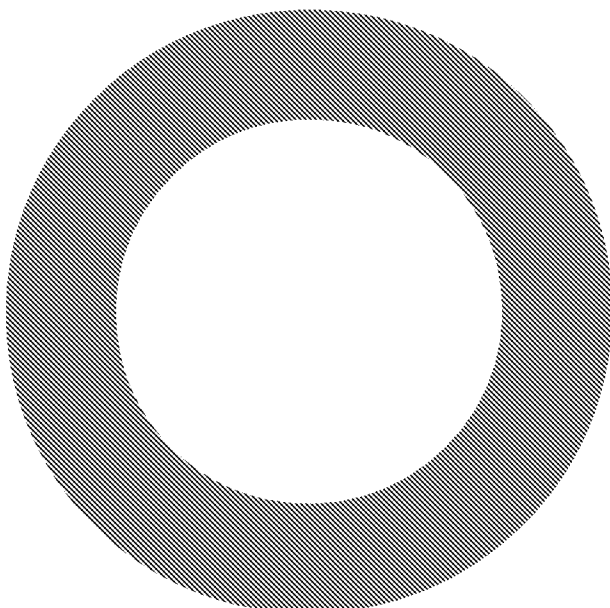


## **AIR QUALITY AND DUST ASSESSMENT TECHNICAL REPORT**

**Land at Ford Airfield.  
Ford, West Sussex.  
Redrow Homes Southern and  
Wates Developments Ltd.**

**AIR QUALITY**  
AIR QUALITY ASSESSMENT

REVISION 07 – 19 DECEMBER 2019



### *Audit sheet.*

| Rev. | Date       | Description of change / purpose of issue    | Prepared | Reviewed | Authorised |
|------|------------|---------------------------------------------|----------|----------|------------|
| 01   | 27/11/2018 | First draft                                 | MS/AD    | CH       | CR         |
| 02   | 06/12/2018 | Second draft                                | MS/AD    | CH       | CR         |
| 03   | 11/12/2018 | Final draft                                 | MS/AD    | CH       | CR         |
| 04   | 14/05/2019 | Update to ES following change in proposals  | CS       | CR       | CR         |
| 05   | 22/07/2019 | Update following finalisation of Masterplan | CS       | CR       | CR         |
| 06   | 24/10/2019 | First Issue                                 | CS       | CR       | CR         |
| 07   | 19/12/2019 | Second issue following update to Site area  | CS       | CR       | CR         |
|      |            |                                             |          |          |            |

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## Contents.

|                                                       |           |
|-------------------------------------------------------|-----------|
| <b>Audit sheet.</b>                                   | <b>2</b>  |
| <b>Executive summary</b>                              | <b>5</b>  |
| <b>1. Introduction</b>                                | <b>6</b>  |
| 1.1 Development Description                           | 6         |
| 1.2 Report Context                                    | 6         |
| 1.3 Scope                                             | 6         |
| 1.4 Objectives                                        | 6         |
| 1.5 Copyright notice:                                 | 6         |
| <b>2. Assessment Methodology</b>                      | <b>7</b>  |
| 2.1 Dust Assessment                                   | 7         |
| 2.2 Traffic Exhaust Emissions Impact Assessment       | 7         |
| 2.3 Future Exposure Risk Assessment                   | 8         |
| <b>3. Regulatory Standards and Guidance</b>           | <b>9</b>  |
| 3.1 European Legislation                              | 9         |
| 3.2 UK Legislation                                    | 9         |
| 3.3 Local Authority Air Quality Review and Assessment | 10        |
| 3.4 National Planning Policy                          | 10        |
| 3.5 Local Planning Policy                             | 11        |
| 3.6 Sussex Air Quality Guidance                       | 12        |
| <b>4. Site Setting</b>                                | <b>13</b> |
| 4.1 Site Location                                     | 13        |
| 4.2 Receptors                                         | 13        |
| 4.3 Existing Baseline Conditions                      | 16        |
| <b>5. Dust Assessment</b>                             | <b>18</b> |
| 5.1 STEP 1: Screening                                 | 18        |
| 5.2 STEP 2a: Dust Emission Magnitude                  | 18        |
| 5.3 STEP 2b: Sensitivity of the Area                  | 18        |
| 5.4 STEP 2c: Risks                                    | 19        |
| 5.5 STEP 3: Mitigation                                | 19        |
| 5.6 STEP4: Effect                                     | 19        |
| <b>6. Dispersion Modelling Assessment</b>             | <b>20</b> |
| 6.1 Dispersion Model                                  | 20        |

|                                                               |           |
|---------------------------------------------------------------|-----------|
| 6.2 Emission Factors                                          | 20        |
| 6.3 Traffic Flow Data                                         | 20        |
| 6.4 Meteorological Data                                       | 25        |
| 6.5 Roughness Length                                          | 25        |
| 6.6 Monin-Obukhov Length                                      | 25        |
| 6.7 Background Concentrations                                 | 25        |
| 6.8 NO <sub>x</sub> to NO <sub>2</sub> Conversion             | 26        |
| 6.9 Verification                                              | 26        |
| <b>7. Assessment of Air Quality Impacts &amp; Constraints</b> | <b>29</b> |
| 7.1 Impacts on Existing Receptors                             | 29        |
| NO <sub>2</sub> Concentrations                                | 29        |
| PM <sub>10</sub> Concentrations                               | 35        |
| PM <sub>2.5</sub> Concentrations                              | 42        |
| 7.2 Summary of Results                                        | 49        |
| 7.3 Impact on New Receptors                                   | 49        |
| <b>8. Mitigation</b>                                          | <b>51</b> |
| <b>9. Conclusions</b>                                         | <b>53</b> |
| <b>Appendix A</b>                                             | <b>54</b> |

## Executive summary

Redrow Homes Southern and Wates Developments Ltd has appointed Hoare Lea to undertake a detailed air quality impact assessment in support of a of a planning application for a proposed mixed-use development on land at Ford Airfield in order to predict the potential impacts on existing and new receptors as a result of the proposals. The site lies within the administrative authority of Arun District Council and West Sussex County Council.

A qualitative construction dust assessment has been completed in accordance with Institute of Air Quality Management (IAQM) Guidance. Mitigation of construction dust will be required for the scheme and this is typically agreed through provision of a Construction Environmental Management Plan (or equivalent).

Dispersion modelling was also undertaken in order to predict pollutant concentrations across the proposed site as a result of emissions from the local road network. The results indicated that pollutant levels across the site were below the relevant air quality standards and as such, the location is considered suitable for the proposed end use without the inclusion of mitigation measures. Furthermore, the assessment concluded that impacts on existing air quality as a result of the operation of the proposed development were predicted to be negligible at all sensitive receptor locations.

Based on the assessment results, the Proposed Development does not conflict with any national or local planning policy and as such, air quality issues are not considered a constraint to planning consent.

## 1. Introduction

This air quality assessment has been produced in order to predict the potential impacts associated with the construction and operational phases on existing and future sensitive receptors as a result of a proposed mixed-use development on land at Ford Airfield.

### 1.1 Development Description

The Site is located within the administrative boundary of Arun District Council (ADC). The village of Ford is located immediately to the north-east of the site, with the villages of Climping and Yapton located to the immediate south-east and west, respectively. The town of Littlehampton is located approximately 1.5km to the east of the site while Bognor Regis is located approximately 2km to the south-west.

The Site extends to 86.63 hectares (ha) and predominantly comprises an area of land formerly used as an airfield. Large areas of the Site now comprise agricultural fields, separated by hedgerows and trees.

The proposals comprise the development of up to 1,500 dwellings (Use Class C3), 60-bed care home (Use Class C2), up to 9,000 sqm of employment floorspace (Use Classes B1), local centre of up to 2,350 sqm including up to 900 sqm retail / commercial (Use Classes A1-A5) and 1,450 sqm community / leisure floorspace (Use Classes D1-D2), land for a two-form entry primary school (Use Class D1), public open space, allotments, new sports pitches and associated facilities, drainage, parking and associated access, infrastructure, landscape, ancillary and site preparation works, including demolition of existing buildings and part removal of existing runway hardstanding

### 1.2 Report Context

Due to the size of the proposals, an air quality assessment is required to assess the potential for air quality impacts as a result of emissions associated with the construction and operational phases of the Proposed Development on existing and future sensitive receptors. This report has therefore been produced to determine baseline conditions, consider the site suitability for the proposed end-use and provide consideration of potential effects as a result of the proposals.

### 1.3 Scope

The scope of this assessment has been agreed with the local authority and is limited to the prediction of air quality and dust impacts associated with the construction and operation of the Proposed Development. It draws on existing information to determine whether this is likely to be significant.

### 1.4 Objectives

The objectives of the assessment are therefore as follows:

- To review current air quality in the area;
- To identify and assess air quality impacts during the construction phase;
- To identify and assess air quality impacts during the operational phase (e.g. additional traffic);
- To assess the significance of these impacts;
- To identify the potential for exposure of future residents to poor air quality; and
- To identify further options for mitigation where required.

### 1.5 Copyright notice:

Unless otherwise noted, all OS drawings used in this report are subject to Crown copyright and database rights 2019 Ordnance Survey.

## 2. Assessment Methodology

A staged approach has been adopted; this ensures that the approach taken for the assessment of risk is proportional to the risk of an unacceptable impact being caused. As such, where a simple review of the situation shows that the risk of a health or disamenity impact is negligible, this will be sufficient. In cases where the risk cannot be regarded as insignificant, a more detailed assessment may be required, such as a quantitative screening assessment or an advanced dispersion modelling exercise.

The assessment methodology was agreed with Mr Colin Giddings, Senior Environmental Health Officer at Arun District Council in May 2018. The following sections outline the methodology utilised throughout the assessment.

The assessment of the potential impacts on air quality and the significance of the effects of these impacts requires professional judgement. The experience of those involved in the preparation of the assessment are provided in Appendix A.

### 2.1 Dust Assessment

Given the requirement for construction activities, there is a potential risk for the generation of dust. For such operations the common concern regarding dust emissions is their potential disamenity effect.

A qualitative risk-screening assessment of the dust generation potential of the construction phase has been carried out using the method detailed in the 2016 Institute of Air Quality Management (IAQM) document '*Assessment of dust from demolition and construction v1.1*'.

### 2.2 Traffic Exhaust Emissions Impact Assessment

The development has the potential to affect existing air quality as a result of road traffic exhaust emissions associated with vehicles travelling to and from the Site. Potential impacts have been defined by predicting nitrogen dioxide (NO<sub>2</sub>), particulate matter (PM) with an aerodynamic diameter of less than 10µm (PM<sub>10</sub>), and PM with an aerodynamic diameter of less than 2.5 µm (PM<sub>2.5</sub>) concentrations at relevant locations using dispersion modelling for the following scenarios:

- **Scenario 0:** Model verification;
- **Scenario 1:** Opening year 'without development' (predicted traffic flows in 2024, inclusive of anticipated growth and committed developments, should the proposals not proceed);
- **Scenario 2:** Opening year 'with development' (predicted traffic flows in 2024, inclusive of anticipated growth and committed developments, as well as traffic associated with the full build out of the development);
- **Scenario 3:** Opening year 'with development' (predicted traffic flows in 2024, inclusive of anticipated growth and committed developments, as well as traffic associated with the full build out of the development and the proposed secondary school plus sixth form adjacent to the site);
- **Scenario 4:** Future year 'without development' (predicted traffic flows in 2030, inclusive of anticipated growth and committed developments in line with the end of the Local Plan, should the proposals not proceed);
- **Scenario 5:** Future year 'with development' (predicted traffic flows in 2030, inclusive of anticipated growth and committed developments in line with the end of the Local Plan, as well as traffic associated with the full build out of the development); and
- **Scenario 6:** Future year 'with development' (predicted traffic flows in 2030, inclusive of anticipated growth and committed developments in line with the end of the Local Plan, as well as traffic associated with the full build out of the development and the proposed secondary school plus sixth form adjacent to the site).

Dispersion modelling was undertaken using the ADMS-Roads dispersion model (version 4.1.1.0).

The predicted impacts have been assessed against the relevant air quality objectives (AQOs) and are described for individual receptors using the criteria in the Environmental Protection UK/IAQM guidance, as presented in Table 1.

**Table 1: Significance Criteria for Annual NO<sub>2</sub> and PM<sub>10</sub>**

| Concentration at Receptor in Assessment Year | Predicted Concentration Change as Percentage of Air Quality Objective (AQO) (%) |             |             |             |
|----------------------------------------------|---------------------------------------------------------------------------------|-------------|-------------|-------------|
|                                              | 1                                                                               | 2 - 5       | 6 - 10      | > 10        |
| 75% or less of AQO                           | Negligible                                                                      | Negligible  | Slight      | Moderate    |
| 76 - 94% of AQO                              | Negligible                                                                      | Slight      | Moderate    | Moderate    |
| 95 - 102% of AQO                             | Slight                                                                          | Moderate    | Moderate    | Substantial |
| 103 - 109% of AQO                            | Moderate                                                                        | Moderate    | Substantial | Substantial |
| 110% or more of AQO                          | Moderate                                                                        | Substantial | Substantial | Substantial |

The overall significance of the predicted impact is determined by using professional judgement taking into account a range of factors including:

- Existing and future air quality in the absence of the development;
- The extent of current and future population exposure to the impacts; and
- The influence and validity of any assumptions adopted when undertaking the prediction of impacts

### 2.3 Future Exposure Risk Assessment

The proposed development has the potential to expose future users to poor air quality. In order to assess NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations across the site, dispersion modelling was undertaken.

Results were compared with the relevant AQOs to determine the potential for exposure of future residents to poor air quality.

### 3. Regulatory Standards and Guidance

#### 3.1 European Legislation

European air quality legislation is consolidated under Directive 2008/50/EC, which came into force on 11th June 2008. This Directive consolidates previous legislation which was designed to deal with specific pollutants in a consistent manner and provides new air quality limit and targets values for fine particulate matter (PM<sub>2.5</sub>).

#### 3.2 UK Legislation

##### 3.2.1 Air Quality Standards

Current EU Air Quality limit values defined within the Directive have been transposed into UK legislation in the Air Quality Standards Regulations 2010, Statutory Instrument 2010 No. 1001.

##### 3.2.2 Air Quality Strategy

The Air Quality Strategy (UKAQS) 2007 for England, Scotland, Wales and Northern Ireland sets out the Government's policies aimed at delivering cleaner air in the UK. It sets out a comprehensive strategic framework within which air quality policy will be taken forward in the short to medium term, and the roles that Government, industry, the Environment Agency, local government, business, individuals and transport have in protecting and improving air quality.

The Air Quality Strategy defines 'standards' and 'objectives' in paragraph 17:

"For the purposes of the strategy:

standards are the concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on assessment of the effects of each pollutant on human health including the effects on sensitive subgroups or on ecosystems;

objectives are policy targets often expressed as a maximum ambient concentration not to be exceeded, either without exception or with a permitted number of exceedances, within a specified timescale."

The air quality objectives considered within this air quality assessment are presented within Table 3.1. It should be noted that the AQOs have the same numerical values as the EU limit values.

**Table 2: Air Quality Limit Objective (AQOs)**

| Pollutant         | Concentration        | Measured as  | Equivalent percentile                                                                     |
|-------------------|----------------------|--------------|-------------------------------------------------------------------------------------------|
| NO <sub>2</sub>   | 40µg/m <sup>3</sup>  | Annual mean  | -                                                                                         |
|                   | 200µg/m <sup>3</sup> | 1-hour mean  | 99.79 <sup>th</sup> percentile of 1-hour-means<br>(equivalent to 18 1-hour exceedances)   |
| PM <sub>10</sub>  | 40µg/m <sup>3</sup>  | Annual mean  | -                                                                                         |
|                   | 50µg/m <sup>3</sup>  | 24-hour mean | 90.41 <sup>th</sup> percentile of 24-hour-means<br>(equivalent to 35 24-hour exceedances) |
| PM <sub>2.5</sub> | 25 µg/m <sup>3</sup> | Annual mean  | -                                                                                         |

In accordance with statutory DEFRA technical guidance for Local Air Quality Management (LAQM(TG16)), the air quality objectives should be assessed at locations where members of the public are likely to be regularly present and are likely to be exposed for a period of time appropriate to the averaging period of the objective.

A summary of relevant exposure for the objectives presented in Table 2 are shown below in Table 3.

**Table 3: Relevant Public Exposure**

| Objective Averaging Period | Relevant Locations                                                           | Objectives should apply at:                                                          | Objectives should not apply at:                                          |
|----------------------------|------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| Annual mean                | Where individuals are exposed for a cumulative period of 6 months in a year; | Building facades of residential properties, schools, hospitals etc                   | Facades of offices<br>Hotels<br>Gardens of residences<br>Kerbside sites  |
| 24-hour mean               | Where individuals may be exposed for eight hours or more in a day            | As above together with hotels and gardens of residential properties                  | Kerbside sites where public exposure is expected to be short term        |
| 1-hour mean                | Where individuals might reasonably be expected to spend one hour or longer   | As above together with kerbside sites of regular access, car parks, bus stations etc | Kerbside sites where public would not be expected to have regular access |

### 3.3 Local Authority Air Quality Review and Assessment

Local Authorities (LAs), including ADC, have statutory duties to control air quality through a combination of Local Air Quality Management (LAQM) and by use of their wider planning policies.

Under Section 82 of the Environment Act 1995 (Part IV), LAs are required to periodically review and assess air quality within their area of administration under the system of LAQM. This review and assessment involves assessing present and likely future air quality against the AQOs. If it is predicted that levels at the façade of buildings, in the instance of annual mean concentrations, where members of the public are regularly present are likely to be exceeded, the LA is required to declare an Air Quality Management Area (AQMA). For each AQMA the LA is required to produce an Air Quality Action Plan (AQAP), the objective of which is to reduce pollutant concentrations in pursuit of the AQOs.

The results of ADC's Review and Assessment of air quality are summarised in Section 4.3.1

### 3.4 National Planning Policy

The National Planning Policy Framework (NPPF) 2019 sets out planning policy for England. It includes advice on when air quality should be a material consideration in development control decisions. Relevant sections are set out below:

Paragraph 170:

“Planning policies and decisions should contribute to and enhance the natural and local environment by: preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality”

Paragraph 180:

“Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development”.

Paragraph 181:

“Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality

Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan."

Paragraph 183:

"The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities."

Paragraph 54:

"Local planning authorities should consider whether otherwise unacceptable development could be made acceptable through the use of conditions or planning obligations. Planning obligations should only be used where it is not possible to address unacceptable impacts through a planning condition."

The NPPF is supported by Planning Practice Guidance (PPG)<sup>i</sup>.

The PPG states that:

Paragraph 001 (Reference ID: 32-001-20140306):

"Defra carries out an annual national assessment of air quality using modelling and monitoring to determine compliance with EU Limit Values. It is important that the potential impact of new development on air quality is taken into account in planning where the national assessment indicates that relevant limits have been exceeded or are near the limit."

Paragraph 005 (Reference ID: 32-005-20140306):

"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 an 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)."

The PPG also sets out the information that may be required in an air quality assessment, stating that:

Paragraph 007 (Reference ID: 32-007-20140306):

"Assessments should be proportional to the nature and scale of development proposed and the level of concern about air quality, and because of this are likely to be locationally specific."

It also provides guidance on options for mitigating air quality impacts, and makes clear that:

Paragraph 008 (Reference ID: 32-008-20140306):

"Mitigation options where necessary will be locationally specific, will depend on the Proposed Development and should be proportionate to the likely impact."

### 3.5 Local Planning Policy

The Arun Local Plan 2011-2031 sets out the planning framework for the district for the period between 2011 and 2031.

Policy QE DM3 Air Pollution of the Local Plan refers to air quality:

"All major development proposals will be required to assess the likely impacts of the development on air quality and mitigate any negative impacts by:

- a. Ensuring the development is located within easy reach of established public transport services;
- b. Maximising provision for cycling and pedestrian facilities;
- c. Encouraging the use of cleaner transport fuels on site, through the inclusion of electric car charging points; and
- d. Contributing towards the improvement of the highway network where the development is predicted to result in increased congestion on the highway network.

Development proposed nearby any Air Quality Management Area (AQMA) declared within the District within the Plan period, will require an air quality assessment to identify likely impacts of development upon the designated area. Developers will be required to ensure delivery of the actions set out within any Air Quality Action Plan.

Industrial development which is regulated by environmental permits (that creates or results in dust, smell, fumes, smoke, heat, radiation, gases, steam or other forms of pollution) must be located in such a position which ensures that the health, safety and amenity of users of the site or surrounding land is not put at risk and the quality of the environment would not be damaged or put at risk.

Developments shall also be consistent with all other Local Plan policies."

This policy has been considered throughout this air quality assessment.

### 3.6 Sussex Air Quality Guidance

Air quality and emissions mitigation guidance for Sussex (2013) was developed by members of the Sussex Air Quality Partnership (Sussex-air). The guidance supports the principles of the partnership to improve air quality across Sussex and encourage emissions reductions to improve the environment and health of the population.

The stated purpose of this guidance is to:

- 'Provide a Sussex-wide approach for assessing potential air quality impacts from development and transport related emissions and provide a consistent approach to mitigating those impacts'; and
- 'Provide technical advice to local planning authorities on how to deal with planning applications that could have an impact on air quality'.

This guidance includes an air quality screening checklist however as an air quality assessment has been requested, this is not required. The guidance also outlines mitigation options but is currently under review.

## 4. Site Setting

The following sections provide detail of the location of the site and the surrounding topography and receptors.

### 4.1 Site Location

The Site is 86.63 hectares in size and is located to the south-west of Ford. The Proposed Development location predominantly comprises an area of land formerly in use as an airfield. Large areas of the site now comprise agricultural fields, separated by hedgerows and trees. The surrounding typology represents a mix of residential, commercial and light industrial properties, as well as agricultural land uses.

### 4.2 Receptors

In relation to the Ford Airfield site, the key receptors will be:

- Construction dust: Local residential buildings, persons parking in the vicinity of the Site;
- Existing receptors: residents of near-by properties, occupiers of residences alongside road links used by Site traffic and local schools; and
- New receptors: Occupiers of the new residential properties.

Representative existing receptors were identified from a desk-top study. These are summarised in Table 4, below.

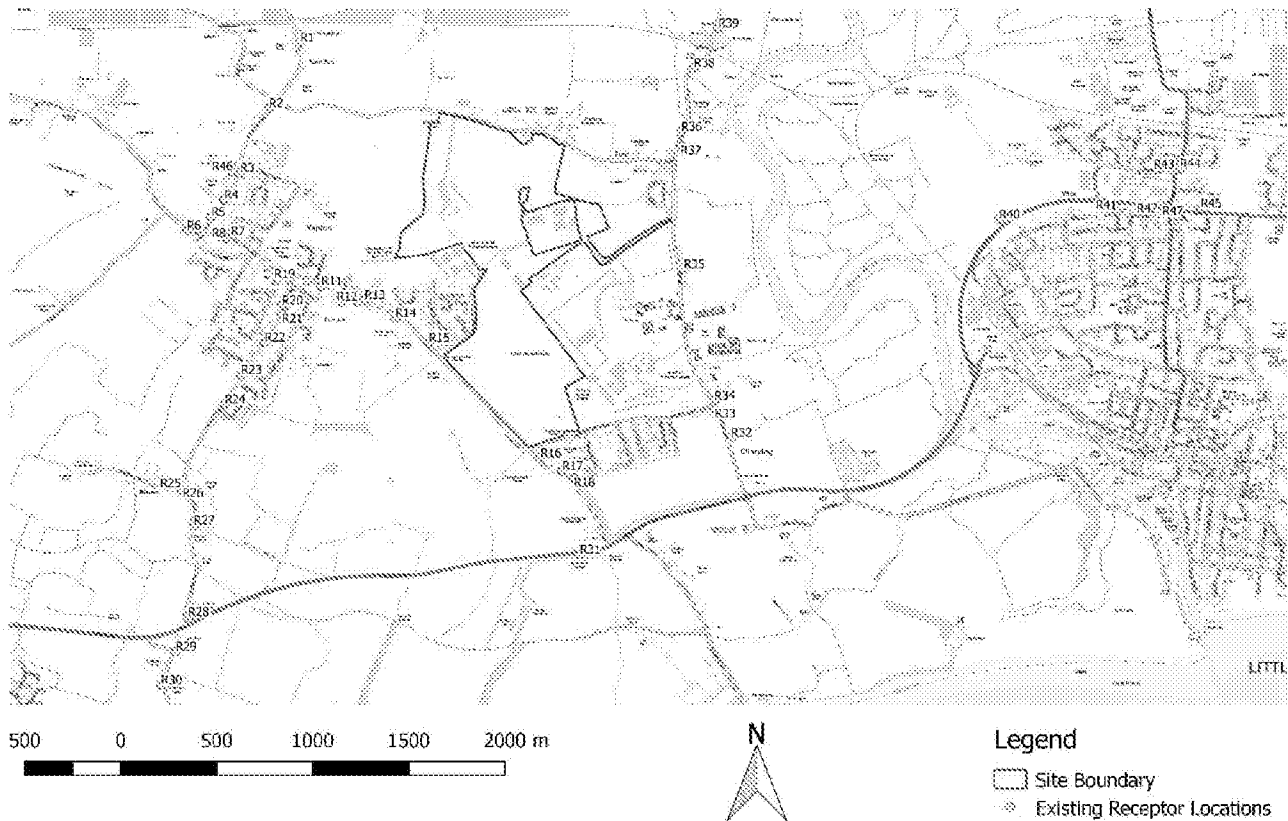
**Table 4: Road Traffic Emissions – Existing Sensitive Receptors**

| Receptor Location |                              | Ordnance Survey Grid Reference (m) |          |
|-------------------|------------------------------|------------------------------------|----------|
|                   |                              | X                                  | Y        |
| R1                | Residential - North End Road | 498132.8                           | 104303.0 |
| R2                | Residential - North End Road | 497969.6                           | 103961.2 |
| R3                | Residential - North End Road | 497818.4                           | 103625.3 |
| R4                | Residential - North End Road | 497736.2                           | 103483.6 |
| R5                | Residential - North End Road | 497667.8                           | 103394.9 |
| R6                | Residential - Main Road      | 497542.0                           | 103324.8 |
| R7                | Residential - Main Road      | 497771.0                           | 103295.5 |
| R8                | Residential - Main Road      | 497744.9                           | 103284.2 |
| R9                | Residential - Main Road      | 498074.6                           | 103086.8 |
| R10               | Residential - Burndell Road  | 498168.8                           | 103060.1 |
| R11               | Residential - Burndell Road  | 498241.8                           | 103034.6 |
| R12               | Residential - Burndell Road  | 498430.3                           | 102954.0 |
| R13               | Residential - Burndell Road  | 498466.4                           | 102962.3 |
| R14               | Residential - Burndell Road  | 498627.1                           | 102868.6 |
| R15               | Residential - Burndell Road  | 498801.4                           | 102739.3 |
| R16               | Residential - Yapton Road    | 499383.3                           | 102138.8 |
| R17               | Residential - Yapton Road    | 499495.5                           | 102072.3 |
| R18               | Residential - Yapton Road    | 499557.5                           | 102032.4 |
| R19               | Residential - Bilsham Road   | 498077.6                           | 103072.3 |

| Receptor Location |                                  | Ordnance Survey Grid Reference (m) |          |
|-------------------|----------------------------------|------------------------------------|----------|
|                   |                                  | X                                  | Y        |
| R20               | Residential - Bilsham Road       | 498037.5                           | 102934.6 |
| R21               | Residential - Bilsham Road       | 498036.7                           | 102886.9 |
| R22               | Residential - Bilsham Road       | 497945.9                           | 102741.6 |
| R23               | Residential - Bilsham Road       | 497823.3                           | 102572.9 |
| R24               | Residential - Bilsham Road       | 497738.6                           | 102418.5 |
| R25               | Residential - Bilsham Road       | 497510.8                           | 101981.9 |
| R26               | Residential - Bilsham Road       | 497518.4                           | 101957.0 |
| R27               | Residential - Bilsham Road       | 497578.2                           | 101789.0 |
| R28               | Residential - Bilsham Road       | 497547.9                           | 101312.3 |
| R29               | Residential - Yapton Road        | 497483.1                           | 101131.4 |
| R30               | Residential - Yapton Road        | 497407.7                           | 100957.2 |
| R31               | Residential - Apple Barn Cottage | 499588.2                           | 101637.0 |
| R32               | Residential - Church Lane        | 500375.9                           | 102245.4 |
| R33               | Residential - Church Lane        | 500290.8                           | 102392.5 |
| R34               | Residential - Church Lane        | 500288.3                           | 102438.0 |
| R35               | Residential - Church Lane        | 500128.8                           | 103122.4 |
| R36               | Residential - Station Road       | 500115.6                           | 103839.0 |
| R37               | Residential - Station Road       | 500112.2                           | 103763.8 |
| R38               | Residential - Ford Lane          | 500182.5                           | 104171.3 |
| R39               | Residential - Ford Lane          | 500308.1                           | 104377.9 |
| R40               | Residential - Henry Lock Way     | 501771.8                           | 103381.9 |
| R41               | Residential - Willow Brook       | 502384.5                           | 103429.7 |
| R42               | Residential - Colebrook Road     | 502596.9                           | 103414.5 |
| R43               | Residential - Lyminster Road     | 502685.0                           | 103642.5 |
| R44               | Residential - Lyminster Road     | 502712.7                           | 103647.1 |
| R45               | Residential - Worthing Road      | 502822.1                           | 103438.5 |
| R46               | Yapton Primary School            | 497780.3                           | 103631.9 |
| R47               | Lyminster Primary School         | 502703.2                           | 103398.9 |

Existing sensitive receptor locations are shown on the Figure 1 below.

Figure 1: Road Traffic Emissions – Existing Sensitive Receptors



The Proposed Development also has the potential to introduce new sensitive receptors into an area of poor air quality and therefore a number of proposed sensitive receptor locations have been included within this assessment, utilising the Masterplan (Ref: 23885 - RG-M-78E - Illustrative Master Plan-(1-2500@A1)) to determine locations where there is the potential for elevated pollutant concentrations i.e. adjacent to the road network. These are summarised in Table 5 and shown on Figure 2 below.

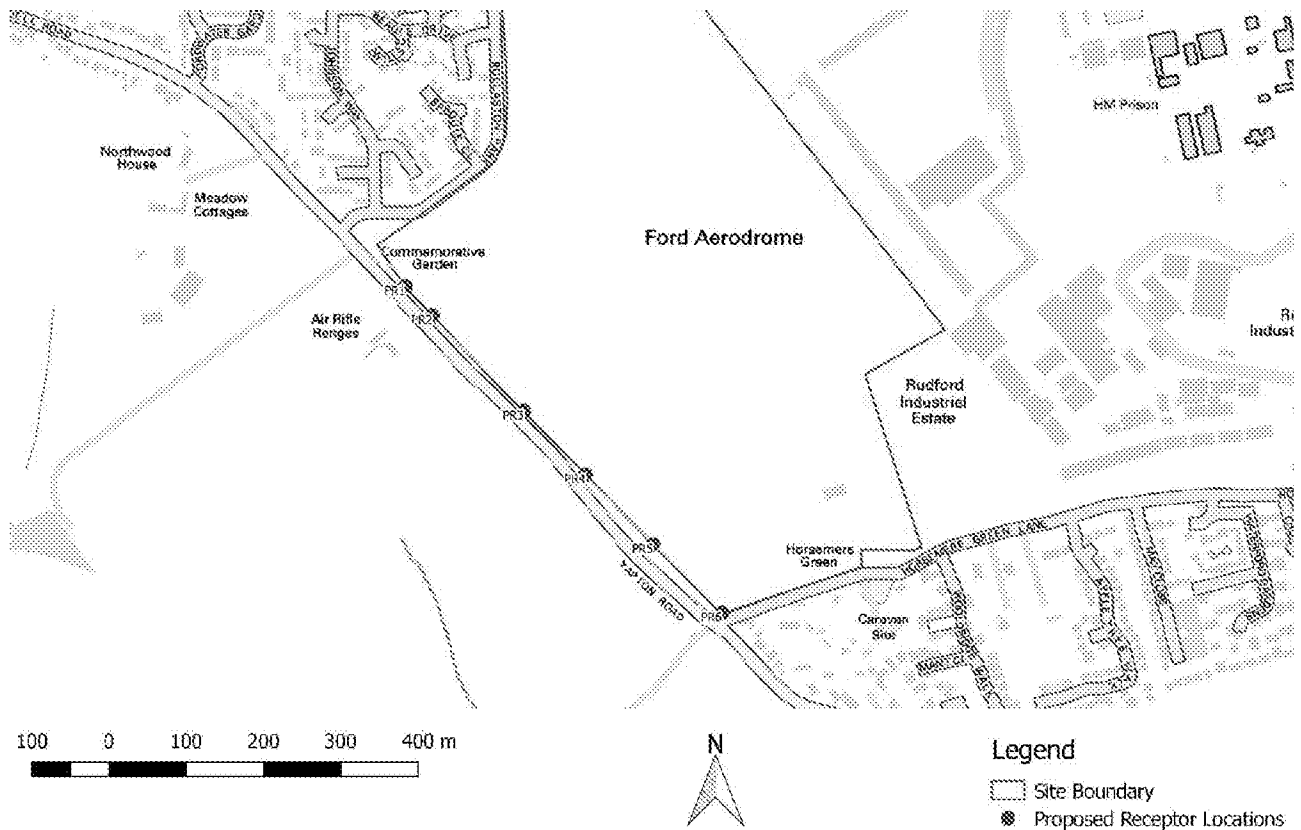
Table 5: Road Traffic Emissions – Proposed Sensitive Receptors

| Proposed Receptor Location |                               | Ordnance Survey Grid Reference (m) |          |
|----------------------------|-------------------------------|------------------------------------|----------|
|                            |                               | X                                  | Y        |
| PR1                        | Proposed Residential Receptor | 498929.4                           | 102627.5 |
| PR2                        | Proposed Residential Receptor | 498962.3                           | 102589.1 |
| PR3                        | Proposed Residential Receptor | 499102.8                           | 102493.5 |
| PR4                        | Proposed Residential Receptor | 499163.7                           | 102391.4 |
| PR5                        | Proposed Residential Receptor | 499259.7                           | 102307.7 |
| PR6                        | Proposed Residential Receptor | 499343.1                           | 102267.8 |

The proposed residential receptors identified above are located along the south eastern boundary of the Site adjacent to Yapton Road. It is noted that the Proposed Development comprises a school as well as other residential units in other parts of the Site however the receptors identified above are the closest to the surrounding road network for which traffic data is available and are therefore considered to be the worst case

locations on the Site. Furthermore, these receptor locations will be an overestimation of the concentrations experienced across the Site as concentrations reduce with distance from the source.

**Figure 2: Road Traffic Emissions – Proposed Sensitive Receptors**



### 4.3 Existing Baseline Conditions

#### 4.3.1 Local Authority Review and Assessment

As required under Section 82 of the Environment Act (1995) (Part IV), ADC has conducted an ongoing exercise to review and assess air quality within their area of administration. This process, as reported in the ADC 2018 Annual Status Report, has indicated that concentrations of all Air Quality Strategy pollutants were below the relevant AQOs at locations of relevant public exposure, and as such no AQMAs have been declared within the Council's administrative area.

#### 4.3.2 Monitoring

During 2017 ADC operated a network of 15 NO<sub>2</sub> diffusion tube locations. A summary of recent NO<sub>2</sub> monitoring results from the monitoring locations with most relevance to the Site is presented within Table 6, below.

**Table 6: NO<sub>2</sub> Diffusion Tube Monitoring Results**

| Monitoring Location | Monitored NO <sub>2</sub> Concentration (µg/m <sup>3</sup> ) |      |      |
|---------------------|--------------------------------------------------------------|------|------|
|                     | 2015                                                         | 2016 | 2017 |
| 2 - Litt02          | 25.8                                                         | 24.4 | 25.3 |
| 3 - Yap03           | 12.9                                                         | 12.9 | 16.9 |
| 4 - Litt04          | 16.1                                                         | 22.9 | 27.1 |

| Monitoring Location | Monitored NO <sub>2</sub> Concentration (µg/m <sup>3</sup> ) |      |      |
|---------------------|--------------------------------------------------------------|------|------|
|                     | 2015                                                         | 2016 | 2017 |
| 8 - Ford08          | 17.1                                                         | 16.6 | 18.5 |

Table 6 indicates that the annual mean AQO of 40µg/m<sup>3</sup> was achieved at all monitoring locations during recent years. ADC do not undertake PM<sub>10</sub> monitoring within the vicinity of the Site.

#### 4.3.3 Background Air Quality

Predictions of background pollutant concentrations on a 1km by 1km grid basis have been produced by DEFRA for the entire of the UK and assist local authorities in their Review and Assessment of air quality.

Mapped background concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> were downloaded for grid squares x499500, y102500 and x499500, y103500, which represent the southern and northern parts of the Site, respectively, for the base year (2017), opening year (2024) and a future year (2030). This data is presented in Table 7, below.

**Table 7: Estimated Annual Mean Background Concentrations**

| Grid Square    | Pollutant         | Predicted Concentrations (µg/m <sup>3</sup> ) |       |       |
|----------------|-------------------|-----------------------------------------------|-------|-------|
|                |                   | 2017                                          | 2024  | 2030  |
| 499500, 102500 | NO <sub>2</sub>   | 10.07                                         | 8.01  | 7.17  |
|                | PM <sub>10</sub>  | 14.91                                         | 13.84 | 13.84 |
|                | PM <sub>2.5</sub> | 9.60                                          | 8.70  | 8.70  |
| 499500, 103500 | NO <sub>2</sub>   | 10.46                                         | 8.71  | 8.05  |
|                | PM <sub>10</sub>  | 14.95                                         | 13.88 | 13.88 |
|                | PM <sub>2.5</sub> | 9.53                                          | 8.63  | 8.63  |

As detailed above, the background concentrations are well below the objectives for all three pollutants in both grid squares.

## 5. Dust Assessment

This dust assessment has been undertaken in accordance with the IAQM document 'Assessment of dust from demolition and construction v1.1'.

The construction phases are broken down into four different activities with the potential to generate dust:

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

### 5.1 STEP 1: Screening

There are human receptors located within 50m of the boundary of the site and 50m of the route(s) used by construction vehicles. There are however no notable ecological receptors close to the development site.

According to the IAQM Dust Guidance the risk cannot therefore be regarded as 'negligible' and an assessment is required.

### 5.2 STEP 2a: Dust Emission Magnitude

#### 5.2.1 Demolition

There are no existing buildings on Site which will require demolition prior to construction of the new buildings. As such, there are no potential dust emissions associated with demolition activities.

#### 5.2.2 Earthworks

The total Site area is greater than 10,000m<sup>2</sup> and there may be the requirement for material movement from Site during operations. However, the Site itself is over 1.7km long (north to south) and the risk of dust impact will therefore only be greatest when works are closest to existing properties on the western and southern boundaries, for example. The phasing of the development proposals may mean the introduction of new receptors within the overall site boundary whilst other areas are being constructed.

The potential dust emission magnitude as a result of earthworks is therefore considered to be 'large'.

#### 5.2.3 Construction

Based on size of the Proposed Development, the new buildings are anticipated to have a total volume greater than 100,000m<sup>3</sup>. The potential dust emission magnitude as a result of construction is therefore considered to be 'large'.

#### 5.2.4 Trackout

The final (detailed) construction scheme is not available at the time of writing. Based on the size of the development it is anticipated that there will be more than 50 Heavy Duty Vehicle (HDV) movements per day during certain periods of the construction works and the unpaved road length is likely to be greater than 100m at stages of the build, given the Site orientation. The potential dust emission magnitude as a result of trackout is therefore considered to be 'large'.

### 5.3 STEP 2b: Sensitivity of the Area

The closest receptors to the Site are located adjacent to the northern, southern and western boundaries. Hence the sensitivity of the area to dust soiling effects on people and property as a result of earthworks and construction activities is regarded as 'high' in these locations. The sensitivity will be, at worst, 'medium' for all other directions due to their commercial / industrial uses.

There are a number of residential receptors within 20m of the anticipated Site access route along Yapton Road. The sensitivity of the area to dust soiling effects on people and property as a result of trackout activities is therefore considered to be 'high'.

Given the low baseline PM<sub>10</sub> concentrations, the sensitivity of the area to human health impacts is considered to be 'low'.

#### 5.4 STEP 2c: Risks

The risk of dust soiling during earthworks is likely, during specific stage of Site preparation, to be 'high risk' at the closest receptors before mitigation is considered. The risk of human health impacts during earthworks is considered to be 'low risk' before mitigation is considered.

The risk of dust soiling during construction on the northern, southern and western boundaries of the Site must be regarded as 'high risk' before mitigation is considered. This risk will reduce with distance from the relevant boundaries. The risk of human health impacts during construction must be regarded as 'low risk' before mitigation is considered.

The risk of dust soiling impacts during trackout activities must be regarded as 'high risk' before mitigation is considered. The risk of human health impacts during trackout activities must be regarded as 'low risk' before mitigation is considered.

#### 5.5 STEP 3: Mitigation

The risk of dust impacts at stages of the earthworks, construction and trackout must be regarded as 'high risk', as the most significant risk rating, before mitigation is considered and therefore the high-risk mitigation measures detailed in section 8.2 of the IAQM 'Guidance on the assessment of dust from demolition and construction v1.1' should be considered in this case.

Specific measures will be detailed within a Site Construction Environmental Management Plan which should be approved by the LA before construction commences on site. The level of detail will depend on the risk and should include, as a minimum, the highly recommended measures in this document. The desirable measures should be included as appropriate for the site. Mitigation measures may include (but not be limited to):

- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of site boundary, with cleaning to be provided if necessary.
- Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.

#### 5.6 STEP4: Effect

The IAQM document 'Assessment of dust from demolition and construction v1.1' describes that, where suitable mitigation is applied, the residual effect will normally be 'not significant'. This is the case with the Ford Airfield scheme where robust mitigation measures are proposed. Full and final details of this mitigation should be provided to the Council before site works commence. This should be produced by the Principal contractor, taking into account the results and mitigation recommendations of this assessment.

## 6. Dispersion Modelling Assessment

The Proposed Development has the potential to affect existing air quality as a result of road traffic emissions associated with vehicles travelling to and from the Site, as well as expose future occupants to elevated pollution levels. Potential impacts have been defined by predicting pollutant concentrations at the receptors for the following scenarios, as described in section 2.2:

- **Scenario 0:** Model verification;
- **Scenario 1:** Opening year 'without development' (predicted traffic flows in 2024, inclusive of anticipated growth and committed developments, should the proposals not proceed);
- **Scenario 2:** Opening year 'with development' (predicted traffic flows in 2024, inclusive of anticipated growth and committed developments, as well as traffic associated with the full build out of the development);
- **Scenario 3:** Opening year 'with development' (predicted traffic flows in 2024, inclusive of anticipated growth and committed developments, as well as traffic associated with the full build out of the development and the proposed secondary school plus sixth form adjacent to the site);
- **Scenario 4:** Future year 'without development' (predicted traffic flows in 2030, inclusive of anticipated growth and committed developments in line with the end of the Local Plan, should the proposals not proceed);
- **Scenario 5:** Future year 'with development' (predicted traffic flows in 2030, inclusive of anticipated growth and committed developments in line with the end of the Local Plan, as well as traffic associated with the full build out of the development); and
- **Scenario 6:** Future year 'with development' (predicted traffic flows in 2030, inclusive of anticipated growth and committed developments in line with the end of the Local Plan, as well as traffic associated with the full build out of the development and the proposed secondary school plus sixth form adjacent to the site).

The relevant inputs are outlined in the following Sections.

### 6.1 Dispersion Model

Dispersion modelling was undertaken using the ADMS-Roads dispersion model (version 4.1.1.0). ADMS-Roads is developed by Cambridge Environmental Research Consultants (CERC) and is routinely used throughout the world for the prediction of pollutant dispersion from road sources. The use of the ADMS-Roads model has been agreed with the local authority.

### 6.2 Emission Factors

Emission factors for each link were calculated using the relevant traffic flows and the Emissions Factor Toolkit (version 9.0), released in 2019, which incorporates COPERT 5 vehicle emission factors for NO<sub>x</sub> and vehicle fleet information.

There is current uncertainty over NO<sub>2</sub> concentrations within the UK, with roadside levels not reducing as previously expected. Therefore, for this assessment, 2017 (base year) emission factors have been utilised for the prediction of pollution levels for both opening year scenarios and future year scenarios. This provides a robust assessment and assumes that emission rates will not improve in the future.

### 6.3 Traffic Flow Data

Traffic data including 24-hour Annual Average Daily Traffic (AADT) flows and fleet composition (% heavy duty vehicles) was provided by i-Transport, the appointed Transport Consultants for the project. A diurnal profile was also included within the model to represent variations in traffic flow throughout the day. Separate inputs were provided for weekdays, Saturday and Sunday and this information was obtained from DfT data.

Traffic data for a future year of 2031 has been provided by i-Transport, the appointed Transport Consultants for the project, in line with the completion of the Local Plan however in the EFT, emission factors are only available up to 2030. It has been confirmed with i-Transport, that the traffic data provided for the 2031 future year

scenario is also representative of the traffic predicted to be on the network in 2030. It is predicted that between 2030 and 2031 that there will be a 1% growth in traffic flows and therefore utilising 2031 traffic data for a 2030 scenario is an overestimation and provides a robust assessment of air quality impacts.

A summary of the AADT traffic data used in the assessment is provided in Tables 8 and 9, below.

**Table 8: 2017 and 2024 Traffic Data**

| Road Link |                                               | AADT Flow   |             |             |             | HDV (%)     |             |             |             |
|-----------|-----------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|           |                                               | 2017<br>Sc0 | 2024<br>Sc1 | 2024<br>Sc2 | 2024<br>Sc3 | 2017<br>Sc0 | 2024<br>Sc1 | 2024<br>Sc2 | 2024<br>Sc3 |
| L1        | North End Road                                | 8040        | 9706        | 10080       | 10137       | 6.7         | 5.6         | 5.4         | 5.4         |
| L2        | North End Road, junction                      | 8040        | 9706        | 10080       | 10137       | 6.7         | 5.6         | 5.4         | 5.4         |
| L3        | Yapton Road, west of North End Road, junction | 8144        | 9700        | 11203       | 11858       | 3.1         | 2.6         | 2.3         | 2.2         |
| L4        | Yapton Road, west of North End Road           | 8144        | 9700        | 11203       | 11858       | 3.1         | 2.6         | 2.3         | 2.2         |
| L5        | Main Road, east of North End Road, junction   | 8144        | 9700        | 11203       | 11858       | 3.1         | 2.6         | 2.3         | 2.2         |
| L6        | Main Road, east of North End Road             | 8144        | 9700        | 11203       | 11858       | 3.1         | 2.6         | 2.3         | 2.2         |
| L7        | Main Road, west of Bilsham Road               | 8144        | 9700        | 11203       | 11858       | 3.1         | 2.6         | 2.3         | 2.2         |
| L8        | Burndell Road, west of Bilsham Road, junction | 9411        | 10713       | 11765       | 11765       | 3.9         | 3.4         | 3.1         | 3.1         |
| L9        | Burndell Road                                 | 9411        | 10713       | 11765       | 11765       | 3.9         | 3.4         | 3.1         | 3.1         |
| L10       | Yapton Road                                   | 7654        | 8635        | 10211       | 10211       | 5.2         | 4.6         | 3.9         | 3.9         |
| L11       | Yapton Road North of Oystercatcher Junction   | 7654        | 8635        | 10211       | 10211       | 5.2         | 4.6         | 3.9         | 3.9         |
| L12       | Bilsham Road, south of Yapton Road, junction  | 7015        | 7542        | 7955        | 8008        | 3.5         | 3.3         | 3.1         | 3.1         |
| L13       | Bilsham Road, south of Yapton Road            | 7015        | 7542        | 7955        | 8008        | 3.5         | 3.3         | 3.1         | 3.1         |
| L14       | Bilsham Road, north of A529                   | 7015        | 7542        | 7955        | 8008        | 3.5         | 3.3         | 3.1         | 3.1         |
| L15       | Bilsham Road, north of A530, junction         | 7015        | 7542        | 7955        | 8008        | 3.5         | 3.3         | 3.1         | 3.1         |
| L16       | A259 east of B2259                            | 22849       | 29073       | 30636       | 30689       | 3.4         | 3.2         | 3.0         | 3.0         |
| L17       | B2132 south of Bilsham Road stagger, junction | 5635        | 5683        | 5709        | 5709        | 3.4         | 2.9         | 2.9         | 2.9         |
| L18       | B2132 south of Bilsham Road stagger           | 5635        | 5683        | 5709        | 5709        | 3.4         | 2.9         | 2.9         | 2.9         |
| L19       | A259 West of Oystercatcher Junction           | 20386       | 21615       | 22733       | 22733       | 3.6         | 3.5         | 3.3         | 3.3         |
| L20       | Crookthorn Lane                               | 25544       | 27701       | 28820       | 28820       | 3.7         | 3.4         | 3.3         | 3.3         |
| L21       | Crookthorn Lane, junction                     | 25544       | 27701       | 28820       | 28820       | 3.7         | 3.4         | 3.3         | 3.3         |
| L22       | Church Lane, junction                         | 10981       | 12593       | 13955       | 14026       | 6.2         | 7.5         | 6.9         | 6.9         |
| L23       | Church Lane                                   | 10981       | 12593       | 13955       | 14026       | 6.2         | 7.5         | 6.9         | 6.9         |
| L24       | Ford Road                                     | 6300        | 6828        | 7462        | 7486        | 4.9         | 4.6         | 4.2         | 4.2         |
| L25       | A259 east of Church Lane Roundabout, junction | 31476       | 34008       | 36005       | 36075       | 4.2         | 4.0         | 3.8         | 3.8         |
| L26       | A259 east of Church Lane Roundabout           | 31476       | 34008       | 36005       | 36075       | 4.2         | 4.0         | 3.8         | 3.8         |

| Road Link |                                                | AADT Flow   |             |             |             | HDV (%)     |             |             |             |
|-----------|------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|           |                                                | 2017<br>Sc0 | 2024<br>Sc1 | 2024<br>Sc2 | 2024<br>Sc3 | 2017<br>Sc0 | 2024<br>Sc1 | 2024<br>Sc2 | 2024<br>Sc3 |
| L27       | A259 south of Broad Piece Roundabout           | 31476       | 34008       | 36005       | 36075       | 4.2         | 4.0         | 3.8         | 3.8         |
| L28       | A259 north of Broad Piece Roundabout, junction | 22432       | 24569       | 25940       | 25987       | 2.2         | 2.1         | 2.0         | 2.0         |
| L29       | A259 north of Broad Piece Roundabout           | 22432       | 24569       | 25940       | 25987       | 2.2         | 2.1         | 2.0         | 2.0         |
| L30       | A259 west of Wick Roundabout                   | 22432       | 24569       | 25940       | 25987       | 2.2         | 2.1         | 2.0         | 2.0         |
| L31       | Lyminster Road, junction                       | 13150       | 13491       | 13491       | 13491       | 4.7         | 4.6         | 4.6         | 4.6         |
| L32       | Lyminster Road                                 | 13150       | 13491       | 13491       | 13491       | 4.7         | 4.6         | 4.6         | 4.6         |
| L33       | Worthing Road, junction                        | 22860       | 24939       | 26253       | 26300       | 2.5         | 2.3         | 2.2         | 2.2         |
| L34       | Worthing Road                                  | 22860       | 24939       | 26253       | 26300       | 2.5         | 2.3         | 2.2         | 2.2         |
| L35       | Broad Piece Roundabout                         | 15738       | 17004       | 18002       | 18038       | 4.2         | 4.0         | 3.8         | 3.8         |
| L36       | Wick Roundabout                                | 21606       | 23058       | 23847       | 23874       | 4.7         | 4.6         | 4.6         | 4.6         |

Table 9: 2030 Traffic Data

| Road Link |                                               | AADT Flow   |             |             | HGV (%)     |             |             |
|-----------|-----------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
|           |                                               | 2030<br>Sc4 | 2030<br>Sc5 | 2030<br>Sc6 | 2030<br>Sc4 | 2030<br>Sc5 | 2030<br>Sc6 |
| L1        | North End Road                                | 9746        | 10121       | 10177       | 5.7         | 5.5         | 5.4         |
| L2        | North End Road, junction                      | 9746        | 10121       | 10177       | 5.7         | 5.5         | 5.4         |
| L3        | Yapton Road, west of North End Road, junction | 9742        | 11245       | 11899       | 2.7         | 2.3         | 2.2         |
| L4        | Yapton Road, west of North End Road           | 9742        | 11245       | 11899       | 2.7         | 2.3         | 2.2         |
| L5        | Main Road, east of North End Road, junction   | 9742        | 11245       | 11899       | 2.7         | 2.3         | 2.2         |
| L6        | Main Road, east of North End Road             | 9742        | 11245       | 11899       | 2.7         | 2.3         | 2.2         |
| L7        | Main Road, west of Bilsham Road               | 9742        | 11245       | 11899       | 2.7         | 2.3         | 2.2         |
| L8        | Burndell Road, west of Bilsham Road, junction | 10758       | 11810       | 11810       | 3.5         | 3.2         | 3.2         |
| L9        | Burndell Road                                 | 10758       | 11810       | 11810       | 3.5         | 3.2         | 3.2         |
| L10       | Yapton Road                                   | 8670        | 10246       | 10246       | 4.7         | 4.0         | 4.0         |
| L11       | Yapton Road North of Oystercatcher Junction   | 8670        | 10246       | 10246       | 4.7         | 4.0         | 4.0         |
| L12       | Bilsham Road, south of Yapton Road, junction  | 7576        | 7989        | 8042        | 3.4         | 3.2         | 3.2         |
| L13       | Bilsham Road, south of Yapton Road            | 7576        | 7989        | 8042        | 3.4         | 3.2         | 3.2         |
| L14       | Bilsham Road, north of A529                   | 7576        | 7989        | 8042        | 3.4         | 3.2         | 3.2         |
| L15       | Bilsham Road, north of A530, junction         | 7576        | 7989        | 8042        | 3.4         | 3.2         | 3.2         |
| L16       | A259 east of B2259                            | 29199       | 30762       | 30815       | 3.2         | 3.1         | 3.1         |

| Road Link |                                                | AADT Flow   |             |             | HGV (%)     |             |             |
|-----------|------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
|           |                                                | 2030<br>Sc4 | 2030<br>Sc5 | 2030<br>Sc6 | 2030<br>Sc4 | 2030<br>Sc5 | 2030<br>Sc6 |
| L17       | B2132 south of Bilsham Road stagger, junction  | 5699        | 5725        | 5725        | 2.9         | 2.9         | 2.9         |
| L18       | B2132 south of Bilsham Road stagger            | 5699        | 5725        | 5725        | 2.9         | 2.9         | 2.9         |
| L19       | A259 West of Oystercatcher Junction            | 21718       | 22837       | 22837       | 3.5         | 3.4         | 3.4         |
| L20       | Crookthorn Lane                                | 27831       | 28949       | 28949       | 3.5         | 3.3         | 3.3         |
| L21       | Crookthorn Lane, junction                      | 27831       | 28949       | 28949       | 3.5         | 3.3         | 3.3         |
| L22       | Church Lane, junction                          | 12649       | 14011       | 14081       | 7.4         | 6.9         | 6.9         |
| L23       | Church Lane                                    | 12649       | 14011       | 14081       | 7.4         | 6.9         | 6.9         |
| L24       | Ford Road                                      | 6852        | 7486        | 7510        | 4.7         | 4.3         | 4.3         |
| L25       | A259 east of Church Lane Roundabout, junction  | 34168       | 36165       | 36235       | 4.0         | 3.8         | 3.8         |
| L26       | A259 east of Church Lane Roundabout            | 34168       | 36165       | 36235       | 4.0         | 3.8         | 3.8         |
| L27       | A259 south of Broad Piece Roundabout           | 34168       | 36165       | 36235       | 4.0         | 3.8         | 3.8         |
| L28       | A259 north of Broad Piece Roundabout, junction | 24677       | 26049       | 26095       | 2.1         | 2.0         | 2.0         |
| L29       | A259 north of Broad Piece Roundabout           | 24677       | 26049       | 26095       | 2.1         | 2.0         | 2.0         |
| L30       | A259 west of Wick Roundabout                   | 24677       | 26049       | 26095       | 2.1         | 2.0         | 2.0         |
| L31       | Lyminster Road, junction                       | 13547       | 13547       | 13547       | 4.7         | 4.7         | 4.7         |
| L32       | Lyminster Road                                 | 13547       | 13547       | 13547       | 4.7         | 4.7         | 4.7         |
| L33       | Worthing Road, junction                        | 25055       | 26369       | 26416       | 2.3         | 2.3         | 2.3         |
| L34       | Worthing Road                                  | 25055       | 26369       | 26416       | 2.3         | 2.3         | 2.3         |
| L35       | Broad Piece Roundabout                         | 17084       | 18083       | 18118       | 4.0         | 3.8         | 3.8         |
| L36       | Wick Roundabout                                | 23161       | 23950       | 23977       | 4.7         | 4.7         | 4.7         |

Road widths were estimated from aerial photography and UK highway design standards. A summary of the link parameters is shown in Table 10, below.

**Table 10: Link Parameters**

| Road Link |                                               | Average Vehicle Speed<br>(km/h) | Road Width (m) |
|-----------|-----------------------------------------------|---------------------------------|----------------|
| L1        | North End Road                                | 45                              | 6.5            |
| L2        | North End Road, junction                      | 30                              | 6.5            |
| L3        | Yapton Road, west of North End Road, junction | 30                              | 7.0            |
| L4        | Yapton Road, west of North End Road           | 45                              | 7.0            |
| L5        | Main Road, east of North End Road, junction   | 30                              | 7.0            |
| L6        | Main Road, east of North End Road             | 45                              | 7.0            |
| L7        | Main Road, west of Bilsham Road               | 25                              | 7.0            |

| Road Link |                                                | Average Vehicle Speed<br>(km/h) | Road Width (m) |
|-----------|------------------------------------------------|---------------------------------|----------------|
| L8        | Burndell Road, west of Bilsham Road, junction  | 25                              | 7.0            |
| L9        | Burndell Road                                  | 45                              | 7.0            |
| L10       | Yapton Road                                    | 60                              | 5.8            |
| L11       | Yapton Road North of Oystercatcher Junction    | 25                              | 5.8            |
| L12       | Bilsham Road, south of Yapton Road, junction   | 25                              | 5.8            |
| L13       | Bilsham Road, south of Yapton Road             | 45                              | 5.8            |
| L14       | Bilsham Road, north of A529                    | 60                              | 5.8            |
| L15       | Bilsham Road, north of A530, junction          | 25                              | 5.8            |
| L16       | A259 east of B2259                             | 80                              | 7.2            |
| L17       | B2132 south of Bilsham Road stagger, junction  | 25                              | 7.2            |
| L18       | B2132 south of Bilsham Road stagger            | 45                              | 7.2            |
| L19       | A259 West of Oystercatcher Junction            | 80                              | 7.3            |
| L20       | Crookthorn Lane                                | 60                              | 7.3            |
| L21       | Crookthorn Lane, junction                      | 30                              | 7.3            |
| L22       | Church Lane, junction                          | 30                              | 7.3            |
| L23       | Church Lane                                    | 55                              | 6.6            |
| L24       | Ford Road                                      | 50                              | 6.7            |
| L25       | A259 east of Church Lane Roundabout, junction  | 30                              | 7.2            |
| L26       | A259 east of Church Lane Roundabout            | 60                              | 7.2            |
| L27       | A259 south of Broad Piece Roundabout           | 30                              | 7.2            |
| L28       | A259 north of Broad Piece Roundabout, junction | 30                              | 15.8           |
| L29       | A259 north of Broad Piece Roundabout           | 80                              | 7.7            |
| L30       | A259 west of Wick Roundabout                   | 30                              | 13.6           |
| L31       | Lyminster Road, junction                       | 25                              | 16.5           |
| L32       | Lyminster Road                                 | 30                              | 7.3            |
| L33       | Worthing Road, junction                        | 30                              | 12.8           |
| L34       | Worthing Road                                  | 45                              | 12.8           |
| L35       | Broad Piece Roundabout                         | 25                              | 11.2           |
| L36       | Wick Roundabout                                | 25                              | 11.2           |

A map of the model inputs and monitoring points used in the verification process is shown in Figure 3, below.

Figure 3: ADMS-Inputs



## 6.4 Meteorological Data

Meteorological data used in the assessment was taken from Shoreham meteorological station over the period 1st January 2017 to 31st December 2017 (inclusive). Shoreham meteorological station is located at OS GR: x520095, y105457, which is approximately 21.3km east of the Site.

## 6.5 Roughness Length

The roughness length is a modelling parameter used to estimate the impact of the surface height on air flows. Roughness lengths of 0.5m and 0.1m were used to describe the modelling domain and meteorological site, respectively.

## 6.6 Monin-Obukhov Length

The Monin-Obukhov length provides a measure of the stability of the atmosphere. Minimum Monin-Obukhov lengths of 10m and 30m were used to describe the modelling domain and meteorological site, respectively.

## 6.7 Background Concentrations

Annual mean NO<sub>2</sub>, NO<sub>x</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> background concentrations for use in the assessment were taken from the DEFRA mapping for the grid squares OS GR: x497500, y101500 and x502500, y103500 for receptor locations in the vicinity of the Site and receptor locations in Wick, respectively. For the proposed receptor locations, background concentrations were also taken from the DEFRA mapping but for the grid square x499500, y102500 which covers the southern aspect of the Site. This ensured a robust assessment.

## 6.8 NO<sub>x</sub> to NO<sub>2</sub> Conversion

Predicted annual mean NO<sub>x</sub> concentrations were converted to NO<sub>2</sub> concentrations using the spreadsheet (version 7.1) provided by DEFRA, which is the method detailed within DEFRA guidance LAQM(TG16).

## 6.9 Verification

The predicted results from a dispersion model may differ from measured concentrations for a large number of reasons. Model verification is the process by which these uncertainties are investigated and where possible, minimised.

For the purpose of the assessment model, verification was undertaken for 2017 using traffic data, meteorological data and monitoring results from this year as this was the most recent year with all data available.

ADC undertook monitoring of NO<sub>2</sub> concentrations at four locations within the modelling domain during 2017. In order to provide a robust assessment, two model verifications were undertaken; one for receptors located close to the Site using diffusion tubes Yap03 and Ford08 and another for receptors located in Wick using diffusion tubes Litt02 and Litt04. Results were obtained and the road contributions to total NO<sub>x</sub> concentrations calculated following the methodology contained within DEFRA guidance LAQM(TG16). The monitored annual mean NO<sub>2</sub> concentrations and calculated road NO<sub>x</sub> concentrations are summarised in Tables below.

**Table 11: Verification of Monitoring Results in the vicinity of the Site**

| Monitoring Location | Monitored NO <sub>2</sub> Concentration (µg/m <sup>3</sup> ) | Calculated Road NO <sub>x</sub> Concentration (µg/m <sup>3</sup> ) |
|---------------------|--------------------------------------------------------------|--------------------------------------------------------------------|
| 3 - Yap03           | 16.9                                                         | 13.1                                                               |
| 8 - Ford08          | 18.5                                                         | 17.2                                                               |

**Table 12: Verification of Monitoring Results in Wick**

| Monitoring Location | Monitored NO <sub>2</sub> Concentration (µg/m <sup>3</sup> ) | Calculated Road NO <sub>x</sub> Concentration (µg/m <sup>3</sup> ) |
|---------------------|--------------------------------------------------------------|--------------------------------------------------------------------|
| 2 - Litt02          | 25.3                                                         | 26.2                                                               |
| 4 - Litt04          | 27.1                                                         | 27.9                                                               |

The annual mean road NO<sub>x</sub> concentrations predicted from the dispersion model and the 2017 monitoring results are summarised in Table 13 for the diffusion tubes in the vicinity of the Site and Table 14 for the diffusion tubes in Wick.

**Table 13: Verification of Modelling Results in the vicinity of the Site**

| Monitoring Location | Calculated Road NO <sub>x</sub> Concentration (µg/m <sup>3</sup> ) | Modelled Road NO <sub>x</sub> Concentration (µg/m <sup>3</sup> ) |
|---------------------|--------------------------------------------------------------------|------------------------------------------------------------------|
| 3 - Yap03           | 13.09                                                              | 10.21                                                            |
| 8 - Ford08          | 17.21                                                              | 8.91                                                             |

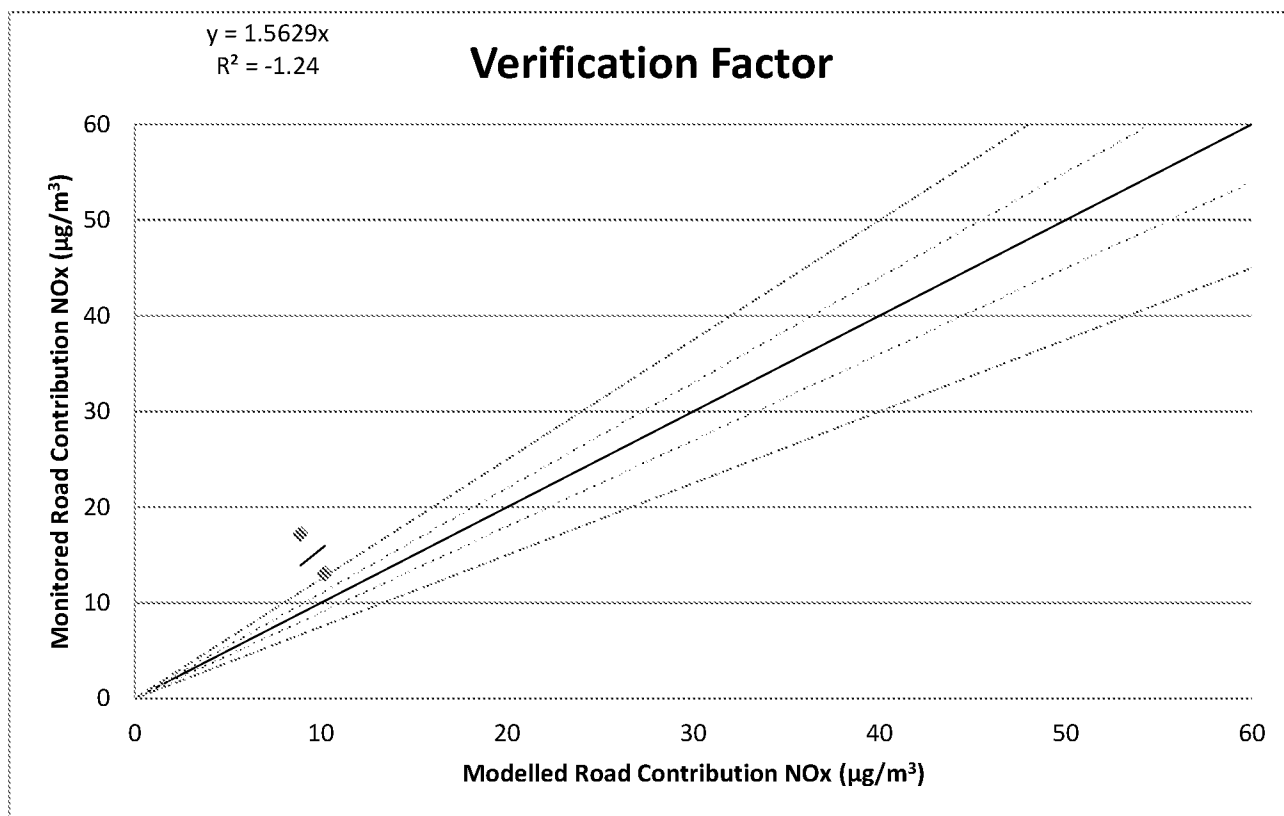
**Table 14: Verification of Modelling Results in Wick**

| Monitoring Location | Calculated Road NO <sub>x</sub> Concentration (µg/m <sup>3</sup> ) | Modelled Road NO <sub>x</sub> Concentration (µg/m <sup>3</sup> ) |
|---------------------|--------------------------------------------------------------------|------------------------------------------------------------------|
| 2 - Litt02          | 26.18                                                              | 11.13                                                            |

| Monitoring Location | Calculated Road NO <sub>x</sub> Concentration (µg/m <sup>3</sup> ) | Modelled Road NO <sub>x</sub> Concentration (µg/m <sup>3</sup> ) |
|---------------------|--------------------------------------------------------------------|------------------------------------------------------------------|
| 4 - Litt04          | 27.90                                                              | 12.25                                                            |

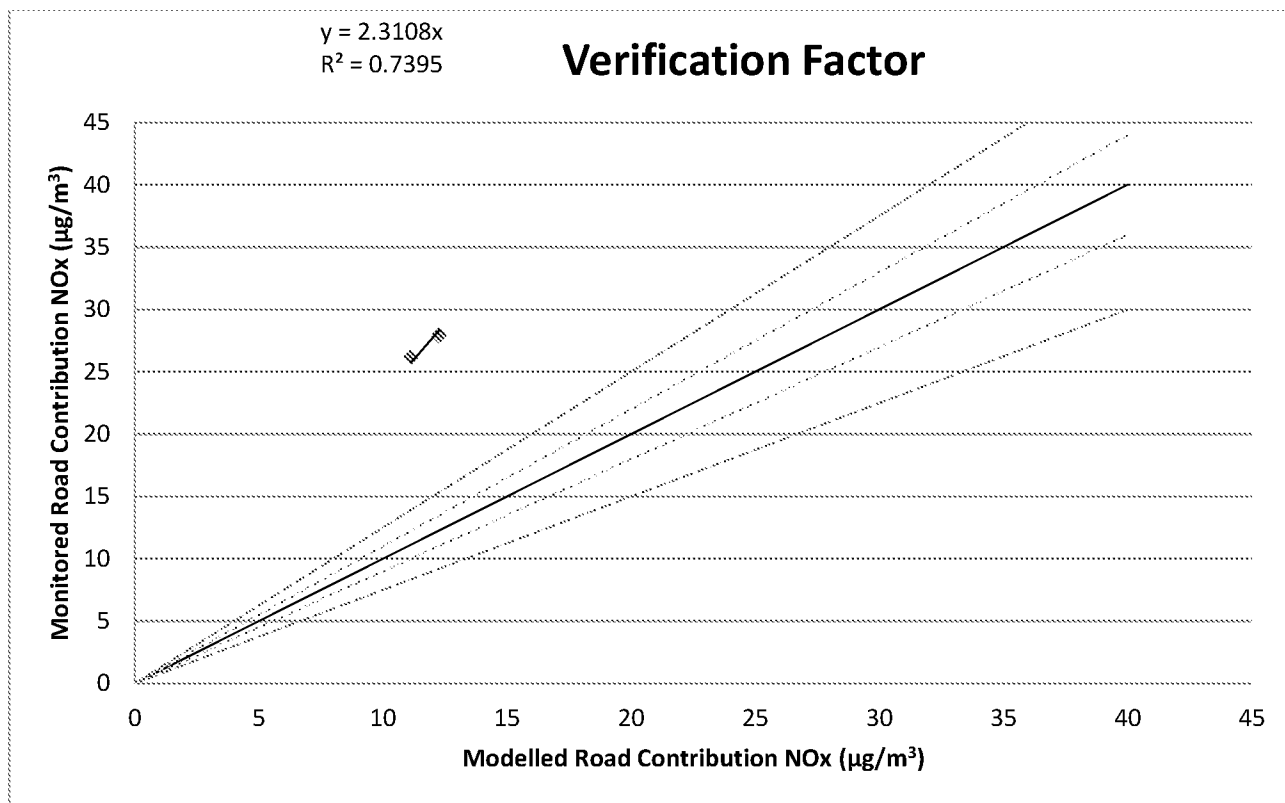
The monitored and modelled road NO<sub>x</sub> concentrations were graphed and the equation of the trendline based on linear progression through zero calculated. This indicated that a verification factor of 1.5629 was required to be applied to modelling results at sensitive receptor locations in the vicinity of the Site as shown in Graph 1.

Graph 1: NO<sub>x</sub> Verification Factor for Receptors in the vicinity of the Site.



Graph 2 shows that a verification factor of 2.3108 was required to be applied to modelling results at sensitive receptor locations in Wick.

Graph 2: NO<sub>x</sub> Verification Factor for Receptors in Wick



Monitoring of PM<sub>10</sub> or PM<sub>2.5</sub> concentrations is not undertaken within the assessment area. The NO<sub>x</sub> verification factor was therefore used to adjust PM<sub>10</sub> and PM<sub>2.5</sub> model predictions in lieu of more accurate data in accordance with the guidance provided within DEFRA guidance LAQM (TG16).

## 7. Assessment of Air Quality Impacts & Constraints

### 7.1 Impacts on Existing Receptors

Vehicle movements associated with the operation of the Proposed Development will generate exhaust emissions on the local road networks. An assessment was therefore undertaken using dispersion modelling to quantify potential changes in pollutant concentrations at representative receptors.

Annual mean NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations were predicted for scenarios 1 to 6 to allow for comparison of air quality impacts as a result of the Proposed Development without and with the addition of the proposed secondary school and sixth form located outside of the site boundary for 2024 and 2030 when the proposed development is due to be completed, and in line with the end of the Local Plan, respectively.

### NO<sub>2</sub> Concentrations

Table 15 summarises the predicted change in NO<sub>2</sub> concentrations in 2024 with the full build out of the Proposed Development but without the inclusion of additional traffic associated with the proposed secondary school and sixth form.

**Table 15: Predicted Annual Mean NO<sub>2</sub> Concentrations (Scenario 1 and Scenario 2)**

| Receptor |                              | Predicted Annual Mean NO <sub>2</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|------------------------------|--------------------------------------------------------------------------|------------|--------|
|          |                              | Scenario 1                                                               | Scenario 2 | Change |
| R1       | Residential - North End Road | 18.27                                                                    | 18.50      | 0.23   |
| R2       | Residential - North End Road | 15.81                                                                    | 15.99      | 0.18   |
| R3       | Residential - North End Road | 17.53                                                                    | 17.77      | 0.24   |
| R4       | Residential - North End Road | 15.87                                                                    | 16.09      | 0.22   |
| R5       | Residential - North End Road | 15.41                                                                    | 15.67      | 0.26   |
| R6       | Residential - Main Road      | 15.76                                                                    | 16.45      | 0.69   |
| R7       | Residential - Main Road      | 17.79                                                                    | 18.67      | 0.88   |
| R8       | Residential - Main Road      | 17.04                                                                    | 17.83      | 0.79   |
| R9       | Residential - Main Road      | 16.45                                                                    | 17.05      | 0.60   |
| R10      | Residential - Burndell Road  | 17.56                                                                    | 18.13      | 0.57   |
| R11      | Residential - Burndell Road  | 17.54                                                                    | 18.11      | 0.57   |
| R12      | Residential - Burndell Road  | 16.68                                                                    | 17.18      | 0.50   |
| R13      | Residential - Burndell Road  | 17.43                                                                    | 17.98      | 0.55   |
| R14      | Residential - Burndell Road  | 14.85                                                                    | 15.21      | 0.36   |
| R15      | Residential - Burndell Road  | 16.60                                                                    | 17.10      | 0.50   |
| R16      | Residential - Yapton Road    | 14.91                                                                    | 15.53      | 0.62   |
| R17      | Residential - Yapton Road    | 15.43                                                                    | 16.12      | 0.69   |
| R18      | Residential - Yapton Road    | 14.58                                                                    | 15.15      | 0.57   |
| R19      | Residential - Bilsham Road   | 15.93                                                                    | 16.38      | 0.45   |
| R20      | Residential - Bilsham Road   | 15.26                                                                    | 15.52      | 0.26   |
| R21      | Residential - Bilsham Road   | 16.76                                                                    | 17.07      | 0.31   |

| Receptor |                                  | Predicted Annual Mean NO <sub>2</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|----------------------------------|--------------------------------------------------------------------------|------------|--------|
|          |                                  | Scenario 1                                                               | Scenario 2 | Change |
| R22      | Residential - Bilsham Road       | 15.91                                                                    | 16.18      | 0.27   |
| R23      | Residential - Bilsham Road       | 13.57                                                                    | 13.73      | 0.16   |
| R24      | Residential - Bilsham Road       | 16.60                                                                    | 16.89      | 0.29   |
| R25      | Residential - Bilsham Road       | 16.53                                                                    | 16.83      | 0.30   |
| R26      | Residential - Bilsham Road       | 15.62                                                                    | 15.87      | 0.25   |
| R27      | Residential - Bilsham Road       | 15.26                                                                    | 15.50      | 0.24   |
| R28      | Residential - Bilsham Road       | 19.13                                                                    | 19.53      | 0.40   |
| R29      | Residential - Yapton Road        | 17.33                                                                    | 17.48      | 0.15   |
| R30      | Residential - Yapton Road        | 12.79                                                                    | 12.85      | 0.06   |
| R31      | Residential - Apple Barn Cottage | 22.50                                                                    | 23.07      | 0.57   |
| R32      | Residential - Church Lane        | 16.60                                                                    | 17.13      | 0.53   |
| R33      | Residential - Church Lane        | 18.82                                                                    | 19.53      | 0.71   |
| R34      | Residential - Church Lane        | 19.88                                                                    | 20.69      | 0.81   |
| R35      | Residential - Church Lane        | 16.07                                                                    | 16.58      | 0.51   |
| R36      | Residential - Station Road       | 13.57                                                                    | 13.84      | 0.27   |
| R37      | Residential - Station Road       | 15.53                                                                    | 15.94      | 0.41   |
| R38      | Residential - Ford Lane          | 16.97                                                                    | 17.49      | 0.52   |
| R39      | Residential - Ford Lane          | 15.27                                                                    | 15.65      | 0.38   |
| R40      | Residential - Henry Lock Way     | 18.45                                                                    | 18.72      | 0.27   |
| R41      | Residential - Willow Brook       | 19.93                                                                    | 20.27      | 0.34   |
| R42      | Residential - Colebrook Road     | 25.40                                                                    | 25.89      | 0.49   |
| R43      | Residential - Lyminster Road     | 24.37                                                                    | 24.47      | 0.10   |
| R44      | Residential - Lyminster Road     | 29.96                                                                    | 30.06      | 0.10   |
| R45      | Residential - Worthing Road      | 28.18                                                                    | 28.78      | 0.60   |
| R46      | Yapton Primary School            | 17.00                                                                    | 17.17      | 0.17   |
| R47      | Lyminster Primary School         | 27.11                                                                    | 27.61      | 0.50   |

As indicated in Table 15, predicted annual mean NO<sub>2</sub> concentrations were below the relevant AQO at all receptors in both scenario 1 and scenario 2 with a maximum increase of 0.88µg/m<sup>3</sup> at R7.

Table 16 summarises the predicted change in NO<sub>2</sub> concentrations in 2024 with the full build out of the Proposed Development plus the inclusion of additional traffic associated with the proposed secondary school and sixth form.

**Table 16: Predicted Annual Mean NO<sub>2</sub> Concentrations (Scenario 1 and Scenario 3)**

| Receptor |                                  | Predicted Annual Mean NO <sub>2</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|----------------------------------|--------------------------------------------------------------------------|------------|--------|
|          |                                  | Scenario 1                                                               | Scenario 3 | Change |
| R1       | Residential - North End Road     | 18.27                                                                    | 18.54      | 0.27   |
| R2       | Residential - North End Road     | 15.81                                                                    | 16.03      | 0.22   |
| R3       | Residential - North End Road     | 17.53                                                                    | 17.82      | 0.29   |
| R4       | Residential - North End Road     | 15.87                                                                    | 16.15      | 0.28   |
| R5       | Residential - North End Road     | 15.41                                                                    | 15.76      | 0.35   |
| R6       | Residential - Main Road          | 15.76                                                                    | 16.75      | 0.99   |
| R7       | Residential - Main Road          | 17.79                                                                    | 19.05      | 1.26   |
| R8       | Residential - Main Road          | 17.04                                                                    | 18.17      | 1.13   |
| R9       | Residential - Main Road          | 16.45                                                                    | 17.27      | 0.82   |
| R10      | Residential - Burndell Road      | 17.56                                                                    | 18.16      | 0.60   |
| R11      | Residential - Burndell Road      | 17.54                                                                    | 18.13      | 0.59   |
| R12      | Residential - Burndell Road      | 16.68                                                                    | 17.19      | 0.51   |
| R13      | Residential - Burndell Road      | 17.43                                                                    | 17.99      | 0.56   |
| R14      | Residential - Burndell Road      | 14.85                                                                    | 15.21      | 0.36   |
| R15      | Residential - Burndell Road      | 16.60                                                                    | 17.10      | 0.50   |
| R16      | Residential - Yapton Road        | 14.91                                                                    | 15.53      | 0.62   |
| R17      | Residential - Yapton Road        | 15.43                                                                    | 16.12      | 0.69   |
| R18      | Residential - Yapton Road        | 14.58                                                                    | 15.15      | 0.57   |
| R19      | Residential - Bilsham Road       | 15.93                                                                    | 16.51      | 0.58   |
| R20      | Residential - Bilsham Road       | 15.26                                                                    | 15.57      | 0.31   |
| R21      | Residential - Bilsham Road       | 16.76                                                                    | 17.12      | 0.36   |
| R22      | Residential - Bilsham Road       | 15.91                                                                    | 16.22      | 0.31   |
| R23      | Residential - Bilsham Road       | 13.57                                                                    | 13.76      | 0.19   |
| R24      | Residential - Bilsham Road       | 16.60                                                                    | 16.94      | 0.34   |
| R25      | Residential - Bilsham Road       | 16.53                                                                    | 16.87      | 0.34   |
| R26      | Residential - Bilsham Road       | 15.62                                                                    | 15.91      | 0.29   |
| R27      | Residential - Bilsham Road       | 15.26                                                                    | 15.54      | 0.28   |
| R28      | Residential - Bilsham Road       | 19.13                                                                    | 19.56      | 0.43   |
| R29      | Residential - Yapton Road        | 17.33                                                                    | 17.49      | 0.16   |
| R30      | Residential - Yapton Road        | 12.79                                                                    | 12.86      | 0.07   |
| R31      | Residential - Apple Barn Cottage | 22.50                                                                    | 23.07      | 0.57   |
| R32      | Residential - Church Lane        | 16.60                                                                    | 17.16      | 0.56   |

| Receptor |                               | Predicted Annual Mean NO <sub>2</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|-------------------------------|--------------------------------------------------------------------------|------------|--------|
|          |                               | Scenario 1                                                               | Scenario 3 | Change |
| R33      | Residential - Church Lane     | 18.82                                                                    | 19.57      | 0.75   |
| R34      | Residential - Church Lane     | 19.88                                                                    | 20.73      | 0.85   |
| R35      | Residential - Church Lane     | 16.07                                                                    | 16.61      | 0.54   |
| R36      | Residential - Station Road    | 13.57                                                                    | 13.85      | 0.28   |
| R37      | Residential - Station Road    | 15.53                                                                    | 15.96      | 0.43   |
| R38      | Residential - Ford Lane       | 16.97                                                                    | 17.51      | 0.54   |
| R39      | Residential - Ford Lane       | 15.27                                                                    | 15.67      | 0.40   |
| R40      | Residential - Henry Lock Way  | 18.45                                                                    | 18.73      | 0.28   |
| R41      | Residential - Willow Brook    | 19.93                                                                    | 20.27      | 0.34   |
| R42      | Residential - Colebrook Road  | 25.40                                                                    | 25.90      | 0.50   |
| R43      | Residential - Lymminster Road | 24.37                                                                    | 24.47      | 0.10   |
| R44      | Residential - Lymminster Road | 29.96                                                                    | 30.06      | 0.10   |
| R45      | Residential - Worthing Road   | 28.18                                                                    | 28.80      | 0.62   |
| R46      | Yapton Primary School         | 17.00                                                                    | 17.21      | 0.21   |
| R47      | Lymminster Primary School     | 27.11                                                                    | 27.62      | 0.51   |

As indicated in Table 16, predicted annual mean NO<sub>2</sub> concentrations were below the relevant AQO at all receptors in both scenario 1 and scenario 3 with a maximum increase of 1.26µg/m<sup>3</sup> at R7.

Table 17 summarises the predicted change in NO<sub>2</sub> concentrations in 2030 with the full build out of the Proposed Development but without the inclusion of additional traffic associated with the proposed secondary school and sixth form.

**Table 17: Predicted Annual Mean NO<sub>2</sub> Concentrations (Scenario 4 and Scenario 5)**

| Receptor |                              | Predicted Annual Mean NO <sub>2</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|------------------------------|--------------------------------------------------------------------------|------------|--------|
|          |                              | Scenario 4                                                               | Scenario 5 | Change |
| R1       | Residential - North End Road | 18.32                                                                    | 18.56      | 0.24   |
| R2       | Residential - North End Road | 15.85                                                                    | 16.03      | 0.18   |
| R3       | Residential - North End Road | 17.58                                                                    | 17.82      | 0.24   |
| R4       | Residential - North End Road | 15.91                                                                    | 16.13      | 0.22   |
| R5       | Residential - North End Road | 15.44                                                                    | 15.71      | 0.27   |
| R6       | Residential - Main Road      | 15.80                                                                    | 16.48      | 0.68   |
| R7       | Residential - Main Road      | 17.84                                                                    | 18.71      | 0.87   |
| R8       | Residential - Main Road      | 17.08                                                                    | 17.86      | 0.78   |
| R9       | Residential - Main Road      | 16.50                                                                    | 17.09      | 0.59   |
| R10      | Residential - Burndell Road  | 17.62                                                                    | 18.19      | 0.57   |

| Receptor |                                  | Predicted Annual Mean NO <sub>2</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|----------------------------------|--------------------------------------------------------------------------|------------|--------|
|          |                                  | Scenario 4                                                               | Scenario 5 | Change |
| R11      | Residential - Burndell Road      | 17.60                                                                    | 18.17      | 0.57   |
| R12      | Residential - Burndell Road      | 16.73                                                                    | 17.24      | 0.51   |
| R13      | Residential - Burndell Road      | 17.48                                                                    | 18.04      | 0.56   |
| R14      | Residential - Burndell Road      | 14.88                                                                    | 15.25      | 0.37   |
| R15      | Residential - Burndell Road      | 16.64                                                                    | 17.15      | 0.51   |
| R16      | Residential - Yapton Road        | 14.93                                                                    | 15.57      | 0.64   |
| R17      | Residential - Yapton Road        | 15.46                                                                    | 16.16      | 0.70   |
| R18      | Residential - Yapton Road        | 14.61                                                                    | 15.18      | 0.57   |
| R19      | Residential - Bilsham Road       | 15.98                                                                    | 16.42      | 0.44   |
| R20      | Residential - Bilsham Road       | 15.30                                                                    | 15.56      | 0.26   |
| R21      | Residential - Bilsham Road       | 16.81                                                                    | 17.12      | 0.31   |
| R22      | Residential - Bilsham Road       | 15.96                                                                    | 16.22      | 0.26   |
| R23      | Residential - Bilsham Road       | 13.60                                                                    | 13.76      | 0.16   |
| R24      | Residential - Bilsham Road       | 16.66                                                                    | 16.94      | 0.28   |
| R25      | Residential - Bilsham Road       | 16.57                                                                    | 16.87      | 0.30   |
| R26      | Residential - Bilsham Road       | 15.65                                                                    | 15.91      | 0.26   |
| R27      | Residential - Bilsham Road       | 15.29                                                                    | 15.54      | 0.25   |
| R28      | Residential - Bilsham Road       | 19.18                                                                    | 19.59      | 0.41   |
| R29      | Residential - Yapton Road        | 17.36                                                                    | 17.51      | 0.15   |
| R30      | Residential - Yapton Road        | 12.80                                                                    | 12.86      | 0.06   |
| R31      | Residential - Apple Barn Cottage | 22.55                                                                    | 23.14      | 0.59   |
| R32      | Residential - Church Lane        | 16.62                                                                    | 17.15      | 0.53   |
| R33      | Residential - Church Lane        | 18.84                                                                    | 19.56      | 0.72   |
| R34      | Residential - Church Lane        | 19.90                                                                    | 20.73      | 0.83   |
| R35      | Residential - Church Lane        | 16.09                                                                    | 16.60      | 0.51   |
| R36      | Residential - Station Road       | 13.59                                                                    | 13.86      | 0.27   |
| R37      | Residential - Station Road       | 15.56                                                                    | 15.97      | 0.41   |
| R38      | Residential - Ford Lane          | 17.02                                                                    | 17.53      | 0.51   |
| R39      | Residential - Ford Lane          | 15.30                                                                    | 15.69      | 0.39   |
| R40      | Residential - Henry Lock Way     | 18.47                                                                    | 18.75      | 0.28   |
| R41      | Residential - Willow Brook       | 19.96                                                                    | 20.30      | 0.34   |
| R42      | Residential - Colebrook Road     | 25.47                                                                    | 25.97      | 0.50   |
| R43      | Residential - Lymminster Road    | 24.46                                                                    | 24.57      | 0.11   |

| Receptor |                              | Predicted Annual Mean NO <sub>2</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|------------------------------|--------------------------------------------------------------------------|------------|--------|
|          |                              | Scenario 4                                                               | Scenario 5 | Change |
| R44      | Residential - Lyminster Road | 30.10                                                                    | 30.20      | 0.10   |
| R45      | Residential - Worthing Road  | 28.26                                                                    | 28.91      | 0.65   |
| R46      | Yapton Primary School        | 17.03                                                                    | 17.20      | 0.17   |
| R47      | Lyminster Primary School     | 27.20                                                                    | 27.73      | 0.53   |

As indicated in Table 17, predicted annual mean NO<sub>2</sub> concentrations were below the relevant AQO at all receptors in both scenario 4 and scenario 5 with a maximum increase of 0.87µg/m<sup>3</sup> at R7..

Table 18 summarises the predicted change in NO<sub>2</sub> concentrations in 2030 with the full build out of the Proposed Development plus the inclusion of additional traffic associated with the proposed secondary school and sixth form.

**Table 18: Predicted Annual Mean NO<sub>2</sub> Concentrations (Scenario 4 and Scenario 6)**

| Receptor |                              | Predicted Annual Mean NO <sub>2</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|------------------------------|--------------------------------------------------------------------------|------------|--------|
|          |                              | Scenario 4                                                               | Scenario 6 | Change |
| R1       | Residential - North End Road | 18.32                                                                    | 18.57      | 0.25   |
| R2       | Residential - North End Road | 15.85                                                                    | 16.05      | 0.20   |
| R3       | Residential - North End Road | 17.58                                                                    | 17.85      | 0.27   |
| R4       | Residential - North End Road | 15.91                                                                    | 16.17      | 0.26   |
| R5       | Residential - North End Road | 15.44                                                                    | 15.78      | 0.34   |
| R6       | Residential - Main Road      | 15.80                                                                    | 16.77      | 0.97   |
| R7       | Residential - Main Road      | 17.84                                                                    | 19.08      | 1.24   |
| R8       | Residential - Main Road      | 17.08                                                                    | 18.20      | 1.12   |
| R9       | Residential - Main Road      | 16.50                                                                    | 17.30      | 0.80   |
| R10      | Residential - Burndell Road  | 17.62                                                                    | 18.22      | 0.60   |
| R11      | Residential - Burndell Road  | 17.60                                                                    | 18.19      | 0.59   |
| R12      | Residential - Burndell Road  | 16.73                                                                    | 17.24      | 0.51   |
| R13      | Residential - Burndell Road  | 17.48                                                                    | 18.05      | 0.57   |
| R14      | Residential - Burndell Road  | 14.88                                                                    | 15.25      | 0.37   |
| R15      | Residential - Burndell Road  | 16.64                                                                    | 17.15      | 0.51   |
| R16      | Residential - Yapton Road    | 14.93                                                                    | 15.57      | 0.64   |
| R17      | Residential - Yapton Road    | 15.46                                                                    | 16.16      | 0.70   |
| R18      | Residential - Yapton Road    | 14.61                                                                    | 15.18      | 0.57   |
| R19      | Residential - Bilsham Road   | 15.98                                                                    | 16.56      | 0.58   |
| R20      | Residential - Bilsham Road   | 15.30                                                                    | 15.61      | 0.31   |
| R21      | Residential - Bilsham Road   | 16.81                                                                    | 17.18      | 0.37   |

| Receptor |                                  | Predicted Annual Mean NO <sub>2</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|----------------------------------|--------------------------------------------------------------------------|------------|--------|
|          |                                  | Scenario 4                                                               | Scenario 6 | Change |
| R22      | Residential - Bilsham Road       | 15.96                                                                    | 16.27      | 0.31   |
| R23      | Residential - Bilsham Road       | 13.60                                                                    | 13.79      | 0.19   |
| R24      | Residential - Bilsham Road       | 16.66                                                                    | 16.99      | 0.33   |
| R25      | Residential - Bilsham Road       | 16.57                                                                    | 16.92      | 0.35   |
| R26      | Residential - Bilsham Road       | 15.65                                                                    | 15.95      | 0.30   |
| R27      | Residential - Bilsham Road       | 15.29                                                                    | 15.57      | 0.28   |
| R28      | Residential - Bilsham Road       | 19.18                                                                    | 19.62      | 0.44   |
| R29      | Residential - Yapton Road        | 17.36                                                                    | 17.52      | 0.16   |
| R30      | Residential - Yapton Road        | 12.80                                                                    | 12.87      | 0.07   |
| R31      | Residential - Apple Barn Cottage | 22.55                                                                    | 23.14      | 0.59   |
| R32      | Residential - Church Lane        | 16.62                                                                    | 17.18      | 0.56   |
| R33      | Residential - Church Lane        | 18.84                                                                    | 19.60      | 0.76   |
| R34      | Residential - Church Lane        | 19.90                                                                    | 20.77      | 0.87   |
| R35      | Residential - Church Lane        | 16.09                                                                    | 16.63      | 0.54   |
| R36      | Residential - Station Road       | 13.59                                                                    | 13.87      | 0.28   |
| R37      | Residential - Station Road       | 15.56                                                                    | 15.99      | 0.43   |
| R38      | Residential - Ford Lane          | 17.02                                                                    | 17.55      | 0.53   |
| R39      | Residential - Ford Lane          | 15.30                                                                    | 15.70      | 0.40   |
| R40      | Residential - Henry Lock Way     | 18.47                                                                    | 18.76      | 0.29   |
| R41      | Residential - Willow Brook       | 19.96                                                                    | 20.31      | 0.35   |
| R42      | Residential - Colebrook Road     | 25.47                                                                    | 25.99      | 0.52   |
| R43      | Residential - Lyminster Road     | 24.46                                                                    | 24.57      | 0.11   |
| R44      | Residential - Lyminster Road     | 30.10                                                                    | 30.20      | 0.10   |
| R45      | Residential - Worthing Road      | 28.26                                                                    | 28.93      | 0.67   |
| R46      | Yapton Primary School            | 17.03                                                                    | 17.23      | 0.20   |
| R47      | Lyminster Primary School         | 27.20                                                                    | 27.75      | 0.55   |

As indicated in Table 14, predicted annual mean NO<sub>2</sub> concentrations were below the relevant AQO at all receptors in both scenario 4 and scenario 6 with a maximum increase of 1.24µg/m<sup>3</sup> at R7.

### PM<sub>10</sub> Concentrations

Table 19 summarises the predicted change in PM<sub>10</sub> concentrations in 2024 with the full build out of the Proposed Development but without the inclusion of additional traffic associated with the proposed secondary school and sixth form.

**Table 19: Predicted Annual Mean PM<sub>10</sub> Concentrations (Scenario 1 and Scenario 2)**

| Receptor |                                  | Predicted Annual Mean PM <sub>10</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|----------------------------------|---------------------------------------------------------------------------|------------|--------|
|          |                                  | Scenario 1                                                                | Scenario 2 | Change |
| R1       | Residential - North End Road     | 16.36                                                                     | 16.41      | 0.04   |
| R2       | Residential - North End Road     | 15.95                                                                     | 15.99      | 0.03   |
| R3       | Residential - North End Road     | 16.24                                                                     | 16.28      | 0.04   |
| R4       | Residential - North End Road     | 15.96                                                                     | 16.00      | 0.04   |
| R5       | Residential - North End Road     | 15.88                                                                     | 15.92      | 0.05   |
| R6       | Residential - Main Road          | 15.97                                                                     | 16.10      | 0.12   |
| R7       | Residential - Main Road          | 16.32                                                                     | 16.48      | 0.16   |
| R8       | Residential - Main Road          | 16.19                                                                     | 16.33      | 0.14   |
| R9       | Residential - Main Road          | 16.01                                                                     | 16.11      | 0.10   |
| R10      | Residential - Burndell Road      | 16.26                                                                     | 16.36      | 0.10   |
| R11      | Residential - Burndell Road      | 16.27                                                                     | 16.37      | 0.10   |
| R12      | Residential - Burndell Road      | 16.12                                                                     | 16.22      | 0.09   |
| R13      | Residential - Burndell Road      | 16.25                                                                     | 16.35      | 0.10   |
| R14      | Residential - Burndell Road      | 15.81                                                                     | 15.88      | 0.06   |
| R15      | Residential - Burndell Road      | 16.11                                                                     | 16.20      | 0.09   |
| R16      | Residential - Yapton Road        | 15.87                                                                     | 15.99      | 0.12   |
| R17      | Residential - Yapton Road        | 15.96                                                                     | 16.09      | 0.13   |
| R18      | Residential - Yapton Road        | 15.80                                                                     | 15.91      | 0.11   |
| R19      | Residential - Bilsham Road       | 15.93                                                                     | 16.01      | 0.08   |
| R20      | Residential - Bilsham Road       | 15.88                                                                     | 15.93      | 0.05   |
| R21      | Residential - Bilsham Road       | 16.14                                                                     | 16.19      | 0.06   |
| R22      | Residential - Bilsham Road       | 15.99                                                                     | 16.04      | 0.05   |
| R23      | Residential - Bilsham Road       | 15.60                                                                     | 15.63      | 0.03   |
| R24      | Residential - Bilsham Road       | 16.09                                                                     | 16.14      | 0.05   |
| R25      | Residential - Bilsham Road       | 15.89                                                                     | 15.93      | 0.04   |
| R26      | Residential - Bilsham Road       | 15.77                                                                     | 15.80      | 0.03   |
| R27      | Residential - Bilsham Road       | 15.72                                                                     | 15.75      | 0.03   |
| R28      | Residential - Bilsham Road       | 16.18                                                                     | 16.23      | 0.05   |
| R29      | Residential - Yapton Road        | 15.95                                                                     | 15.97      | 0.02   |
| R30      | Residential - Yapton Road        | 15.37                                                                     | 15.38      | 0.01   |
| R31      | Residential - Apple Barn Cottage | 16.75                                                                     | 16.83      | 0.08   |
| R32      | Residential - Church Lane        | 15.89                                                                     | 15.96      | 0.07   |

| Receptor |                               | Predicted Annual Mean PM <sub>10</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|-------------------------------|---------------------------------------------------------------------------|------------|--------|
|          |                               | Scenario 1                                                                | Scenario 2 | Change |
| R33      | Residential - Church Lane     | 16.19                                                                     | 16.29      | 0.10   |
| R34      | Residential - Church Lane     | 16.33                                                                     | 16.45      | 0.11   |
| R35      | Residential - Church Lane     | 15.82                                                                     | 15.89      | 0.07   |
| R36      | Residential - Station Road    | 15.48                                                                     | 15.51      | 0.03   |
| R37      | Residential - Station Road    | 15.73                                                                     | 15.78      | 0.05   |
| R38      | Residential - Ford Lane       | 15.91                                                                     | 15.98      | 0.07   |
| R39      | Residential - Ford Lane       | 15.69                                                                     | 15.74      | 0.05   |
| R40      | Residential - Henry Lock Way  | 17.10                                                                     | 17.15      | 0.05   |
| R41      | Residential - Willow Brook    | 17.37                                                                     | 17.43      | 0.06   |
| R42      | Residential - Colebrook Road  | 18.06                                                                     | 18.15      | 0.09   |
| R43      | Residential - Lymminster Road | 17.80                                                                     | 17.82      | 0.02   |
| R44      | Residential - Lymminster Road | 18.68                                                                     | 18.70      | 0.02   |
| R45      | Residential - Worthing Road   | 18.75                                                                     | 18.87      | 0.12   |
| R46      | Yapton Primary School         | 16.75                                                                     | 16.78      | 0.03   |
| R47      | Lymminster Primary School     | 18.31                                                                     | 18.40      | 0.09   |

As indicated in Table 18, predicted annual mean PM<sub>10</sub> concentrations were below the relevant AQO at all receptors in both scenario 1 and 2 with a maximum increase of 0.16µg/m<sup>3</sup> at R7.

Table 19 summarises the predicted change in PM<sub>10</sub> concentrations in 2024 with the full build out of the Proposed Development plus the inclusion of additional traffic associated with the proposed secondary school and sixth form.

**Table 19: Predicted Annual Mean PM<sub>10</sub> Concentrations (Scenario 1 and Scenario 3)**

| Receptor |                              | Predicted Annual Mean PM <sub>10</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|------------------------------|---------------------------------------------------------------------------|------------|--------|
|          |                              | Scenario 1                                                                | Scenario 3 | Change |
| R1       | Residential - North End Road | 16.36                                                                     | 16.41      | 0.05   |
| R2       | Residential - North End Road | 15.95                                                                     | 15.99      | 0.04   |
| R3       | Residential - North End Road | 16.24                                                                     | 16.29      | 0.05   |
| R4       | Residential - North End Road | 15.96                                                                     | 16.01      | 0.05   |
| R5       | Residential - North End Road | 15.88                                                                     | 15.94      | 0.06   |
| R6       | Residential - Main Road      | 15.97                                                                     | 16.15      | 0.18   |
| R7       | Residential - Main Road      | 16.32                                                                     | 16.55      | 0.23   |
| R8       | Residential - Main Road      | 16.19                                                                     | 16.39      | 0.21   |
| R9       | Residential - Main Road      | 16.01                                                                     | 16.15      | 0.14   |
| R10      | Residential - Burndell Road  | 16.26                                                                     | 16.36      | 0.11   |

| Receptor |                                  | Predicted Annual Mean PM <sub>10</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|----------------------------------|---------------------------------------------------------------------------|------------|--------|
|          |                                  | Scenario 1                                                                | Scenario 3 | Change |
| R11      | Residential - Burndell Road      | 16.27                                                                     | 16.38      | 0.11   |
| R12      | Residential - Burndell Road      | 16.12                                                                     | 16.22      | 0.09   |
| R13      | Residential - Burndell Road      | 16.25                                                                     | 16.36      | 0.10   |
| R14      | Residential - Burndell Road      | 15.81                                                                     | 15.88      | 0.07   |
| R15      | Residential - Burndell Road      | 16.11                                                                     | 16.20      | 0.09   |
| R16      | Residential - Yapton Road        | 15.87                                                                     | 15.99      | 0.12   |
| R17      | Residential - Yapton Road        | 15.96                                                                     | 16.09      | 0.13   |
| R18      | Residential - Yapton Road        | 15.80                                                                     | 15.91      | 0.11   |
| R19      | Residential - Bilsham Road       | 15.93                                                                     | 16.03      | 0.10   |
| R20      | Residential - Bilsham Road       | 15.88                                                                     | 15.94      | 0.05   |
| R21      | Residential - Bilsham Road       | 16.14                                                                     | 16.20      | 0.07   |
| R22      | Residential - Bilsham Road       | 15.99                                                                     | 16.05      | 0.06   |
| R23      | Residential - Bilsham Road       | 15.60                                                                     | 15.63      | 0.03   |
| R24      | Residential - Bilsham Road       | 16.09                                                                     | 16.14      | 0.06   |
| R25      | Residential - Bilsham Road       | 15.89                                                                     | 15.93      | 0.05   |
| R26      | Residential - Bilsham Road       | 15.77                                                                     | 15.81      | 0.04   |
| R27      | Residential - Bilsham Road       | 15.72                                                                     | 15.75      | 0.04   |
| R28      | Residential - Bilsham Road       | 16.18                                                                     | 16.23      | 0.06   |
| R29      | Residential - Yapton Road        | 15.95                                                                     | 15.97      | 0.02   |
| R30      | Residential - Yapton Road        | 15.37                                                                     | 15.38      | 0.01   |
| R31      | Residential - Apple Barn Cottage | 16.75                                                                     | 16.83      | 0.08   |
| R32      | Residential - Church Lane        | 15.89                                                                     | 15.96      | 0.07   |
| R33      | Residential - Church Lane        | 16.19                                                                     | 16.29      | 0.10   |
| R34      | Residential - Church Lane        | 16.33                                                                     | 16.45      | 0.12   |
| R35      | Residential - Church Lane        | 15.82                                                                     | 15.89      | 0.07   |
| R36      | Residential - Station Road       | 15.48                                                                     | 15.51      | 0.04   |
| R37      | Residential - Station Road       | 15.73                                                                     | 15.78      | 0.06   |
| R38      | Residential - Ford Lane          | 15.91                                                                     | 15.98      | 0.07   |
| R39      | Residential - Ford Lane          | 15.69                                                                     | 15.74      | 0.05   |
| R40      | Residential - Henry Lock Way     | 17.10                                                                     | 17.15      | 0.05   |
| R41      | Residential - Willow Brook       | 17.37                                                                     | 17.43      | 0.07   |
| R42      | Residential - Colebrook Road     | 18.06                                                                     | 18.15      | 0.09   |
| R43      | Residential - Lymminster Road    | 17.80                                                                     | 17.82      | 0.02   |

| Receptor |                              | Predicted Annual Mean PM <sub>10</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|------------------------------|---------------------------------------------------------------------------|------------|--------|
|          |                              | Scenario 1                                                                | Scenario 3 | Change |
| R44      | Residential - Lyminster Road | 18.68                                                                     | 18.70      | 0.02   |
| R45      | Residential - Worthing Road  | 18.75                                                                     | 18.88      | 0.12   |
| R46      | Yapton Primary School        | 16.75                                                                     | 16.79      | 0.04   |
| R47      | Lyminster Primary School     | 18.31                                                                     | 18.40      | 0.09   |

As indicated in Table 19, predicted annual mean PM<sub>10</sub> concentrations were below the relevant AQO at all receptors in both scenario 1 and 3 with a maximum increase of 0.23µg/m<sup>3</sup> at R7.

Table 20 summarises the predicted change in PM<sub>10</sub> concentrations in 2030 with the full build out of the Proposed Development but without the inclusion of additional traffic associated with the proposed secondary school and sixth form.

**Table 20: Predicted Annual Mean PM<sub>10</sub> Concentrations (Scenario 4 and Scenario 5)**

| Receptor |                              | Predicted Annual Mean PM <sub>10</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|------------------------------|---------------------------------------------------------------------------|------------|--------|
|          |                              | Scenario 4                                                                | Scenario 5 | Change |
| R1       | Residential - North End Road | 16.37                                                                     | 16.41      | 0.04   |
| R2       | Residential - North End Road | 15.96                                                                     | 15.99      | 0.03   |
| R3       | Residential - North End Road | 16.25                                                                     | 16.29      | 0.04   |
| R4       | Residential - North End Road | 15.97                                                                     | 16.01      | 0.04   |
| R5       | Residential - North End Road | 15.88                                                                     | 15.93      | 0.05   |
| R6       | Residential - Main Road      | 15.98                                                                     | 16.10      | 0.12   |
| R7       | Residential - Main Road      | 16.33                                                                     | 16.49      | 0.16   |
| R8       | Residential - Main Road      | 16.19                                                                     | 16.34      | 0.14   |
| R9       | Residential - Main Road      | 16.02                                                                     | 16.12      | 0.10   |
| R10      | Residential - Burndell Road  | 16.26                                                                     | 16.37      | 0.10   |
| R11      | Residential - Burndell Road  | 16.28                                                                     | 16.38      | 0.10   |
| R12      | Residential - Burndell Road  | 16.13                                                                     | 16.22      | 0.09   |
| R13      | Residential - Burndell Road  | 16.26                                                                     | 16.36      | 0.10   |
| R14      | Residential - Burndell Road  | 15.82                                                                     | 15.88      | 0.07   |
| R15      | Residential - Burndell Road  | 16.12                                                                     | 16.21      | 0.09   |
| R16      | Residential - Yapton Road    | 15.87                                                                     | 15.99      | 0.12   |
| R17      | Residential - Yapton Road    | 15.97                                                                     | 16.10      | 0.13   |
| R18      | Residential - Yapton Road    | 15.80                                                                     | 15.91      | 0.11   |
| R19      | Residential - Bilsham Road   | 15.94                                                                     | 16.01      | 0.08   |
| R20      | Residential - Bilsham Road   | 15.89                                                                     | 15.93      | 0.05   |
| R21      | Residential - Bilsham Road   | 16.15                                                                     | 16.20      | 0.06   |

| Receptor |                                  | Predicted Annual Mean PM <sub>10</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|----------------------------------|---------------------------------------------------------------------------|------------|--------|
|          |                                  | Scenario 4                                                                | Scenario 5 | Change |
| R22      | Residential - Bilsham Road       | 16.00                                                                     | 16.05      | 0.05   |
| R23      | Residential - Bilsham Road       | 15.60                                                                     | 15.63      | 0.03   |
| R24      | Residential - Bilsham Road       | 16.09                                                                     | 16.14      | 0.05   |
| R25      | Residential - Bilsham Road       | 15.90                                                                     | 15.94      | 0.04   |
| R26      | Residential - Bilsham Road       | 15.77                                                                     | 15.81      | 0.03   |
| R27      | Residential - Bilsham Road       | 15.72                                                                     | 15.76      | 0.03   |
| R28      | Residential - Bilsham Road       | 16.18                                                                     | 16.24      | 0.05   |
| R29      | Residential - Yapton Road        | 15.95                                                                     | 15.97      | 0.02   |
| R30      | Residential - Yapton Road        | 15.38                                                                     | 15.38      | 0.01   |
| R31      | Residential - Apple Barn Cottage | 16.76                                                                     | 16.84      | 0.09   |
| R32      | Residential - Church Lane        | 15.89                                                                     | 15.96      | 0.07   |
| R33      | Residential - Church Lane        | 16.19                                                                     | 16.29      | 0.10   |
| R34      | Residential - Church Lane        | 16.34                                                                     | 16.45      | 0.11   |
| R35      | Residential - Church Lane        | 15.82                                                                     | 15.89      | 0.07   |
| R36      | Residential - Station Road       | 15.48                                                                     | 15.51      | 0.03   |
| R37      | Residential - Station Road       | 15.73                                                                     | 15.78      | 0.05   |
| R38      | Residential - Ford Lane          | 15.92                                                                     | 15.98      | 0.07   |
| R39      | Residential - Ford Lane          | 15.69                                                                     | 15.74      | 0.05   |
| R40      | Residential - Henry Lock Way     | 17.10                                                                     | 17.15      | 0.05   |
| R41      | Residential - Willow Brook       | 17.37                                                                     | 17.44      | 0.06   |
| R42      | Residential - Colebrook Road     | 18.07                                                                     | 18.16      | 0.09   |
| R43      | Residential - Lyminster Road     | 17.81                                                                     | 17.83      | 0.02   |
| R44      | Residential - Lyminster Road     | 18.70                                                                     | 18.72      | 0.02   |
| R45      | Residential - Worthing Road      | 18.77                                                                     | 18.89      | 0.13   |
| R46      | Yapton Primary School            | 16.75                                                                     | 16.78      | 0.03   |
| R47      | Lyminster Primary School         | 18.33                                                                     | 18.42      | 0.09   |

As indicated in Table 20, predicted annual mean PM<sub>10</sub> concentrations were below the relevant AQO at all receptors in both scenario 4 and scenario 5 with a maximum increase of 0.16µg/m<sup>3</sup> at R7.

Table 21 summarises the predicted change in PM<sub>10</sub> concentrations in 2030 with the full build out of the Proposed Development plus the inclusion of additional traffic associated with the proposed secondary school and sixth form.

**Table 21: Predicted Annual Mean PM<sub>10</sub> Concentrations (Scenario 4 and Scenario 6)**

| Receptor |                                  | Predicted Annual Mean PM <sub>10</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|----------------------------------|---------------------------------------------------------------------------|------------|--------|
|          |                                  | Scenario 4                                                                | Scenario 6 | Change |
| R1       | Residential - North End Road     | 16.37                                                                     | 16.42      | 0.05   |
| R2       | Residential - North End Road     | 15.96                                                                     | 16.00      | 0.04   |
| R3       | Residential - North End Road     | 16.25                                                                     | 16.30      | 0.05   |
| R4       | Residential - North End Road     | 15.97                                                                     | 16.02      | 0.05   |
| R5       | Residential - North End Road     | 15.88                                                                     | 15.94      | 0.06   |
| R6       | Residential - Main Road          | 15.98                                                                     | 16.15      | 0.18   |
| R7       | Residential - Main Road          | 16.33                                                                     | 16.56      | 0.23   |
| R8       | Residential - Main Road          | 16.19                                                                     | 16.40      | 0.20   |
| R9       | Residential - Main Road          | 16.02                                                                     | 16.15      | 0.14   |
| R10      | Residential - Burndell Road      | 16.26                                                                     | 16.37      | 0.11   |
| R11      | Residential - Burndell Road      | 16.28                                                                     | 16.38      | 0.11   |
| R12      | Residential - Burndell Road      | 16.13                                                                     | 16.22      | 0.09   |
| R13      | Residential - Burndell Road      | 16.26                                                                     | 16.36      | 0.10   |
| R14      | Residential - Burndell Road      | 15.82                                                                     | 15.88      | 0.07   |
| R15      | Residential - Burndell Road      | 16.12                                                                     | 16.21      | 0.09   |
| R16      | Residential - Yapton Road        | 15.87                                                                     | 15.99      | 0.12   |
| R17      | Residential - Yapton Road        | 15.97                                                                     | 16.10      | 0.13   |
| R18      | Residential - Yapton Road        | 15.80                                                                     | 15.91      | 0.11   |
| R19      | Residential - Bilsham Road       | 15.94                                                                     | 16.04      | 0.10   |
| R20      | Residential - Bilsham Road       | 15.89                                                                     | 15.94      | 0.05   |
| R21      | Residential - Bilsham Road       | 16.15                                                                     | 16.21      | 0.07   |
| R22      | Residential - Bilsham Road       | 16.00                                                                     | 16.06      | 0.06   |
| R23      | Residential - Bilsham Road       | 15.60                                                                     | 15.63      | 0.03   |
| R24      | Residential - Bilsham Road       | 16.09                                                                     | 16.15      | 0.06   |
| R25      | Residential - Bilsham Road       | 15.90                                                                     | 15.94      | 0.05   |
| R26      | Residential - Bilsham Road       | 15.77                                                                     | 15.81      | 0.04   |
| R27      | Residential - Bilsham Road       | 15.72                                                                     | 15.76      | 0.04   |
| R28      | Residential - Bilsham Road       | 16.18                                                                     | 16.24      | 0.06   |
| R29      | Residential - Yapton Road        | 15.95                                                                     | 15.97      | 0.02   |
| R30      | Residential - Yapton Road        | 15.38                                                                     | 15.38      | 0.01   |
| R31      | Residential - Apple Barn Cottage | 16.76                                                                     | 16.84      | 0.09   |
| R32      | Residential - Church Lane        | 15.89                                                                     | 15.97      | 0.08   |

| Receptor |                              | Predicted Annual Mean PM <sub>10</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|------------------------------|---------------------------------------------------------------------------|------------|--------|
|          |                              | Scenario 4                                                                | Scenario 6 | Change |
| R33      | Residential - Church Lane    | 16.19                                                                     | 16.30      | 0.10   |
| R34      | Residential - Church Lane    | 16.34                                                                     | 16.46      | 0.12   |
| R35      | Residential - Church Lane    | 15.82                                                                     | 15.89      | 0.07   |
| R36      | Residential - Station Road   | 15.48                                                                     | 15.52      | 0.04   |
| R37      | Residential - Station Road   | 15.73                                                                     | 15.79      | 0.06   |
| R38      | Residential - Ford Lane      | 15.92                                                                     | 15.98      | 0.07   |
| R39      | Residential - Ford Lane      | 15.69                                                                     | 15.75      | 0.05   |
| R40      | Residential - Henry Lock Way | 17.10                                                                     | 17.15      | 0.05   |
| R41      | Residential - Willow Brook   | 17.37                                                                     | 17.44      | 0.07   |
| R42      | Residential - Colebrook Road | 18.07                                                                     | 18.16      | 0.09   |
| R43      | Residential - Lyminster Road | 17.81                                                                     | 17.83      | 0.02   |
| R44      | Residential - Lyminster Road | 18.70                                                                     | 18.72      | 0.02   |
| R45      | Residential - Worthing Road  | 18.77                                                                     | 18.90      | 0.13   |
| R46      | Yapton Primary School        | 16.75                                                                     | 16.79      | 0.04   |
| R47      | Lyminster Primary School     | 18.33                                                                     | 18.42      | 0.10   |

As indicated in Table 21, predicted annual mean PM<sub>10</sub> concentrations were below the relevant AQO at all receptors in both scenario 4 and scenario 6 with a maximum increase of 0.23µg/m<sup>3</sup> at R7.

### PM<sub>2.5</sub> Concentrations

Table 22 summarises the predicted change in PM<sub>2.5</sub> concentrations in 2024 with the full build out of the Proposed Development but without the inclusion of additional traffic associated with the proposed secondary school and sixth form.

**Table 22: Predicted Annual Mean PM<sub>2.5</sub> Concentrations (Scenario 1 and Scenario 2)**

| Receptor |                              | Predicted Annual Mean PM <sub>2.5</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|------------------------------|----------------------------------------------------------------------------|------------|--------|
|          |                              | Scenario 1                                                                 | Scenario 2 | Change |
| R1       | Residential - North End Road | 10.46                                                                      | 10.49      | 0.03   |
| R2       | Residential - North End Road | 10.22                                                                      | 10.24      | 0.02   |
| R3       | Residential - North End Road | 10.39                                                                      | 10.42      | 0.03   |
| R4       | Residential - North End Road | 10.23                                                                      | 10.25      | 0.02   |
| R5       | Residential - North End Road | 10.18                                                                      | 10.20      | 0.03   |
| R6       | Residential - Main Road      | 10.23                                                                      | 10.30      | 0.07   |
| R7       | Residential - Main Road      | 10.44                                                                      | 10.53      | 0.10   |
| R8       | Residential - Main Road      | 10.36                                                                      | 10.44      | 0.09   |

| Receptor |                                  | Predicted Annual Mean PM <sub>2.5</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|----------------------------------|----------------------------------------------------------------------------|------------|--------|
|          |                                  | Scenario 1                                                                 | Scenario 2 | Change |
| R9       | Residential - Main Road          | 10.26                                                                      | 10.32      | 0.06   |
| R10      | Residential - Burndell Road      | 10.40                                                                      | 10.46      | 0.06   |
| R11      | Residential - Burndell Road      | 10.41                                                                      | 10.47      | 0.06   |
| R12      | Residential - Burndell Road      | 10.32                                                                      | 10.38      | 0.05   |
| R13      | Residential - Burndell Road      | 10.40                                                                      | 10.46      | 0.06   |
| R14      | Residential - Burndell Road      | 10.14                                                                      | 10.17      | 0.04   |
| R15      | Residential - Burndell Road      | 10.31                                                                      | 10.37      | 0.05   |
| R16      | Residential - Yapton Road        | 10.17                                                                      | 10.24      | 0.07   |
| R17      | Residential - Yapton Road        | 10.22                                                                      | 10.30      | 0.08   |
| R18      | Residential - Yapton Road        | 10.13                                                                      | 10.19      | 0.06   |
| R19      | Residential - Bilsham Road       | 10.21                                                                      | 10.26      | 0.05   |
| R20      | Residential - Bilsham Road       | 10.18                                                                      | 10.20      | 0.03   |
| R21      | Residential - Bilsham Road       | 10.33                                                                      | 10.36      | 0.03   |
| R22      | Residential - Bilsham Road       | 10.24                                                                      | 10.27      | 0.03   |
| R23      | Residential - Bilsham Road       | 10.01                                                                      | 10.02      | 0.02   |
| R24      | Residential - Bilsham Road       | 10.30                                                                      | 10.33      | 0.03   |
| R25      | Residential - Bilsham Road       | 10.21                                                                      | 10.24      | 0.03   |
| R26      | Residential - Bilsham Road       | 10.13                                                                      | 10.15      | 0.02   |
| R27      | Residential - Bilsham Road       | 10.10                                                                      | 10.12      | 0.02   |
| R28      | Residential - Bilsham Road       | 10.40                                                                      | 10.44      | 0.03   |
| R29      | Residential - Yapton Road        | 10.25                                                                      | 10.27      | 0.01   |
| R30      | Residential - Yapton Road        | 9.89                                                                       | 9.89       | 0.01   |
| R31      | Residential - Apple Barn Cottage | 10.76                                                                      | 10.81      | 0.05   |
| R32      | Residential - Church Lane        | 10.21                                                                      | 10.26      | 0.04   |
| R33      | Residential - Church Lane        | 10.40                                                                      | 10.46      | 0.06   |
| R34      | Residential - Church Lane        | 10.49                                                                      | 10.56      | 0.07   |
| R35      | Residential - Church Lane        | 10.17                                                                      | 10.21      | 0.04   |
| R36      | Residential - Station Road       | 9.95                                                                       | 9.97       | 0.02   |
| R37      | Residential - Station Road       | 10.11                                                                      | 10.14      | 0.03   |
| R38      | Residential - Ford Lane          | 10.23                                                                      | 10.27      | 0.04   |
| R39      | Residential - Ford Lane          | 10.09                                                                      | 10.12      | 0.03   |
| R40      | Residential - Henry Lock Way     | 11.48                                                                      | 11.51      | 0.03   |
| R41      | Residential - Willow Brook       | 11.64                                                                      | 11.68      | 0.04   |

| Receptor |                               | Predicted Annual Mean PM <sub>2.5</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|-------------------------------|----------------------------------------------------------------------------|------------|--------|
|          |                               | Scenario 1                                                                 | Scenario 2 | Change |
| R42      | Residential - Colebrook Road  | 12.07                                                                      | 12.12      | 0.05   |
| R43      | Residential - Lymminster Road | 11.92                                                                      | 11.93      | 0.01   |
| R44      | Residential - Lymminster Road | 12.46                                                                      | 12.47      | 0.01   |
| R45      | Residential - Worthing Road   | 12.47                                                                      | 12.54      | 0.07   |
| R46      | Yapton Primary School         | 11.27                                                                      | 11.29      | 0.02   |
| R47      | Lymminster Primary School     | 12.22                                                                      | 12.28      | 0.05   |

As indicated in Table 22, predicted annual mean PM<sub>2.5</sub> concentrations were below the relevant AQO at all receptors in both scenario 1 and 2 with a maximum increase of 0.10µg/m<sup>3</sup> at R7.

Table 23 summarises the predicted change in PM<sub>2.5</sub> concentrations in 2024 with the full build out of the Proposed Development plus the inclusion of additional traffic associated with the proposed secondary school and sixth form.

**Table 23: Predicted Annual Mean PM<sub>2.5</sub> Concentrations (Scenario 1 and Scenario 3)**

| Receptor |                              | Predicted Annual Mean PM <sub>2.5</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|------------------------------|----------------------------------------------------------------------------|------------|--------|
|          |                              | Scenario 1                                                                 | Scenario 3 | Change |
| R1       | Residential - North End Road | 10.46                                                                      | 10.50      | 0.03   |
| R2       | Residential - North End Road | 10.22                                                                      | 10.24      | 0.02   |
| R3       | Residential - North End Road | 10.39                                                                      | 10.42      | 0.03   |
| R4       | Residential - North End Road | 10.23                                                                      | 10.26      | 0.03   |
| R5       | Residential - North End Road | 10.18                                                                      | 10.21      | 0.04   |
| R6       | Residential - Main Road      | 10.23                                                                      | 10.34      | 0.11   |
| R7       | Residential - Main Road      | 10.44                                                                      | 10.58      | 0.14   |
| R8       | Residential - Main Road      | 10.36                                                                      | 10.48      | 0.12   |
| R9       | Residential - Main Road      | 10.26                                                                      | 10.34      | 0.08   |
| R10      | Residential - Burndell Road  | 10.40                                                                      | 10.47      | 0.06   |
| R11      | Residential - Burndell Road  | 10.41                                                                      | 10.47      | 0.06   |
| R12      | Residential - Burndell Road  | 10.32                                                                      | 10.38      | 0.05   |
| R13      | Residential - Burndell Road  | 10.40                                                                      | 10.46      | 0.06   |
| R14      | Residential - Burndell Road  | 10.14                                                                      | 10.17      | 0.04   |
| R15      | Residential - Burndell Road  | 10.31                                                                      | 10.37      | 0.05   |
| R16      | Residential - Yapton Road    | 10.17                                                                      | 10.24      | 0.07   |
| R17      | Residential - Yapton Road    | 10.22                                                                      | 10.30      | 0.08   |
| R18      | Residential - Yapton Road    | 10.13                                                                      | 10.19      | 0.06   |
| R19      | Residential - Bilsham Road   | 10.21                                                                      | 10.27      | 0.06   |

| Receptor |                                  | Predicted Annual Mean PM <sub>2.5</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|----------------------------------|----------------------------------------------------------------------------|------------|--------|
|          |                                  | Scenario 1                                                                 | Scenario 3 | Change |
| R20      | Residential - Bilsham Road       | 10.18                                                                      | 10.21      | 0.03   |
| R21      | Residential - Bilsham Road       | 10.33                                                                      | 10.37      | 0.04   |
| R22      | Residential - Bilsham Road       | 10.24                                                                      | 10.28      | 0.03   |
| R23      | Residential - Bilsham Road       | 10.01                                                                      | 10.03      | 0.02   |
| R24      | Residential - Bilsham Road       | 10.30                                                                      | 10.34      | 0.03   |
| R25      | Residential - Bilsham Road       | 10.21                                                                      | 10.24      | 0.03   |
| R26      | Residential - Bilsham Road       | 10.13                                                                      | 10.16      | 0.02   |
| R27      | Residential - Bilsham Road       | 10.10                                                                      | 10.13      | 0.02   |
| R28      | Residential - Bilsham Road       | 10.40                                                                      | 10.44      | 0.04   |
| R29      | Residential - Yapton Road        | 10.25                                                                      | 10.27      | 0.01   |
| R30      | Residential - Yapton Road        | 9.89                                                                       | 9.89       | 0.01   |
| R31      | Residential - Apple Barn Cottage | 10.76                                                                      | 10.81      | 0.05   |
| R32      | Residential - Church Lane        | 10.21                                                                      | 10.26      | 0.05   |
| R33      | Residential - Church Lane        | 10.40                                                                      | 10.47      | 0.06   |
| R34      | Residential - Church Lane        | 10.49                                                                      | 10.57      | 0.07   |
| R35      | Residential - Church Lane        | 10.17                                                                      | 10.21      | 0.04   |
| R36      | Residential - Station Road       | 9.95                                                                       | 9.97       | 0.02   |
| R37      | Residential - Station Road       | 10.11                                                                      | 10.14      | 0.04   |
| R38      | Residential - Ford Lane          | 10.23                                                                      | 10.27      | 0.05   |
| R39      | Residential - Ford Lane          | 10.09                                                                      | 10.12      | 0.03   |
| R40      | Residential - Henry Lock Way     | 11.48                                                                      | 11.51      | 0.03   |
| R41      | Residential - Willow Brook       | 11.64                                                                      | 11.68      | 0.04   |
| R42      | Residential - Colebrook Road     | 12.07                                                                      | 12.12      | 0.05   |
| R43      | Residential - Lyminster Road     | 11.92                                                                      | 11.93      | 0.01   |
| R44      | Residential - Lyminster Road     | 12.46                                                                      | 12.47      | 0.01   |
| R45      | Residential - Worthing Road      | 12.47                                                                      | 12.54      | 0.07   |
| R46      | Yapton Primary School            | 11.27                                                                      | 11.30      | 0.02   |
| R47      | Lyminster Primary School         | 12.22                                                                      | 12.28      | 0.06   |

As indicated in Table 23, predicted annual mean PM<sub>10</sub> concentrations were below the relevant AQO at all receptors in both scenario 1 and scenario 3 with a maximum increase of 0.14µg/m<sup>3</sup> at R7.

Table 24 summarises the predicted change in PM<sub>10</sub> concentrations in 2030 with the full build out of the Proposed Development but without the inclusion of additional traffic associated with the proposed secondary school and sixth form.

Table 24: Predicted Annual Mean PM<sub>2.5</sub> Concentrations (Scenario 4 and Scenario 5)

| Receptor |                                  | Predicted Annual Mean PM <sub>2.5</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|----------------------------------|----------------------------------------------------------------------------|------------|--------|
|          |                                  | Scenario 4                                                                 | Scenario 5 | Change |
| R1       | Residential - North End Road     | 10.47                                                                      | 10.50      | 0.03   |
| R2       | Residential - North End Road     | 10.22                                                                      | 10.24      | 0.02   |
| R3       | Residential - North End Road     | 10.40                                                                      | 10.42      | 0.03   |
| R4       | Residential - North End Road     | 10.23                                                                      | 10.25      | 0.02   |
| R5       | Residential - North End Road     | 10.18                                                                      | 10.21      | 0.03   |
| R6       | Residential - Main Road          | 10.23                                                                      | 10.31      | 0.07   |
| R7       | Residential - Main Road          | 10.44                                                                      | 10.54      | 0.09   |
| R8       | Residential - Main Road          | 10.36                                                                      | 10.45      | 0.08   |
| R9       | Residential - Main Road          | 10.26                                                                      | 10.32      | 0.06   |
| R10      | Residential - Burndell Road      | 10.41                                                                      | 10.47      | 0.06   |
| R11      | Residential - Burndell Road      | 10.41                                                                      | 10.47      | 0.06   |
| R12      | Residential - Burndell Road      | 10.33                                                                      | 10.38      | 0.05   |
| R13      | Residential - Burndell Road      | 10.40                                                                      | 10.46      | 0.06   |
| R14      | Residential - Burndell Road      | 10.14                                                                      | 10.18      | 0.04   |
| R15      | Residential - Burndell Road      | 10.32                                                                      | 10.37      | 0.05   |
| R16      | Residential - Yapton Road        | 10.17                                                                      | 10.24      | 0.07   |
| R17      | Residential - Yapton Road        | 10.22                                                                      | 10.30      | 0.08   |
| R18      | Residential - Yapton Road        | 10.13                                                                      | 10.19      | 0.06   |
| R19      | Residential - Bilsham Road       | 10.22                                                                      | 10.26      | 0.05   |
| R20      | Residential - Bilsham Road       | 10.18                                                                      | 10.21      | 0.03   |
| R21      | Residential - Bilsham Road       | 10.33                                                                      | 10.37      | 0.03   |
| R22      | Residential - Bilsham Road       | 10.25                                                                      | 10.28      | 0.03   |
| R23      | Residential - Bilsham Road       | 10.01                                                                      | 10.03      | 0.02   |
| R24      | Residential - Bilsham Road       | 10.31                                                                      | 10.34      | 0.03   |
| R25      | Residential - Bilsham Road       | 10.21                                                                      | 10.24      | 0.03   |
| R26      | Residential - Bilsham Road       | 10.14                                                                      | 10.16      | 0.02   |
| R27      | Residential - Bilsham Road       | 10.11                                                                      | 10.13      | 0.02   |
| R28      | Residential - Bilsham Road       | 10.41                                                                      | 10.44      | 0.03   |
| R29      | Residential - Yapton Road        | 10.26                                                                      | 10.27      | 0.01   |
| R30      | Residential - Yapton Road        | 9.89                                                                       | 9.89       | 0.00   |
| R31      | Residential - Apple Barn Cottage | 10.77                                                                      | 10.82      | 0.05   |
| R32      | Residential - Church Lane        | 10.21                                                                      | 10.26      | 0.05   |

| Receptor |                              | Predicted Annual Mean PM <sub>2.5</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|------------------------------|----------------------------------------------------------------------------|------------|--------|
|          |                              | Scenario 4                                                                 | Scenario 5 | Change |
| R33      | Residential - Church Lane    | 10.40                                                                      | 10.47      | 0.06   |
| R34      | Residential - Church Lane    | 10.50                                                                      | 10.57      | 0.07   |
| R35      | Residential - Church Lane    | 10.17                                                                      | 10.21      | 0.04   |
| R36      | Residential - Station Road   | 9.95                                                                       | 9.97       | 0.02   |
| R37      | Residential - Station Road   | 10.11                                                                      | 10.15      | 0.03   |
| R38      | Residential - Ford Lane      | 10.23                                                                      | 10.27      | 0.04   |
| R39      | Residential - Ford Lane      | 10.09                                                                      | 10.12      | 0.03   |
| R40      | Residential - Henry Lock Way | 11.48                                                                      | 11.51      | 0.03   |
| R41      | Residential - Willow Brook   | 11.64                                                                      | 11.68      | 0.04   |
| R42      | Residential - Colebrook Road | 12.08                                                                      | 12.13      | 0.05   |
| R43      | Residential - Lyminster Road | 11.93                                                                      | 11.94      | 0.01   |
| R44      | Residential - Lyminster Road | 12.47                                                                      | 12.48      | 0.01   |
| R45      | Residential - Worthing Road  | 12.48                                                                      | 12.55      | 0.08   |
| R46      | Yapton Primary School        | 11.28                                                                      | 11.29      | 0.02   |
| R47      | Lyminster Primary School     | 12.23                                                                      | 12.29      | 0.06   |

As indicated in Table 24, predicted annual mean PM<sub>2.5</sub> concentrations were below the relevant AQO at all receptors in both scenario 4 and scenario 5 with a maximum increase of 0.09µg/m<sup>3</sup> at R7.

Table 25 summarises the predicted change in PM<sub>2.5</sub> concentrations in 2030 with the full build out of the Proposed Development plus the inclusion of additional traffic associated with the proposed secondary school and sixth form.

**Table 25: Predicted Annual Mean PM<sub>2.5</sub> Concentrations (Scenario 4 and Scenario 6)**

| Receptor |                              | Predicted Annual Mean PM <sub>2.5</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|------------------------------|----------------------------------------------------------------------------|------------|--------|
|          |                              | Scenario 4                                                                 | Scenario 6 | Change |
| R1       | Residential - North End Road | 10.47                                                                      | 10.50      | 0.03   |
| R2       | Residential - North End Road | 10.22                                                                      | 10.25      | 0.02   |
| R3       | Residential - North End Road | 10.40                                                                      | 10.43      | 0.03   |
| R4       | Residential - North End Road | 10.23                                                                      | 10.26      | 0.03   |
| R5       | Residential - North End Road | 10.18                                                                      | 10.21      | 0.04   |
| R6       | Residential - Main Road      | 10.23                                                                      | 10.34      | 0.10   |
| R7       | Residential - Main Road      | 10.44                                                                      | 10.58      | 0.14   |
| R8       | Residential - Main Road      | 10.36                                                                      | 10.48      | 0.12   |
| R9       | Residential - Main Road      | 10.26                                                                      | 10.35      | 0.08   |
| R10      | Residential - Burndell Road  | 10.41                                                                      | 10.47      | 0.06   |

| Receptor |                                  | Predicted Annual Mean PM <sub>2.5</sub> Concentration (µg/m <sup>3</sup> ) |            |        |
|----------|----------------------------------|----------------------------------------------------------------------------|------------|--------|
|          |                                  | Scenario 4                                                                 | Scenario 6 | Change |
| R11      | Residential - Burndell Road      | 10.41                                                                      | 10.48      | 0.06   |
| R12      | Residential - Burndell Road      | 10.33                                                                      | 10.38      | 0.06   |
| R13      | Residential - Burndell Road      | 10.40                                                                      | 10.46      | 0.06   |
| R14      | Residential - Burndell Road      | 10.14                                                                      | 10.18      | 0.04   |
| R15      | Residential - Burndell Road      | 10.32                                                                      | 10.37      | 0.05   |
| R16      | Residential - Yapton Road        | 10.17                                                                      | 10.24      | 0.07   |
| R17      | Residential - Yapton Road        | 10.22                                                                      | 10.30      | 0.08   |
| R18      | Residential - Yapton Road        | 10.13                                                                      | 10.19      | 0.06   |
| R19      | Residential - Bilsham Road       | 10.22                                                                      | 10.27      | 0.06   |
| R20      | Residential - Bilsham Road       | 10.18                                                                      | 10.21      | 0.03   |
| R21      | Residential - Bilsham Road       | 10.33                                                                      | 10.37      | 0.04   |
| R22      | Residential - Bilsham Road       | 10.25                                                                      | 10.28      | 0.03   |
| R23      | Residential - Bilsham Road       | 10.01                                                                      | 10.03      | 0.02   |
| R24      | Residential - Bilsham Road       | 10.31                                                                      | 10.34      | 0.04   |
| R25      | Residential - Bilsham Road       | 10.21                                                                      | 10.24      | 0.03   |
| R26      | Residential - Bilsham Road       | 10.14                                                                      | 10.16      | 0.03   |
| R27      | Residential - Bilsham Road       | 10.11                                                                      | 10.13      | 0.02   |
| R28      | Residential - Bilsham Road       | 10.41                                                                      | 10.44      | 0.04   |
| R29      | Residential - Yapton Road        | 10.26                                                                      | 10.27      | 0.01   |
| R30      | Residential - Yapton Road        | 9.89                                                                       | 9.89       | 0.01   |
| R31      | Residential - Apple Barn Cottage | 10.77                                                                      | 10.82      | 0.05   |
| R32      | Residential - Church Lane        | 10.21                                                                      | 10.26      | 0.05   |
| R33      | Residential - Church Lane        | 10.40                                                                      | 10.47      | 0.07   |
| R34      | Residential - Church Lane        | 10.50                                                                      | 10.57      | 0.08   |
| R35      | Residential - Church Lane        | 10.17                                                                      | 10.21      | 0.05   |
| R36      | Residential - Station Road       | 9.95                                                                       | 9.98       | 0.02   |
| R37      | Residential - Station Road       | 10.11                                                                      | 10.15      | 0.04   |
| R38      | Residential - Ford Lane          | 10.23                                                                      | 10.27      | 0.05   |
| R39      | Residential - Ford Lane          | 10.09                                                                      | 10.12      | 0.03   |
| R40      | Residential - Henry Lock Way     | 11.48                                                                      | 11.51      | 0.03   |
| R41      | Residential - Willow Brook       | 11.64                                                                      | 11.68      | 0.04   |
| R42      | Residential - Colebrook Road     | 12.08                                                                      | 12.13      | 0.06   |
| R43      | Residential - Lymminster Road    | 11.93                                                                      | 11.94      | 0.01   |

| Receptor |                              | Predicted Annual Mean PM <sub>2.5</sub> Concentration (µg/m³) |            |        |
|----------|------------------------------|---------------------------------------------------------------|------------|--------|
|          |                              | Scenario 4                                                    | Scenario 6 | Change |
| R44      | Residential - Lyminster Road | 12.47                                                         | 12.48      | 0.01   |
| R45      | Residential - Worthing Road  | 12.48                                                         | 12.56      | 0.08   |
| R46      | Yapton Primary School        | 11.28                                                         | 11.30      | 0.02   |
| R47      | Lyminster Primary School     | 12.23                                                         | 12.29      | 0.06   |

As indicated in Table 25, predicted annual mean PM<sub>2.5</sub> concentrations were below the relevant AQO at all receptors in both scenario 4 and scenario 6 with a maximum increase of 0.14µg/m³ at R7.

## 7.2 Summary of Results

The results of the air quality assessment on existing sensitive receptors predict a negligible impact as a result of the Proposed Development both in 2024 and 2030, without and with the additional traffic associated with the proposed secondary school for all pollutants. With regards to the EPUK/IAQM guidance, the increases in NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> as a result of the proposals are all predicted to be 75% or less of the long-term average concentration and well below the relevant air quality objectives. Air quality impacts on existing sensitive receptors as a result of the Proposed Development are therefore considered to be not significant.

## 7.3 Impact on New Receptors

The Proposed Development has the potential to introduce new sensitive receptors into an area of poor quality and therefore an assessment of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations at the Site has been undertaken at a number of locations along the south western boundary adjacent to Yapton Road.

Table 26 details the predicted pollutant concentrations for Scenarios 2 and 3 and Table 27 details the predicted pollutant concentrations for Scenarios 5 and 6.

**Table 26: Predicted Pollutant Concentrations at Proposed Receptor Locations in 2024**

| Proposed Receptor | Scenario 2 Concentrations (µg/m³) |                  |                   | Scenario 3 Concentrations (µg/m³) |                  |                   |
|-------------------|-----------------------------------|------------------|-------------------|-----------------------------------|------------------|-------------------|
|                   | NO <sub>2</sub>                   | PM <sub>10</sub> | PM <sub>2.5</sub> | NO <sub>2</sub>                   | PM <sub>10</sub> | PM <sub>2.5</sub> |
| PR1               | 16.61                             | 16.00            | 10.25             | 16.62                             | 16.00            | 10.25             |
| PR2               | 16.60                             | 15.99            | 10.25             | 16.60                             | 15.99            | 10.25             |
| PR3               | 16.00                             | 15.96            | 10.22             | 16.00                             | 15.96            | 10.22             |
| PR4               | 15.22                             | 15.82            | 10.14             | 15.22                             | 15.82            | 10.14             |
| PR5               | 13.81                             | 15.56            | 9.98              | 13.81                             | 15.56            | 9.98              |
| PR6               | 14.82                             | 15.74            | 10.09             | 14.82                             | 15.74            | 10.09             |

**Table 27: Predicted Pollutant Concentrations at Proposed Receptor Locations in 2030**

| Proposed Receptor | Scenario 5 Concentrations (µg/m³) |                  |                   | Scenario 6 Concentrations (µg/m³) |                  |                   |
|-------------------|-----------------------------------|------------------|-------------------|-----------------------------------|------------------|-------------------|
|                   | NO <sub>2</sub>                   | PM <sub>10</sub> | PM <sub>2.5</sub> | NO <sub>2</sub>                   | PM <sub>10</sub> | PM <sub>2.5</sub> |
| PR1               | 16.67                             | 16.00            | 10.25             | 16.67                             | 16.00            | 10.25             |
| PR2               | 16.65                             | 16.00            | 10.25             | 16.65                             | 16.00            | 10.25             |

| Proposed Receptor | Scenario 5 Concentrations ( $\mu\text{g}/\text{m}^3$ ) |                  |                   | Scenario 6 Concentrations ( $\mu\text{g}/\text{m}^3$ ) |                  |                   |
|-------------------|--------------------------------------------------------|------------------|-------------------|--------------------------------------------------------|------------------|-------------------|
|                   | NO <sub>2</sub>                                        | PM <sub>10</sub> | PM <sub>2.5</sub> | NO <sub>2</sub>                                        | PM <sub>10</sub> | PM <sub>2.5</sub> |
| PR3               | 16.04                                                  | 15.97            | 10.23             | 16.05                                                  | 15.96            | 10.23             |
| PR4               | 15.25                                                  | 15.82            | 10.14             | 15.26                                                  | 15.82            | 10.14             |
| PR5               | 13.83                                                  | 15.56            | 9.99              | 13.83                                                  | 15.56            | 9.99              |
| PR6               | 14.86                                                  | 15.75            | 10.10             | 14.86                                                  | 15.75            | 10.10             |

As no exceedances of any considered air quality objectives are predicted, this follows the 1<sup>st</sup> hierarchy principle of the IAQM guidance to 'prevent and avoid' exposure'. Therefore, no embedded mitigation into the Proposed Development design (in the form of mechanical ventilation, for example) is required.

## 8. Mitigation

The IAQM have released a position statement 'Mitigation of Development Air Quality Impacts' which provides guidance on determining appropriate mitigation measures for new development. This states:

'The IAQM position is that the appropriate mitigation solution for the operational air quality impact of any given general development scheme should be principle-led rather than specified by detailed prescription.'

The following hierarchy of principles is provided for use when determining an appropriate level of mitigation:

- Prevent or avoid;
- Reduction and minimisation; and
- Off-setting.

This air quality assessment has shown that impacts associated with additional vehicle emissions produced by the development are predicted to be negligible at all receptors. As such, mitigation to reduce potential impacts is not considered necessary. However, the following measures were identified for inclusion within the proposals in accordance with the IAQM 'Land-Use Planning & Development Control: Planning for Air Quality' guidance':

- Provision of Electric Vehicle (EV) "charge" points;
- Production of a Travel Plan;
- Inclusion of pedestrian pathways within the site layout to encourage walking; and
- All gas-fired boilers to meet a minimum standard of 40mgNO<sub>x</sub>/kWh.

These methods are consistent with the requirements of 'Air Quality and Emissions Mitigation Guidance for Sussex' (2013).

The total monetary value of mitigation required can be quantified using a damage cost calculation. The calculation uses the EFT to determine the amount of transport related pollutant emissions a development is likely to produce. The output is then multiplied by the Interdepartmental Group on Costs and Benefits damage costs for the key pollutants, NO<sub>x</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> and finally multiplied by 5 to provide a five-year exposure cost value. This is the value of mitigation that is expected to be spent on measures to reduce the impact of the proposed development. The damage cost has been calculated for 2030 without the inclusion of the proposed secondary school and sixth form. This is in line with the completion of the Local Plan.

This has been summarised in the following equation:

**5 Year Exposure Cost Value = EFT Output x Damage Costs x 5**

The total development trips (AADT) can be calculated by totalling the vehicles (two way) at the following locations.

- Yapton Level Crossing
- B2233 Yapton Road west of North End Road
- Bilsham Road south of Burndell Road mini
- Ford Level Crossing
- A259 West of Oystercatcher Junction
- A259 East of Church Lane Roundabout

Adding the flows gives 5253 AADT at these locations. The input data is summarised in Table 28.

**Table 28: Emissions Calculation Inputs**

| Data                                         | Value   |
|----------------------------------------------|---------|
| Daily Traffic (generated by development)     | 5253    |
| Assumed Average Speed (km/h)                 | 50      |
| Average Trip Length (km)                     | 10      |
| NO <sub>x</sub> Output (tonnes/year): 2030   | 2.50582 |
| PM <sub>10</sub> Output (tonnes/year): 2030  | 0.61444 |
| PM <sub>2.5</sub> Output (tonnes/year): 2030 | 0.33882 |
| NO <sub>x</sub> Damage Cost (£/tonne)        | 6,199   |
| PM <sub>10</sub> Damage Cost (£/tonne) *     | 67,946  |
| PM <sub>2.5</sub> Damage Cost (£/tonne)      | 10,5836 |

\*Calculated using PM conversion factor 0.642 as detailed in the DEFRA guidance

Using the inputs detailed above, the damage costs are calculated and are shown in Table 29

**Table 29: Damage Costs**

| Data                                           | Value   |
|------------------------------------------------|---------|
| Annual Cost of NO <sub>x</sub> Emissions (£)   | 15,533  |
| Annual Cost of PM <sub>10</sub> Emissions (£)  | 41,748  |
| Annual Cost of PM <sub>2.5</sub> Emissions (£) | 35,859  |
| Total Annual Exposure Cost Value (£)           | 93,141  |
| Total Five-Year Exposure Cost Value (£)        | 465,708 |

As shown in Table 29, the emissions mitigation calculation determined that the development should include direct or indirect mitigation measures to reduce the air quality impacts of road traffic emissions equal to £465,708. This could include measures consistent with sustainable travel, for example.

## 9. Conclusions

This air quality assessment has been undertaken with the aim of predicting the potential impacts associated with a proposed mixed-use development on land at Ford Airfield.

This report presents the air quality assessment undertaken in relation to air pollution and dust emissions from the development proposals as well as predicting pollutant concentrations across the Proposed Development to assess the potential exposure of future occupiers to poor air quality

The conclusions of the assessment are as follows:

1. Robust mitigation against dust impacts should be adopted throughout the construction phase. These are likely to be detailed in a Construction Environmental Management Plan, or similar;
2. Based on the results of a dispersion modelling assessment, potential impacts on annual mean NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations associated with additional vehicle emissions from the Proposed Development are predicted to be negligible at all existing receptors in both 2024 and 2030, without and with the additional vehicle emissions associated with the proposed secondary school and sixth form. As such, impacts are not significant according to the EPUK/IAQM criteria; and
3. Based on the location of the Site and the results of a dispersion modelling study, it is considered highly unlikely that future occupiers will be exposed to levels of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> above the air quality objectives.

As such, the Proposed Development does not conflict with the NPPF or policy QE DM3 of the Arun Local Plan 2011-2031.

## Appendix A

The professional experience of the Hoare Lea Team preparing this report are as follows:

### **Dr Claire Holman, CSci, CEnv, FIEEnvSc, FIAQM**

Claire is a Director and owner of Brook Cottage Consultants Ltd., which provides air quality expertise to a range of industrial and public sector clients. She provides an advisory role, reviewing and inputting at key stages of projects for Hoare Lea. She is currently the Chair of the Institute of Air Quality Management (IAQM).

Claire has worked on air quality management for over 35 years. She has experience of developing emission inventories, emission control, ambient monitoring, dispersion, cost benefit and cost-effectiveness analysis and policy development. She has undertaken numerous air quality assessments for new developments. She also advised governments in Europe, Asia and Africa, as well as the European Commission on strategic air quality and climate change issues for the development of policy and new regulations.

Claire is a chartered scientist, a chartered environmentalist, a fellow of the Institution of Environmental Science and a Fellow of IAQM.

### **Chris Rush, BSc (Hons), MSc, PG Dip Acoustics, CEnv, MIOA, MIEMA, MIEEnvSc, MIAQM**

Chris is a Senior Associate Air Quality Consultant with Hoare Lea. He is a Chartered Environmentalist, a Member of the Institute of Acoustics, a Full Member of the Institute of Environmental Management and Assessment, a Member of the Institution of Environmental Sciences and a Member of the Institute of Air Quality Management.

He has a diverse portfolio of experience and has worked on a range of projects from initial site feasibility, through planning and development to construction and operation. Chris's expertise covers planning, noise and air quality, specifically in relation to residential developments, industrial fixed installations such as waste management centres and transportation environmental impacts on developments.

### **Matthew Stoaling, BSc (Hon), FIAQM, MIES**

Matt is Director and owner of Isopleth Ltd. He has 20 years' experience of working on air quality with expertise in odour assessment. He has undertaken numerous assessments of the impacts associated with a wide range of sectors including: residential, industrial and retail development, quarrying and mining, transport and infrastructure, renewable energy, intensive agriculture, waste management and wastewater treatment.

### **Charlotte Smith (Hoare Lea), BSc (Hons) AMIEnvSc, AMIAQM**

Charlotte is a Senior Air Quality Consultant at Hoare Lea with over five years' experience in air quality consultancy. She has worked on a range of projects across a number of industries including residential, educational, commercial and industrial for site feasibility studies, planning applications and Environmental Impact Assessments. She also has experience in air quality monitoring at sites ranging from residential and educational facilities to large road network schemes. Charlotte's interests lie in the effects that pollution has on human health and wellbeing.



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