west, which includes all the properties along Chalkstone Way and leading off Shetland Road i.e. Biscay Close, Fastnet Close and Forties Close.

Potential Dust Emission Magnitude

12.5.7 The dust emission magnitude is based on the scale of anticipated works at the site and has been classified as small, medium or large for each of the three activities; earthworks, construction and trackout. A summary of the dust emission magnitude for each activity is set out in Table 12.9.

Earthworks

12.5.8 Earthworks are those activities involved in preparing the Site for construction such as excavation of material, haulage, tipping, stockpiling and levelling.

12.5.9 The area of the proposed development site is approximately 168.3 hectares. During the earthwork activities it is anticipated that there would be more than 10 earth moving vehicles working within the site at any given time and the potential for storage bunds of over 8m in height. The site is therefore considered to have a dust emission class of 'large' with regards to earthwork activities.

Construction

12.5.10 There are a number of issues that can affect the dust emission class during construction activities including the size of the building, materials used for construction, the method of construction and the duration of the build.

12.5.11 The majority of construction materials would be brick and concrete, potentially dusty materials. Based on the parameter plans in Appendix 4.1, the total building volume proposed for the site would be more than 100,000m³. The proposed development site is therefore considered to have a dust emission class of 'large' with regards to construction activities.

Trackout

12.5.12 The risk of effects occurring during trackout is predominantly dependent on the number of vehicles accessing the proposed development site on a daily basis. However, vehicle size and speed, the duration of activities and local geology are also factors which are used to determine the emission class of the site as a result of trackout.

12.5.13 Given the size of the proposed development it is expected that there would be more than 50 Heavy Duty Vehicles (HDV) accessing the site each day, with the vehicles travelling on site over unpaved roads of more than 100m in length. The site is therefore classed as 'large' with regards to trackout activities.

Table 12.10: Summary of Dust Emission Magnitude for Each Activity

Source	Magnitude
Earthworks	Large
Construction	Large
Trackout	Large

Sensitivity of the Area

- 12.5.14 The main sensitive receptors adjacent to the proposed development site are residential dwellings. Based on the IAQM guidance residential dwellings are considered as high sensitivity receptors in relation to both dust soiling and health effects of PM₁₀. As there are more than 10 high sensitivity receptors within 20m of the site boundary the overall sensitivity of the surrounding area is considered to be 'high' in relation to dust soiling.
- 12.5.15 The ecological receptors within the site consist of semi-natural broadleaf woodland. Dust emitted from construction activities could cover leaves and reduce productivity, which could also affect ground flora and invertebrates and subsequently bird species. Although these areas are not subject to an international or national designation due to the close proximity of these areas to emission sources the sensitivity of the area in relation to ecological receptors is considered to be 'medium' from dust soiling.
- 12.5.16 As detailed above, PM₁₀ concentrations in the vicinity of the proposed development site are expected to be less than 24µg/m³. Based on the proximity of the residential receptors to the site boundary and the local concentrations of PM₁₀ the sensitivity of the surrounding area is considered to be 'low' with regards human health (PM₁₀) effects.
- 12.5.17 All construction vehicles accessing and leaving the proposed development site will do so via the site access points on Chalkstone Way and Haverhill Road. As the site is classed as 'large' in relation to trackout the risk of effects are likely to occur for up to 500m from the site access points. There are properties located along Chalkstone Way and Haverhill Road within 500m of the site access points and within 20m of the roadside therefore the sensitivity of the area in relation to trackout is classed as 'high' in relation to dust soiling but low in relation to human health (PM₁₀).
- 12.5.18 A summary of the sensitivity of the area surrounding the site in relation to each activity is provided below in Table 12.11.

Table 12.11: Summary of Sensitivity of Surrounding Receptors

Source	Magnitude		
	Earthworks	Construction	Trackout
Dust Soiling	High	High	High
Human Health (PM ₁₀)	Low	Low	Low
Ecological	Medium	Medium	Low

Defining the Risk of Effects

- 12.5.19 The dust emission magnitude as set out in Table 12.10 is combined with the sensitivity of the area (Table 12.10) to determine the risk of both dust soiling and human health effects, assuming no mitigation measures applied at the proposed development site. The risk of effects associated with each activity is provided in Table 12.11 below and has been used to identify site-specific mitigation measures, which are discussed later in this chapter and set out in Appendix 12.4.
- 12.5.20 Based on the identified risk of effects as set out in Table 12.12, the significance of effects, prior to the implementation of appropriate mitigation measures, is considered to be Major adverse in relation to dust soiling but negligible in relation to human health (PM₁₀).

Table 12.12: Summary of Risk Effects to Define Site Specific Mitigation

Source	Magnitude		
	Earthworks	Construction	Trackout
Dust Soiling	High Risk	High Risk	High Risk
Human Health (PM ₁₀)	Low Risk	Low Risk	Low Risk
Ecological	Medium Risk	Medium Risk	Low Risk

Operational Phase

NO₂ Concentrations

- 12.5.21 Annual mean NO₂ concentrations predicted at the 25 existing receptor locations are provided in Table 12.13. Concentrations predicted at the proposed development site are set out in Table 12.14.
- 12.5.22 The modelling assessment is predicting annual mean NO₂ concentrations below the annual mean objective at 24 of the 25 existing receptors under the 2013 base scenario. Exceedence of the objective is predicted at Receptor 19, located in the centre of Haverhill on Withersfield Road. However, the model is predicting a decline in concentrations between 2013 and 2029 with concentrations falling below the objective at all locations by 2029.
- 12.5.23 Traffic generated by the proposed development is predicted to increase annual mean NO₂ concentrations by less than 2µg/m³ at the majority of receptor locations. A change in concentrations of between 0.4-2µg/m³ is classed as a 'small' change in air quality (Table 12.5). Based on the criteria set out in Table 12.6 a 'small' change in NO₂ is considered to be of negligible significance due to concentrations being 'well below' (<30µg/m³) the 40µg/m³ objective limit, including at Receptor 19, where concentrations in 2029 are predicted to be 21µg/m³ with the proposed development in operation.
- 12.5.24 At Receptor 4, the modelling assessment is predicting an increase in NO₂ concentrations of 2.2µg/m³, which is classed as a 'medium' change in concentrations. As concentrations in 2029 are predicted to be 'well below' the objective, a 'medium' change is also considered to be of negligible significance.
- 12.5.25 At Receptor 2 the assessment is predicting an increase in NO₂ concentrations of 4µg/m³. This is classed as a 'large' change in concentration and is therefore considered to be a minor adverse impact. The receptor is located adjacent to the junction of Haverhill Road and the new relief road, therefore NO₂ concentrations are expected to increase in this location as a result of the new emissions source where currently there isn't one. However, NO₂ concentrations would remain 'well below' the objective with the development in operation.
- 12.5.26 The 2013 traffic data has been used to provide a baseline scenario in 2029 to allow a cumulative assessment of both the North West Haverhill development, relief road and the proposed development on local air quality. Due to the redistribution of traffic following the completion of the relief road NO₂ concentrations are predicted to decline by up to 2.9µg/m³ within the centre of Haverhill. Traffic flows are predicted to decline along the A143 south of the relief road and along the A1307 Withersfield Road resulting in a reduction in NO₂ concentrations, the largest improvement being at Receptors 19, 21 and 22, where existing NO₂ concentrations are predicted to be highest. Traffic generated by the proposed development would increase traffic along these two links, however, concentrations are predicted to remain

lower than under the base scenario resulting in an overall positive impact on air quality within the centre of Haverhill.

12.5.27 Cumulatively a minor adverse impact is predicted at Receptors 2 and 24, both of which are located adjacent to the new relief road which would experience a significant increase in traffic once operational. However, concentrations at both receptors are predicted to remain 'well below' the objective. At all other receptors the cumulative impact would be negligible.

12.5.28 The ADMS model is predicting annual mean NO₂ concentrations 'well below' the objective at Receptors 26 and 27 under all four assessment scenarios. Both receptors have been selected to represent worst-case exposure to local traffic emissions within the proposed development site therefore NO₂ concentrations are expected to be 'well below' the objective at all locations across the site.

12.5.29 Exceedence of the 1-hour objective for NO₂ is also unlikely based on the predicted annual mean concentrations. Guidance referred to earlier in the report indicates that exceedence of the 1-hour objective is unlikely where the annual mean concentration is below 60µg/m³.

12.5.30 Future occupants of the proposed development site would not be exposed to elevated NO₂ concentrations therefore the effect of the proposed development with regards new exposure to air quality is considered to be negligible.

Table 12.13: Predicted Annual Mean NO₂ Concentrations at Existing Receptor Locations (µg/m³)

Receptor	2013 Base	2029 Base ¹	2029 Base + NW Haverhill	2029 Base + NW Haverhill + Proposed Development	Increase due to Proposed Development	Significance of Effects
1	31.1	19.2	19.8	20.8	0.9	Negligible
2	37.1	21.1	22.2	26.1	4.0	Minor Adverse
3	34.4	20.2	18.7	20.0	1.3	Negligible
4	36.1	20.8	19.7	21.8	2.2	Negligible
5	21.5	16.4	16.6	17.6	1.1	Negligible
6	22.1	16.6	16.8	18.3	1.5	Negligible
7	22.9	16.8	17.0	18.5	1.5	Negligible
8	20.1	16.0	16.2	17.1	1.0	Negligible
9	28.8	18.5	19.4	19.5	0.1	Negligible
10	26.2	17.8	18.8	19.2	0.4	Negligible
11	26.5	17.9	18.6	18.9	0.3	Negligible
12	28.6	18.5	19.3	19.6	0.3	Negligible
13	20.4	16.1	16.4	16.5	0.1	Negligible
14	19.2	15.8	15.9	16.0	0.1	Negligible
15	31.4	19.3	20.5	20.9	0.4	Negligible
16	36.8	21.0	22.4	22.6	0.2	Negligible
17	36.6	20.9	20.6	22.2	1.6	Negligible

Receptor	2013 Base	2029 Base ¹	2029 Base + NW Haverhill	2029 Base + NW Haverhill + Proposed Development	Increase due to Proposed Development	Significance of Effects
18	37.8	21.3	19.8	21.1	1.4	Negligible
19	43.2	23.1	20.4	21.2	0.9	Negligible
20	31.9	19.5	17.5	17.9	0.4	Negligible
21	37.7	21.3	18.3	18.9	0.6	Negligible
22	36.5	20.9	18.2	18.8	0.6	Negligible
23	23.0	16.8	17.4	18.4	0.9	Negligible
24	17.9	15.4	18.2	19.9	1.6	Negligible
25	22.2	16.6	17.4	18.2	0.9	Negligible

Note 1: the 2029 base scenario has been calculated using 2013 base traffic flows to predict air quality without the NW Haverhill development in place

Table 12.14: Predicted Annual Mean NO₂ Concentrations at Proposed Receptor Locations (µg/m³)

Receptor	2013 Base	2029 Base	2029 Base + NW Haverhill	2029 Base + NW Haverhill + Proposed Development
26	27.4	18.1	18.6	22.2
27	20.0	16.0	16.1	17.8

Note 1: the 2029 base scenario has been calculated using 2013 base traffic flows to predict air quality without the NW Haverhill development in place

PM₁₀ Concentrations

12.5.31 Annual mean PM₁₀ concentrations predicted at the existing receptor locations are set out in Table 12.15 and concentrations predicted at the proposed development site are provided in Table 12.16.

12.5.32 The predicted annual mean PM₁₀ concentrations are 'well below' the 40µg/m³ objective at all the selected existing receptor locations under all four assessment scenarios.

12.5.33 Traffic generated by the proposed development is predicted to increase annual mean PM₁₀ concentrations by less than 1µg/m³, at the majority of receptor locations which is a 'small' change in air quality with a negligible significance. At Receptor 2, adjacent to the new relief road concentrations are predicted to increase by 2.1µg/m³, a 'medium' change in air quality. As annual mean concentrations at this location are predicted to remain 'well below' the objective a 'medium' change is also considered to be of negligible significance.

12.5.34 The cumulative impact of both the North West Haverhill development, relief road and proposed development is also considered to be negligible. As with NO₂, the highest impact is predicted at Receptors 2 and 24 adjacent to the relief road. The cumulative increase in NO₂ at these locations is predicted to be between 2-2.6µg/m³, a 'medium' change in concentrations with a negligible significance as concentrations remain 'well below' the objective. At all other locations the change in concentrations would be less than 2µg/m³, a 'small' change with a negligible significance, although at the receptors within the centre of Haverhill the impact would be positive with a decline in PM₁₀ concentrations of up to 1.2µg/m³.

12.5.35 The number of exceedences of $50\mu\text{g}/\text{m}^3$, as a 24-hour mean PM_{10} concentration, has been calculated from the annual mean following the approach set out by DEFRA in LAQM.TG(09):

$$A = -18.5 + 0.00145 \times \text{annual mean}^3 + (206/\text{annual mean})$$

where A is the number of exceedences of $50\mu\text{g}/\text{m}^3$ as a 24-hour mean PM_{10} concentration.

12.5.36 Based on the approach set out above, the maximum number of days $>50\mu\text{g}/\text{m}^3$ PM_{10} is predicted to be between 3 and 10 at all locations with an increase of up to 4 as a result of the cumulative developments. The objective allows for up to 35 exceedences of the limit in any given year therefore the impact is considered to be negligible.

12.5.37 The modelling assessment has predicted an annual mean PM_{10} concentration 'well below' the objective at Receptors 26 and 27. Based on the predicted annual mean the number of days exceeding the 24 hour $50\mu\text{g}/\text{m}^3$ limit is expected to be between 3 and 6. The objective for this pollutant permits up to 35-days per annum and therefore exceedence of this objective is highly unlikely at any location across the proposed development site.

12.5.38 Future occupants of the proposed development site would not be exposed to elevated PM_{10} concentrations therefore the effect of the proposed development with regards new exposure to air quality is considered to be negligible.

Table 12.15: Predicted Annual Mean PM_{10} Concentrations at Existing Receptor Locations ($\mu\text{g}/\text{m}^3$)

Receptor	2013 Base	2029 Base ¹	2029 Base + NW Haverhill	2029 Base + NW Haverhill + Proposed Development	Increase due to Proposed Development	Significance of Effects
1	20.8	20.3	20.6	21.1	0.5	Negligible
2	22.0	21.3	21.8	23.9	2.1	Negligible
3	21.5	20.8	20.0	20.7	0.7	Negligible
4	21.6	20.9	20.4	21.4	1.0	Negligible
5	19.1	18.8	18.9	19.4	0.5	Negligible
6	19.2	18.9	19.0	19.7	0.7	Negligible
7	19.3	19.0	19.1	19.8	0.7	Negligible
8	18.8	18.7	18.7	19.2	0.4	Negligible
9	20.4	20.0	20.4	20.4	0.0	Negligible
10	19.9	19.6	20.1	20.3	0.2	Negligible
11	20.0	19.6	20.0	20.1	0.1	Negligible
12	20.4	19.9	20.4	20.5	0.1	Negligible
13	18.9	18.7	18.9	18.9	0.0	Negligible
14	18.7	18.6	18.6	18.7	0.1	Negligible
15	20.7	20.2	20.7	20.9	0.2	Negligible
16	21.7	21.0	21.6	21.8	0.1	Negligible

Receptor	2013 Base	2029 Base ¹	2029 Base + NW Haverhill	2029 Base + NW Haverhill + Proposed Development	Increase due to Proposed Development	Significance of Effects
17	21.7	20.9	20.8	21.6	0.8	Negligible
18	21.9	21.1	20.4	21.0	0.6	Negligible
19	23.0	22.0	20.7	21.1	0.4	Negligible
20	20.9	20.4	19.4	19.6	0.2	Negligible
21	22.1	21.3	19.9	20.1	0.3	Negligible
22	21.8	21.1	19.8	20.1	0.3	Negligible
23	19.4	19.1	19.4	19.9	0.4	Negligible
24	18.5	18.4	19.7	20.4	0.8	Negligible
25	19.3	19.0	19.4	19.8	0.4	Negligible

Note 1: the 2029 base scenario has been calculated using 2013 base traffic flows to predict air quality without the NW Haverhill development in place.

Table 12.16: Predicted Annual Mean PM₁₀ Concentrations at Proposed Receptor Locations (µg/m³)

Receptor	2013 Base	2029 Base ¹	2029 Base + NW Haverhill	2029 Base + NW Haverhill + Proposed Development
26	20.1	19.7	20.0	21.8
27	18.8	18.7	18.7	19.5

Note 1: the 2029 base scenario has been calculated using 2013 base traffic flows to predict air quality without the NW Haverhill development in place.

PM_{2.5} Concentrations

12.5.39 Annual mean PM_{2.5} concentrations predicted at the existing receptor locations are set out in Table 12.17 and concentrations predicted at the proposed development site are provided in Table 12.18.

12.5.40 The predicted annual mean PM_{2.5} concentrations are 'well below' the 25µg/m³ objective at all the selected receptor locations under all four assessment scenarios.

12.5.41 Traffic generated by the developments is predicted to increase annual mean PM_{2.5} concentrations by a maximum of 1.1µg/m³, a 'small' change in concentrations with a negligible significance.

12.5.42 The cumulative increase in PM_{2.5} concentrations as a result of the proposed development in conjunction with the North West Haverhill development and relief road is predicted to be up to 1.1µg/m³. The cumulative impact is therefore considered to be negligible.

12.5.43 The modelling assessment has predicted an annual mean PM_{2.5} concentration of less than 14µg/m³ at Receptors 26 and 27 (Table 12.18), 'well below' the objective limit. Future occupants of the proposed development site would not be exposed to elevated PM_{2.5} concentrations therefore the effect of the proposed development with regards new exposure to air quality is considered to be negligible.

Table 12.17: Predicted Annual Mean PM_{2.5} Concentrations at Existing Receptor Locations (µg/m³)

Receptor	2013 Base	2029 Base ¹	2029 Base + NW Haverhill	2029 Base + NW Haverhill + Proposed Development	Increase due to Proposed Development	Significance of Effects
1	13.5	13.0	13.2	13.4	0.2	Negligible
2	14.3	13.5	13.8	14.9	1.1	Negligible
3	13.9	13.3	12.9	13.2	0.4	Negligible
4	14.0	13.3	13.1	13.6	0.5	Negligible
5	12.5	12.3	12.3	12.5	0.3	Negligible
6	12.5	12.3	12.3	12.7	0.4	Negligible
7	12.6	12.3	12.4	12.8	0.4	Negligible
8	12.3	12.2	12.2	12.4	0.2	Negligible
9	13.3	12.8	13.1	13.1	0.0	Negligible
10	13.0	12.6	12.9	13.0	0.1	Negligible
11	13.0	12.7	12.9	12.9	0.1	Negligible
12	13.3	12.8	13.0	13.1	0.1	Negligible
13	12.4	12.2	12.3	12.3	0.0	Negligible
14	12.2	12.1	12.1	12.2	0.0	Negligible
15	13.5	13.0	13.3	13.4	0.1	Negligible
16	14.1	13.4	13.7	13.8	0.1	Negligible
17	14.1	13.4	13.3	13.7	0.4	Negligible
18	14.2	13.5	13.1	13.4	0.3	Negligible
19	14.9	13.9	13.2	13.5	0.2	Negligible
20	13.6	13.1	12.5	12.7	0.1	Negligible
21	14.3	13.6	12.8	12.9	0.14	Negligible
22	14.2	13.5	12.8	12.9	0.1	Negligible
23	12.6	12.4	12.5	12.8	0.2	Negligible
24	12.1	12.0	12.7	13.1	0.4	Negligible
25	12.6	12.3	12.5	12.8	0.2	Negligible

Note 1: the 2029 base scenario has been calculated using 2013 base traffic flows to predict air quality without the NW Haverhill development in place.

Table 12.18: Predicted Annual Mean PM_{2.5} Concentrations at Proposed Receptor Locations (µg/m³)

Receptor	2013 Base	2029 Base ¹	2029 Base + NW Haverhill	2029 Base + NW Haverhill + Proposed Development
26	13.1	12.7	12.9	13.8
27	12.3	12.2	12.2	12.6

Note 1: the 2029 base scenario has been calculated using 2013 base traffic flows to predict air quality without the NW Haverhill development in place.

12.6 Mitigation, Monitoring and Residual Effects

Mitigation

Construction Phase

- 12.6.1 The control of dust emissions from construction site activities relies upon management provision and mitigation techniques to reduce emissions of dust and limit dispersion. Where dust emission controls have been used effectively, large-scale operations have been successfully undertaken without effects to nearby properties.
- 12.6.2 A major adverse effect is predicted at adjacent sensitive receptors during construction of the development. Appropriate mitigation measures for the Site have been identified following the IAQM guidance and based on the risk effects presented in Table 12.12. It is recommended that the 'highly recommended' measures identified and set out in Appendix 12.4 are incorporated into a DMP and approved by the Borough Council prior to commencement of any work on the proposed development site.
- 12.6.3 The LAQM guidance recommends that where there is a medium/high risk of effects at nearby residential receptors that monitoring of dust or PM₁₀ is carried out throughout the construction period. The requirement for monitoring should be discussed and agreed with the Borough Council and if required baseline monitoring should commence at least three months before construction work commences on site.
- 12.6.4 In addition to the 'recommended' measures, the IAQM guidance also sets out a number of 'desirable' measures which should also be considered for inclusion within the DMP. These are also set out in Appendix 12.4.
- 12.6.5 Following implementation of the measures recommended for inclusion within the DMP the effect of emissions during construction of the proposed development would be negligible.

Operational Phase

- 12.6.6 The proposed development is predicted to have a minor adverse impact on NO₂ concentrations at one receptor, however concentrations would remain 'well below' the objective. At all other locations the impacts would be negligible. No mitigation measures are therefore considered necessary.

Residual Effects

Construction Phase

- 12.6.7 The greatest potential for dust nuisance problems to occur will generally be within 200m of the construction site perimeter. There may be limited incidences of increased dust deposited on property beyond this distance.

12.6.8 By following the mitigation measures outlined within this appraisal the effect would be substantially minimised. Residual effects are therefore considered to be negligible.

Operational Phase

12.6.9 The proposed development is predicted to have a minor adverse impact at once receptor and a negligible impact at all other locations. As pollutant concentrations would remain 'well below' the relevant air quality objectives once the proposed development is operational the residual impact is considered to be negligible.

12.7 Non-Technical Summary

12.7.1 An air quality assessment has been carried out to assess both construction and operational effects of the proposed development.

12.7.2 An assessment of the potential effects during the construction phase has been carried out. This has shown that during this phase of the proposed development releases of dust and PM₁₀ are likely to occur during site activities. Through good site practice and the implementation of suitable mitigation measures, the effect of dust and PM₁₀ releases may be effectively mitigated and the resultant effects are considered to be negligible.

12.7.3 ADMS Roads dispersion modelling has been carried out to assess the effect of the proposed development on local air quality in respect of both human and ecological receptors.

12.7.4 The modelling assessment has predicted a minor adverse impact at one receptor and a negligible impact at all other locations. As pollutant concentrations would remain 'well below' the relevant air quality objectives once the proposed development is operational the residual impact is considered to be negligible. Concentrations are also predicted to be 'well below' the relevant objective limits across the proposed development site, therefore the effect of the proposed development with regards new exposure to this pollutant is considered to be negligible.

Table 12.19: Summary of Potentially Significant Effect

Predicted Effect	Sensitivity	Magnitude	Significance	Other Parameters	Mitigation, Monitoring & Controls	Magnitude	Significance	Other Parameters
Construction Impacts – Nuisance	High	High	Major	MT,T,I	Mitigation measures set out within DMP as taken from IAQM guidance	Low	Negligible	MT,T,I
Construction Impacts – Health (PM ₁₀)	Low	Low	Negligible	MT,T,I	None	Low	Negligible	MT,T,I
Construction Impacts – ecological receptors	Medium	Medium	Moderate	MT,T,I	Mitigation measures set out within DMP as taken from IAQM guidance	Low	Negligible	MT,T,I
Traffic Impacts	High	Small	Negligible	LT,P,I	None	Small	Negligible	LT,P,I

Predicted Effect	Sensitivity	Magnitude	Significance	Other Parameters	Mitigation, Monitoring & Controls	Magnitude	Significance	Other Parameters
(existing receptors)				r				lr

Notes: Short term (0-5 years) = ST, medium term (5-10 years) = MT, long term (10+ years) = LT, permanent = P, temporary (construction) = T, intermittent = I, reversible = R, irreversible = Ir.

12.8 References

- 1 DEFRA. (July 2007). The Air Quality Strategy for England, Scotland, Wales and Northern Ireland.
- 2 DEFRA. (2009). Part IV The Environment Act 1995: Local Air Quality Management Review and Assessment Technical Guidance LAQM.TG(09).
- 3 DCLG. (March 2012). National Planning Policy Framework.
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- 5 St Edmundsbury Borough Council. (December 2010). The St Edmundsbury Core Strategy.
- 6 Forest Heath District Council & St Edmundsbury Borough Council. (February 2015). The Forest Heath and St Edmundsbury Local Plan Joint Development Management Policies Document.
- 7 EPUK & IAQM. (May 2015). Land-Use Planning and Development Control: Planning for Air Quality.
- 8 IAQM. (February 2014). Guidance on the Assessment of Dust from Demolition and Construction.
- 9 Laxen, D. & Marnier, B. (2003). Analysis of the relationship between 1-hour and annual mean nitrogen dioxide at UK roadside and kerbside monitoring sites.
- 10 <http://uk-air.defra.gov.uk/>