LAND TO THE NORTH-EAST OF GREAT BARTON

Proposed Residential Development

Air Quality Assessment

Prepared for: Montagu Evans LLP

DRAFT

PRELIMINARY REPORT - FOR INFORMATION PURPOSES ONLY

SLR Ref: 425.11028.00001
Version No: Working Draft REV1
December 2020

BASIS OF REPORT

CONTENTS

DOCUMENT REFERENCES

TABLES

FIGURES

DRAWINGS

TO BE COMPLETED

1.0 INTRODUCTION

SLR Consulting Ltd (SLR) has been commissioned by Montagu Evans LLP on behalf of West Suffolk Council (WSC) and Suffolk County Council (SCC) to undertake an Air Quality Assessment (AQA) in support of a planning application for a proposed residential development ('Proposed Development') on Land to the North-East of Great Barton (the 'Application Site'). The Application Site is allocated within the Rural Vision 2031 (2014) document, under Policy RB18, which forms part of the Development Plan for the site.

The planning application seeks the development of:

Awaiting formal development description

The assessment describes the scope, relevant legislation, assessment methodology and the baseline conditions currently existing in the area. It then presents the potential impacts resulting during the construction and operational phases of the Proposed Development and an evaluation of the significance of the effects.

1.1 Scope of Assessment

Pre-assessment discussion[1] was undertaken with the Environment Health Officer (EHO) at WSC in order to agree the extent and methodology of the Air Quality Assessment. The following scope of works have been undertaken as part of this Air Quality Assessment as proposed to WSC:

- Baseline Evaluation – Assessment of existing air quality in the local area;
- Construction Phase Assessment – Identification and assessment of potential air quality impacts and effects associated with the construction phase of the Proposed Development, primarily dust impacts and suspended particulate matter with an aerodynamic diameter of less than 10 micrometres (PM_{10});
- Operational Phase Assessment, to consider the air quality impacts associated with the Proposed Development on the existing environment; and
- Mitigation Measures – Identification of appropriate mitigation measures for incorporation within the 'design' based upon the above proposed scope.

[1] E-mail correspondence between SLR Consulting Ltd and Matthew Axton, Environment Officer within the Environmental Health department of West Suffolk Council, dated 9th November 2020.

2.0 RELEVANT AIR QUALITY LEGISLATION AND GUIDANCE

2.1 Air Quality Strategy

The United Kingdom Air Quality Strategy (UK AQS) 2007 for England, Scotland, Wales and Northern Ireland[2] sets out the Government's policies aimed at delivering cleaner air in the United Kingdom (UK). It provides the over-arching strategic framework for air quality management in the UK and contains national air quality standards and objectives established by the UK Government and Devolved Administrations to protect and improve human health.

2.2 Air Quality Standards

The Air Quality Standards Regulations 2010 (the regulations) transpose both the EU Ambient Air Quality Directive (2008/50/EC), and the Fourth Daughter Directive (2004/107/EC) within UK legislation. The regulations include Limit Values, Target Values, Objectives, Critical Levels and Exposure Reduction Targets for the protection of human health and the environment (collectively termed Air Quality Assessment Levels (AQAL) throughout this report). Those relevant to this AQA are presented within Table 2-1.

Table 2-1
Relevant UK AQS Standards and Objectives

Pollutant	Standard (µg/m^3)	Measured As	Equivalent percentile
Nitrogen Dioxide (NO_2)	40	Annual Mean	-
	200	1-hour Mean	99.79th percentile of 1-hour means (equivalent to 18 1-hour exceedences)
PM_{10} (gravimetric)	40	Annual Mean	-
	50	24-hour mean	90.41th percentile of 24-hour means (equivalent to 35 24-hour exceedences)
Particulate matter within an aerodynamic diameter of less than 2.5µm ($PM_{2.5}$) (gravimetric)	25	Annual Mean	-

The UK nationally has failed to meet the EU Limit Values, as outlined in the Ambient Air Quality Directive (2008/50/EC), for NO_2 by the 2010 target date. As a result, the Government has had to submit time extension applications for compliance with the EU Limit Values, which has since passed and its continued failure to achieve these limits is currently giving rise to infraction procedures being implemented. The UK is not alone as the challenge of NO_2 compliance at EU level includes many other Member States.

[2] The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, DEFRA. July 2007.

In July 2017, the Government published its plan for tackling roadside NO_2 concentrations[3], to achieve compliance with EU Limit Values. This sets out Government policies for bringing NO_2 concentrations within statutory limits in the shortest time period possible.

2.2.1 Relevant Exposure

In accordance with the Department for Environment, Food and Rural Affairs' (DEFRA) technical guidance on Local Air Quality Management (LAQM.TG(16))[4], the AQALs should be assessed at locations of relevant exposure i.e. where members of the public are regularly present and might reasonably be expected to be exposed to pollutant concentrations over the relevant averaging period. A summary of relevant exposure for the objectives presented in Table 2-1 are shown below in Table 2-2.

Table 2-2
Relevant Exposure

AQAL Averaging Periods	Relevant Locations	AQALs should apply at	AQALs 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 Hotels Gardens of residences 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

2.3 Local Air Quality Management

Section 82 of the Environment Act 1995 (Part IV) requires Local Authorities (LA) to periodically review and assess the quality of air within their administrative area. The reviews have to consider the present and future air quality and whether any AQALs prescribed in regulations are being achieved or are likely to be achieved in the future.

Where any of the prescribed AQALs are not likely to be achieved the authority concerned must designate an Air Quality Management Area (AQMA). For each AQMA the LA has a duty to draw up an Air Quality Action Plan (AQAP) setting out the measures the authority intends to introduce to deliver improvements in local air quality in pursuit of the AQAL. As such, LAs, have formal powers to control air quality through a combination of LAQM and by use of their wider planning policies.

[3] Defra, DfT (2017), UK plan for tackling roadside nitrogen dioxide concentrations.

[4] Local Air Quality Management Technical Guidance 16, Published by DEFRA in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland. February 2018.

2.4 Clean Air Strategy

The Clean Air Strategy (CAS)[5], published in 2019, sets out the Government's proposals aimed at delivering cleaner air in England, and also indicates how devolved administrations intend to make emissions reductions. It sets out the comprehensive action that is required from across all parts of government and society to deliver clean air.

2.5 General Nuisance Legislation

Part III of the Environmental Protection Act (EPA) 1990 (as amended) contains the main legislation on Statutory Nuisance and allows LAs and individuals to take action to prevent a statutory nuisance. Section 79 of the EPA defines, amongst other things, smoke, fumes, dust and smells emitted from industrial, trade or business premises so as to be prejudicial to health or a nuisance, as a potential Statutory Nuisance.

Fractions of dust greater than 10µm (i.e. greater than PM_{10}) in diameter typically relate to nuisance effects as opposed to potential health effects and therefore are not covered within the UK AQS. In legislation there are currently no numerical limits in terms of what level of dust deposition constitutes a nuisance.

2.6 Planning Policy

2.6.1 National Policy

The 2019 update to the National Planning Policy Framework (NPPF) describes the policy context in relation to pollutants including air pollutants:

> *'Para 170: Planning policies and decisions should contribute to and enhance the natural and local environment by:*
>
> *e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of […] air […] pollution […]. Development should, wherever possible, help to improve local environmental conditions such as air […] quality […]'*
>
> *'Para 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.'*

Specifically, in terms of development with regards to air quality:

> *'Para 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.'*

[5] The Clean Air Strategy, DEFRA. January 2019.

The NPPF is accompanied by web based supporting Planning Practice Guidance (PPG) which includes guiding principles on how planning can take account of the impacts of new development on air quality. In regard to air quality, the PPG states:

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

The PPG sets out the information that may be required within the context of a supporting air quality assessment, stating that "*assessments should be proportional to the nature and scale of development proposed and the level of concern about air quality* […] *Mitigation options where necessary, will depend on the proposed development and should be proportionate to the likely impact*".

The policies within the NPPF and accompanying PPG in relation to air pollution are considered within this AQA.

2.6.2 Local Policy

The West Suffolk Local Plan (consisting of the former Forest Heath area (FHDC) and former St Edmundsbury area (SEBC) Local Plan documents) sets out the long-term planning and land use policies within West Suffolk. The local plan includes documents previously referred to as the Local Development Framework (LDF). WSC has commenced a review of the extant Local Plan documents as preparation for identifying the long-term planning and land-use policies for the area. However, at the time of writing this Local Plan review was under consultation and, as such, has yet to be formally adopted.

In relation to the former St Edmundsbury area, the extant Local Plan document is the St Edmundsbury Core Strategy 2010, adopted in December 2010. The following policy relating to air quality are referenced within the St Edmundsbury Core Strategy 2010:

> *"Policy CS2 Sustainable Development*
>
> *A high quality, sustainable environment will be achieved by designing and incorporating measures appropriate to the nature and scale of development, including:*
>
> *The protection and enhancement of natural resources: […]*
>
> *E) conserving and, wherever possible, enhancing other natural resources including, air quality and the quality and local distinctiveness of soils; […]"*

The above policy has been considered as part of this assessment.

2.7 Assessment Guidance

The AQA has been carried out in accordance with the following principles contained within the guidance documents below.

2.7.1 DEFRA's 'LAQM.TG(16)'

DEFRA's Local Air Quality Management Technical Guidance (LAQM.TG(16))[4] was published for use by LAs in their LAQM review and assessment work. The document provides key guidance in aspects of air quality assessment, including screening, model verification, use of monitoring data, and use of background data that are applicable to all AQAs. Methodologies prescribed within LAQM.TG(16)[4] have been employed throughout the assessment, in order to provide consistency with the Council's own work on air quality.

2.7.2 Environmental Protection UK and Institute of Air Quality Management Guidance

Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) have together published guidance[6] to help ensure that air quality is properly accounted for in the development control process. It clarifies when an AQA should be undertaken, what it should contain, and how impacts should be described and assessed including guidelines for assessing the significance of impacts.

The guidance also states that best-practice design and operational measures should be recommended and applied to all developments that require an AQA, to reduce emissions and human exposure to poor air quality. Additional measures are also suggested to off-set emissions, depending on the nature and scale of the development proposals.

2.7.3 Design Manual for Roads and Bridges

The Design Manual for Roads and Bridges (DMRB) LA 105[7] states receptors, including ecological designations, within 200m of an 'affected road' source, require further assessment of potential impacts.

2.7.4 Construction and Demolition Dust Guidance

Guidance on the assessment of dust from demolition and construction has been published by the IAQM[8]. The guidance provides a series of matrices to determine the risk magnitude of potential dust sources associated with construction activities in order to identify appropriate mitigation measures that are defined within further IAQM guidance.

2.8 Regulation of Vehicular Exhaust Emissions

2.8.1 Road Vehicles

The emission of combustion pollutants from road vehicle exhausts is regulated by European Directives with the phasing in of more stringent standards (known as Euro standards) for new vehicles over the past 20 years for a range of pollutants including oxides of nitrogen (NOx), carbon monoxide (CO), unburnt hydrocarbons and particulate matter (PM). The actual emission limits vary depending on vehicle size (i.e. car, Light Duty Vehicles[9] (LDV i.e. cars, vans), Heavy Duty Vehicles[10] (HDV i.e. lorries and buses) and fuel type (i.e. diesel or petrol).

The latest standard, 'Euro VI / 6', applies to new type approvals from September 2014 and all new cars and LDVs from September 2015 and requires significantly lower NOx limits for diesel LDVs. Similarly, for HDVs, Euro VI / 6 is

[6] Environmental Protection UK and Institute of Air Quality Management, 'Land-Use Planning and Development Control: Planning for Air Quality', v1.2 2017.

[7] DMRB, LA 105-Air Quality, Highways England, 2019.

[8] Institute of Air Quality Management (IAQM), Guidance on the assessment dust from demolition and construction (2016).

[9] As defined by the design manual for roads and bridges (DMRB) and includes vehicles <3.5tonnes.

[10] As defined by the design manual for roads and bridges (DMRB) and includes vehicles ≥3.5tonnes.

the current standard and also requires significant reductions in NOx (and PM) emissions from the previous Euro V / 5 standard.

There is a widely acknowledged discrepancy between actual vehicle exhaust emissions (under real-world driving conditions) and the Euro emission standards, particularly for NOx. To alleviate this, the latest standard (Euro VI / 6) has been allocated the subcategories b, c and d to represent stricter changes in vehicle emissions testing based on real-driving data (Real Drive Emissions (RDE)). As such, the emission standards have not changed, rather the measuring method. These subcategorised limits also refer to validity of years, for example Euro VIc were mandatory on all LDVs registered from Sept 2018.

Moreover, recent data indicates that emissions from Euro VI diesel Heavy Goods Vehicles (HGVs) are complying with the Euro VI standard[11].

2.8.2 Non-Road Mobile Machinery

Non-road mobile machinery (NRMM) refers to mobile machines, items of transportable industrial equipment or vehicles (with or without bodywork) that is:

- not intended for carrying passengers or goods on the road; and
- installed with a combustion engine - either an internal spark ignition (SI) petrol engine, or a compression ignition diesel engine.

In the UK, the legislation governing emissions produced by diesel engines fitted in NRMM is the Non-Road Mobile Machinery (Emission of Gaseous and Particulate Pollutants) Regulations 1999, as amended which sets emission standards for CO, hydrocarbons, NO_x and PM. These emission limits are defined by European Directive 97/68/EC (and subsequent amendments) and are Stage I-V depending on the capacity of the engine and date of manufacture.

Pollutants emitted by NRMM that may have the most significant potential effects on local air quality are particulate matter (PM_{10}, $PM_{2.5}$) and NO_2 / NO_X.

[11] In-service emission performance of Euro 6/VI vehicles -a summary of testing using London drive cycles. Transport for London and Mayor of London.

3.0 ASSESSMENT METHODOLOGY

3.1 Construction Phase Assessment

3.1.1 Construction Dust Assessment

The assessment has been undertaken with reference to IAQM '*Guidance on the assessment of dust from construction and demolition*'[8]. The assessment of risk is determined by considering the risk of dust effects arising from four activities in the absence of mitigation:

- demolition;
- earthworks;
- construction; and
- track-out.

The assessment methodology considers three separate dust impacts with account being taken of the sensitivity of the area that may experience these effects:

- annoyance due to dust soiling;
- the risk of health effects due to an increase in exposure to PM_{10}; and
- harm to ecological receptors.

The first stage of the assessment involves a screening to determine if there are sensitive receptors within threshold distances of the site activities associated with the construction phase of the Proposed Development. A detailed assessment is required where a:

- human receptor is located within 350m of the Site, and/or within 50m of routes used by construction vehicles, up to 500m from large sites, 200m from medium sites and 50m from small sites; and/or
- ecological receptor is located within 50m of the Site, and/or within 50m of routes used by construction vehicles, up to 500m from large sites, 200m from medium sites and 50m from small sites.

In recognition of the above, the Application Site is classed as a large.

The dust emission class (or magnitude) for each activity is determined on the basis of the guidance, indicative thresholds and expert judgement. The risk of dust effects arising is based upon the relationship between the dust emission magnitude and the sensitivity of the area. The risk of impact is then used to determine the mitigation requirements.

Descriptors for magnitude of impact and impact significance used in the assessment of construction phase dust are as presented in Appendix A.

3.1.2 Construction Phase Plant Emissions Assessment

To facilitate construction, NRMM may be used. NRMM refers to mobile machines, transportable industrial equipment or vehicles which are fitted with an internal combustion engine and not intended for transporting goods or passengers on roads.

Pollutants emitted by NRMM that may have the most significant potential effects on local air quality are particulate matter (PM_{10} and $PM_{2.5}$), and NO_x/NO_2. NRMM emissions associated with construction programmes can adversely affect local air quality.

Emissions from construction phase plant, as NRMM will be screened following LAQM.TG(16) guidance.

3.2 Road Traffic Emissions Screening

A screening assessment has been undertaken to identify 'significant changes' in traffic on roads with relevant receptors associated with both the construction and operational phase, by reference to EPUK & IAQM 'indicative criterion for assessment', i.e.:

- a change of HDV[12] flows of more than 500 AADT (outside an AQMA);
- a change of HDV[13] flows of more than 100 AADT (outside an AQMA);
- a change of LDV flows of more than 100 AADT (within an AQMA); and/or
- a change of HDV flows of more than 25 AADT (within an AQMA).

Traffic data / predicted development trip generation to the extent of the above 'indicative criterion for assessment' has been provided by Curtins, transport consultants to the applicant. For all roads where predicted development trip generation has been provided, detailed dispersion modelling has been undertaken to quantify impacts and an effect on air quality.

3.3 Operational Phase Assessment

3.3.1 Dispersion Modelling

To be completed

[12] As defined by the design manual for roads and bridges (DMRB), and includes vehicles <3.5tonnes including cars and light duty vehicles.

[13] As defined by the design manual for roads and bridges (DMRB), and includes vehicles ≥3.5tonnes and includes heavy duty vehicles and buses.

4.0 BASELINE ENVIRONMENT

4.1 Location

The Application Site is located to the north-east of the village of Great Barton, and centred on approximate National Grid Reference (NGR): x589290, y267400 and is bounded by:

- the B1106 Mill Road located immediately to the north, beyond which is open arable / agricultural land;
- the A143 the St located immediately to the east, beyond which is open arable / agricultural land;
- existing residential dwelling / Great Barton Primary School / the A143 the St located immediately to the south, beyond which is open arable / agricultural land and further existing residential dwellings comprising the eastern extends of Great Barton; and
- School Road located immediately to the west, beyond which is existing residential dwellings.

Primary vehicular access to the Proposed Development will be via a new access point created off School Road.

4.2 Sensitive Receptors

4.2.1 Construction Dust Receptors

The main receptors likely to be affected by the generation of construction dust are those existing receptors within approximately 350m of the Application Site boundary and/or within 50m of the route(s) used by vehicles on the public highway, up to 500m from the site entrance(s), according to the IAQM guidance[14]. However, for those receptors sited in a downwind location from the development site boundary, potential dust impacts may be witnessed at a distance of greater than 350m on occasion under worst case conditions.

Reference should be made to Drawing AQ1 for an illustration of buffer zones of all sensitive receptors with the potential to be impacted upon by construction phase dust in accordance with the stated IAQM assessment methodology.

4.2.2 Human Receptors

To be completed

4.2.3 Ecological Receptors

A review using the Magic web-based mapping service[15] was undertaken to identify any designated sites of ecological or nature conservation importance required for consideration within the assessment, as follows:

- construction phase assessment – any ecological designation within 50m of the Application Site boundary, or 50m of any road projected to witness construction phase road traffic movements, that could potentially be affected by dust from the construction phases of the proposed development; and
- operational phase assessment – any ecological designation, but with particular reference to Ramsar, Special Areas of Conservation (SAC), Special Protection Areas (SPA) or Sites of Special Scientific Interest (SSSI) within 200m of any 'affected road' as part of the scheme, that could be affected by any change in vehicle emissions associated with the proposed development.

[14] IAQM, Guidance on the assessment dust from demolition and construction v1.1, 2016.

[15] Natural England, www.magic.gov.uk, accessed November 2020.

A search within 50m of the development boundary / any road projected to witness construction phase road traffic movements identified no ecological receptors within 50m of the development boundary which could potentially be affected by construction dust.

Furthermore, a search within 200m of an 'affected road' / road predicted to witness additional development trips indicated no ecological receptors. TO BE CHECKED UPON RECEIPT OF TRAFFIC DATA.

4.3 Baseline Air Quality

4.3.1 Local Authority Review and Assessment

As required under Section 82 of the Environment Act (1995) (Part IV), WSC has conducted an on-going exercise to review and assess air quality within their administrative area.

This process has indicated that annual mean NO_2 concentrations are above, and likely to remain above the AQAL at locations of relevant public exposure within WBC's administrative area. As such, three AQMAs have been declared throughout the Council's area as described below:

- Newmarket AQMA: The designated area incorporates Old Station Road from the Clock Tower roundabout to the junction with Rous Road, Newmarket, Suffolk;
- Great Barton AQMA: The designated area incorporates Gatehouse Cottage and 1 to 8 The Street (A143), in the Parish of Great Barton, Suffolk; and
- Sicklesmere Road Bury St Edmunds Air Quality Management Area 2018: The designated area incorporates 2 and 7 Sicklesmere Road and 28 Southgate House, Rougham Road, in the Parish of Bury St Edmunds (Southgate Ward).

The closest AQMA to the Application Sites is the 'Great Barton AQMA' located approximately 0.275km to the south-west.

A Detailed Assessment of air quality has determined that the combustion of fossil fuels, principally from road traffic emissions, are the dominant source of ambient NO_2 concentrations within the declared WSC AQMAs.

Therefore, additional vehicle trips associated with the development have the potential to impact upon pollutant concentrations and the designation of the AQMAs and any potential for future revocation. Road vehicular trip generation presented within Appendix B indicates that additional operational phase development trips have the potential to occur on roads within the extent of the 'Great Barton AQMA' and therefore potentially impact upon air quality. Therefore, consideration of impacts on air quality within the 'Great Barton AQMA' has been made in the assessment of operational phase road-traffic emissions associated with the development. Road vehicular trip generation presented within Appendix B further indicates that additional operational phase development trips will be below the 'indicative criterion for assessment' within all other WSC AQMAs, and therefore no corresponding assessment has been undertaken.

All other AQS pollutants were below the relevant AQALs at locations of relevant public exposure, and as such no further AQMAs have been declared within the Council's administrative area.

4.3.2 Automatic Air Quality Monitoring

The UK Automatic Urban and Rural Network (AURN) is a countrywide network of air quality monitoring stations operated on behalf of the DEFRA. Monitoring data for AURN sites is available from the UK Air Information Resource (AIR) website.

The closest AURN monitor to the Application Site is the Wicken Fen AURN (NGR: x556316, y269179), located approximately 33km west of the Application Site. The Wicken Fen AURN is of an '*rural background*' classification,

defined within LAQM.TG(16) as "*Sites in a rural area away from roads that are representative of exposure of the general population. Rural background sites should not be influenced by agglomerations or industrial sources and should be representative of a wide*". Due to the separation distance and difference in classification between the Application Site and the Wicken Fen AURN, monitored concentrations are not considered to be representative of the Application Site. Therefore, data from the Wicken Fen AURN is not considered within the assessment.

A review of the WSC 2020 Air Quality Annual Status Report indicates that, at the time of writing, WSC did not undertake any automatic monitoring within their administrative area.

4.3.3 Passive Diffusion Tube Monitoring

Passive diffusion tube monitoring is currently undertaken by WSC at numerous locations throughout the Council's area as part of their commitment to LAQM. The diffusion tubes are located in areas which are deemed to require further assessment of NO_2 concentrations.

The details and results of the monitoring locations of relevance to the Application Site are presented in Table 4-1 and Table 4-2 respectively. All data presented has been sourced from the WSC 2020 Air Quality Annual Status Report. Any exceedences of the annual mean AQAL are displayed in bold text.

Table 4-1
WSC NO_2 Passive Diffusion Tube Monitoring Sites: Details

Site ID	Site Location	Site Type	NGR (m)		Height (m)	Within AQMA	Distance and Direction to Site
			X	Y			
GB2	Downing Drive	Suburban	588917	267370	1.9	No	0.23km, west
GB3	The Forge, Bungalows	Roadside (A)	589163	267013	2.3	No	0.26km, south
GB4	Post Office	Roadside (A)	589130	266969	2.4	No	0.29km, south-west
GB5	Church Road junction	Roadside (A)	588993	266838	2.2	No	0.45km, south-west
GB6	Post Office 2, Telegraph Pole	Roadside (A)	589120	266960	2.4	Yes	0.29km, south-west
GB7	The Drift, 8 The Street	Roadside (A)	589100	266941	2.2	Yes	0.33km, south-west
GB8	Opposite AQMA 1	Roadside (A)	589093	266949	2.1	No	0.33km, south-west
GB9	Opposite AQMA 2	Roadside (A)	589117	266970	2.1	No	0.33km, south-west

Note:
(A) Suburban classification as defined by LAQM.TG(16) as "*a location type situated in a residential area on the outskirts of a town or city*".
(B) Roadside classification as defined by LAQM.TG(16) as "*a site in an urban area at least 25 metres from the edge of major junctions and no more than 10 metres from the kerbside*".

Table 4-2
WSC NO_2 Passive Diffusion Tube Monitoring Sites: Results

Site ID	2019 Data Capture %	Annual Mean NO_2 Concentration (µg/m^3)				
		2015	2016	2017	2018	2019
GB2	100	10.1	10.0	11.4	10.3	10.5
GB3	100	36.0	31.2	31.8	26.2	27.2
GB4	100	**40.9**	37.9	36.0	32.7	29.1
GB5	100	35.1	32.9	32.2	30.2	27.4
GB6	92	-	-	-	**48.5**	**45.1**
GB7	97	-	-	-	**46.9**	**40.8**
GB8	100	-	-	-	**40.8**	33.1
GB9	92	-	-	-	**41.3**	34.3

Note:
- Monitoring not undertaken during calendar year.

For the non-automatic locations of relevance to the Application Site presented in Table 4-1 and Table 4-2, monitoring locations GB4 and GB6 – GB9 have all monitored concentrations in excess of the annual mean AQAL over the considered 5-year period. However, it is noted that monitoring location GB4 has not monitored an exceedence since 2015, with all annual mean monitored concentrations in intervening years being 'below' the AQAL limit. Monitoring locations GB6 and GB7 remained to monitor an exceedence of the annual mean AQAL in 2019: these monitoring locations are sited within the extent of the declared Great Barton AQMA.

The WSC 2020 Air Quality Annual Status Report attributes improvements in monitored concentrations at some locations within the Great Barton AQMA to AQAP measures; principally the moving of a puffin crossing to a location outside of the extents of the AQMA.

Diffusion tube location 'GB3 – The Forge, Bungalows' is the closest monitoring location to the Application Site, monitored a 2019 annual mean NO_2 concentration of 27.2µg/m^3. Given the proximity of this diffusion tube relative to the Application Site, concentrations monitored here are considered to be comparable to the Application Site, if somewhat elevated, given the roadside and urban nature of GB3 in comparison.

The empirical relationship given in LAQM.TG(16)[4] states that exceedences of the NO_2 1-hour mean AQAL are unlikely to occur where annual mean concentrations are <60µg/m^3. A review of the annual mean concentrations monitored in Table 4-2 indicates that exceedences of the 1-hour mean AQAL are unlikely to have occurred at these sites between 2015 and 2019.

4.3.4 DEFRA Mapped Background Concentrations

Background pollutant concentration data on a 1km x 1km spatial resolution is provided by DEFRA through the UK Air Information Resource (AIR) website and is routinely used to support LAQM and Air Quality Assessments.

Mapped background annual mean concentrations of NO_2, PM_{10} and $PM_{2.5}$ were downloaded for the grid square containing the Application Site, based upon the 2018 base year (the year in which comparisons between modelled and monitoring are made)[16], as shown in Table 4-3. Mapped background concentrations are presented for 2018 (the mapping base year), as well as 2024 (the anticipated complete opening year of Proposed Development).

[16] Background mapping data for local authorities – http://uk-air.defra.gov.uk/data/laqm-background-home, accessed November 2020.

Table 4-3
DEFRA Mapped Background Concentrations

Grid Square (m)	Year	Annual Mean Background Concentration (µg/m^3)	
		NO_2	PM_{10}
X589500, y267500	2018	9.00	17.4
	2024	7.11	16.1
AQAL		***40***	***40***

5.0 CONSTRUCTION PHASE ASSESSMENT

This section presents the potential air quality impacts and effects associated with the construction of the development in terms of dust and vehicle emissions.

5.1 Construction Dust Assessment

Construction activities will include:

- material export and import;
- temporary stockpiling of materials;
- groundwork for foundations and services;
- construction of buildings;
- landscaping works; and
- vehicle movements (with the potential to track-out material from site).

The following subsections provide a consideration of potential construction dust and conclude with a determined emission class and risk category, from each of the categories identified by the IAQM Guidance.

Where figures relating to area of the site, volume of the site, approximate number of construction vehicles or distances to receptors are given, these relate to thresholds as defined in the IAQM guidance[8] to guide the assessor to define the dust emissions magnitude and sensitivity of the area (as detailed in Section 3.1).

5.1.1 Assessment Screening

As shown in Drawing AQ1, there are 'human receptors' within 350m of the Site but no designated habitat sites within 50m of the Application Site boundary or within 50m of the Site entrance / 200m (commensurate of a medium site, in accordance with the IAQM guidance[8]) of the roads anticipated to witness construction traffic movements. Therefore, an assessment of construction dust on human receptors is only required.

5.1.2 Potential Dust Emissions Magnitude

The most significant potential source of dust emissions during construction would be the earthworks, construction and trackout activities. Dust is potentially generated by the action of heavy vehicles (bulldozer, front-end loader, hydraulic excavator, and dump trucks), as well as by the movement of the vehicles on potentially dusty surfaces. Handling and storage of construction materials (aggregates / hard core), haulage across unsurfaced areas are also potential sources of dust generation.

Demolition

The Site is currently vacant green land; therefore, no demolition activities are required. As such, impacts associated with demolition have been scoped out.

Earthworks

The proposals comprise the development of up to 192 residential dwellings, comprising a total area of 12.4ha. Site earthworks are therefore required over an area greater than 10,000m^2. In addition, given the size of the Site, greater than 10 heavy earth moving vehicles are considered to be potentially required on site at once. The dust emission magnitude for earthworks is therefore initially considered to be 'Large'.

Construction

The proposals comprise the development of up to 192 residential dwellings. Taking into account the number and size of proposed units, total building volume associated with the Proposed Development is predicted to be greater than 100,000m^3. Given the residential nature of the Proposed Development, build materials are considered to include brick and concrete, which are potentially dusty materials. The dust emission magnitude for construction is therefore initially considered to be 'Large'.

Trackout

Construction vehicles will most likely access the Application Site via School Road (using a new access point to join existing infrastructure). No details are available at the time of assessment on the number of additional HDV movements associated with construction works in each phase, however, taking a conservative approach, the number of predicted outward HDV movements in any one day is considered to be 10 – 50 at the maximum period during construction. Given the overall area of the Application Site, the unpaved road length is considered to be >100m. The dust emission magnitude for trackout is therefore considered to be 'Large'.

Summary

A summary of the dust emission magnitude for the four activities is detailed in Table 5-1.

Table 5-1
Potential Dust Emission Magnitude

Activity	Dust Emission Magnitude
Demolition	n/a
Earthworks	Large
Construction	Large
Trackout	Large

5.1.3 Sensitivity of the Area

The sensitivity of the area takes account of a number of factors:

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

Sensitives need to be determined in relation to dust soiling effects onto people and property, as well as upon human health (i.e. relative to existing conditions).

The Proposed Development will be built out in a phased manner: Phase 1 for up to 42 units and located to the west of the Application Site will be built out and operational by 2024; Phase 2 for a further 150 units will be built out and operational by 2025. Therefore, there is the potential for Phase 1 to be built-out and populated, and thus become a sensitive receptor, during the construction of Phase 2 as part of the overall development sequencing. This sequencing and presence of on-site receptors has been considered in the overall determination of sensitivity. It is noted that for the initial development of Phase 1, this precautionary approach has the potential to overestimate sensitivity and therefore requirements for mitigation.

Dust Soiling Impacts

The Application Site is located to the north-eastern periphery of the existing Great Barton village, in an area characterised by existing residential dwellings.

There are between 10 – 100 high sensitivity receptors within 50m of the Application Site boundary (existing residential properties to the south / west on the A143 The St / School Road, respectively) in addition to those residential units comprising Phase 1 located to the western extent of the Application Site. In addition, there are approximately 10 – 100 residential properties (high sensitivity receptors) located less than 20m from School Road that are within 200m from the point of entry to the Application Site, from which potential trackout impacts have the potential to occur.

The sensitivity of the area with respect to dust soiling effects on people and property in relation to earthworks, construction and trackout activities is therefore 'High'.

Human Health Impacts

The 2018 mapped background PM_{10} concentration (2018 base year) for the 1km^2 grid square centred on the development (centred on NGR: x589500, y267500) is estimated to be 17.4µg/m^3 (i.e. falls into the <24µg/m^3 class), as presented in Table 4-3. As discussed in Section 4.3, no local background PM_{10} monitoring exists within the development locale.

Given the above information regarding the number of existing residential receptors within 50m of the site boundary and within 20m of School Road (up to 200m from the point of entry to the Application Site) and those residential units comprising Phase 1 located to the western extent of the Application Site, the sensitivity of the area with respect to human health impacts in relation to earthworks, construction and trackout is therefore considered to be 'Low'.

Summary

A summary of the sensitivity of the surrounding area is detailed in Table 5-2, whilst the spatial density of nearby receptors is illustrated in Drawing AQ1.

Table 5-2
Sensitivity of the Area

Potential Impact	Sensitivity of Surrounding Area		
	Earthworks	Construction	Trackout
Dust Soiling Impacts	High	High	High
Human Health Impacts	Low	Low	Low

5.1.4 Risk of Impacts (Unmitigated)

The outcome of the assessment of the potential 'magnitude of dust emissions', and the 'sensitivity of the area' are combined in Table 5-3 below to determine the risk of impact which is used to inform the selection of appropriate mitigation.

Table 5-3
Risk of Dust Impacts

Potential Impact	Earthworks	Construction	Trackout
Dust Soiling Impacts	High Risk	High Risk	High Risk
Human Health Impacts	Low Risk	Low Risk	Low Risk

5.2 Construction Phase Plant Emissions

As per LAQM.TG(16), with the application of suitable control measures and site management, exhaust emissions from on-site NRMM are "*unlikely to make a significant impact on local air quality. In the vast majority of cases they will not need to be quantitatively assessed*".

5.3 Construction Phase – Vehicular Pollutants

Road traffic emissions associated with vehicle movements, particularly HDV movements, during the construction phase of the development have the potential to result in increased concentrations of combustion related pollutants, including NO_2 and PM_{10} in the vicinity of the development site.

The development quantum is not anticipated to result in a significant increase in movements or be above the EPUK and IAQM criterion (for sites adjacent to or within an AQMA). The duration of movements will be short-term in nature and are not considered further within the context of this assessment. Therefore, in accordance with the criterion presented within EPUK and IAQM guidance, additional road vehicle trips during the construction phase of the scheme *'can be considered to have insignificant effects*' on air quality.

6.0 OPERATIONAL PHASE ASSESSMENT

TO BE COMPLETED

7.0 MITIGATION MEASURES

This section presents any mitigation measures required during the construction and operational phases of the development in order to reduce the potential impact of the predicted effect.

7.1 Construction Phase Dust

Potential dust effects during the construction phase considered to be temporary in nature. The impacts are determined to be temporary as they will only potentially occur throughout the construction phase and short-term because these will only arise at particular times when certain activities and meteorological conditions for creating the level of magnitude predicted combine.

In order to control potential impacts, Table 7-1 presents a potential range of mitigation measures which will be considered in keeping with the stated IAQM guidance. These measures can be secured by planning condition.

With the effective application of the dust mitigation measures it is considered that the overall effect at all receptors will be 'not significant'.

Table 7-1
Construction Dust Mitigation Measures

Site Application	Mitigation Measures
Communications	Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary
	Display the head or regional office contact information
	Develop and implement a dust management strategy
Site Management	Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken
	Make the complaints log available to the local authority when asked
	Record any exceptional incidents that cause dust and / or air quality emissions, either on- or off-site, and the action taken to resolve the situation in the log book
Monitoring	Undertake daily on-site and off-site inspection where receptors are nearby
	Carry out regular site inspections to monitor compliance with the Dust Management Plan, record inspection results, and make the log book available to the local authority when asked
	Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out
Preparing and Maintaining the Site	Plan site layout so machinery is located away from receptors as far as possible
	When necessary erect solid barriers around dusty activities or the site boundary
	Fully enclose site or specific operations where there is a high potential for dust production

Site Application	Mitigation Measures
	Avoid site runoff of water or mud
	Keep site fencing, barriers and scaffolding clean using wet methods
	Cover, seed or fence stockpiles to prevent wind whipping
Operating Vehicle / machinery and sustainable travel	Ensure all vehicles switch off engines when stationary – no idling vehicles
	Impose and signpost a maximum-speed-limit of 15mph on surfaced and 10mph on unsurfaced haul roads and work areas
	Implement a Travel Plan that supports and encourages sustainable travel
Operations	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction
	Ensure an adequate water supply on the site for effective dust / particulate matter suppression / mitigation
	Use enclosed chutes and conveyors and covered skips
	Minimise drop heights
	Ensure equipment is readily available on site to clean any dry spillages
Waste Management	Avoid bonfires and burning of waste materials
Earthworks & Construction	Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable
	Use Hessian, mulches or tackifiers where it is not possible to revegetate
	Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out
Trackout	Use water-assisted dust sweepers on the access and local roads
	Avoid dry sweeping of large areas
	Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport
	Inspect onsite haul routes for integrity and instigate any necessary repairs to the surface as soon as reasonably practicable
	When necessary install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems
	Implement a wheel washing system
	Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the exit, wherever site size and layout permits

Site Application	Mitigation Measures
	Access gates to be located at least 10m from receptors where possible

7.2 Construction Phase Plant Emissions

During the construction phase Non-road Mobile Machinery (NRMM) and plant shall be well maintained; if any emissions of dark smoke occur then the relevant machinery should stop immediately and any problem rectified. In addition, the following controls should apply to NRMM:

- all NRMM should use fuel equivalent to ultralow sulphur diesel;
- all NRMM should comply with either the current or previous EU Directive Staged Emission Standards;
- all NRMM should be fitted with Diesel Particulate Filters (DPF) conforming to defined and demonstrated filtration efficiency (load/duty cycle permitting);
- the on-going conformity of plant retrofitted with DPF, to a defined performance standard; and
- implementation of fuel conservation measures including instructions to throttle down or switch off idle construction equipment; switch off the engines of trucks while they are waiting to access the site and while they are being loaded or unloaded, ensure equipment is properly maintained to ensure efficient fuel consumption.

Successful implementation of the above relevant mitigation measures would ensure that emissions from the construction phase and NRMM used during construction phase result in a 'not significant' effect on air quality.

7.3 Construction Phase – Vehicular Pollutants

Information on traffic movements anticipated during construction works was unavailable for the completion of the Air Quality Assessment. However, the development quantum is not anticipated to result in a significant increase in movements above the EPUK & IAQM criterion and the duration of movements will be short-term in nature. Therefore, in accordance with the criterion presented within EPUK & IAQM guidance, additional road vehicle trips during the construction phase '*can be considered to have insignificant effects*' on air quality.

7.4 Operational Phase Road Traffic Emissions

TO BE COMPLETED

8.0 CONCLUSIONS

SLR Consulting has undertaken an assessment of potential air quality impacts associated with a proposed residential development on land to the north-east of Great Barton.

A qualitative assessment of the potential dust impacts during the construction of the development has been undertaken. Through good practice and implementation of appropriate mitigation measures outlined, it is expected that the release of dust would be effectively controlled and mitigated, with resulting impacts considered to be 'not significant'. All dust impacts are considered to be temporary and short-term in nature.

Due to the low additional number of HDV trips anticipated during the construction phase of the development, there is predicted to result in an 'insignificant' effect on air quality from road vehicle emissions. Furthermore, emissions from plant / NRMM on-site is predicted to result in a 'not significant' impact on air quality.

TO BE COMPLETED

DRAWINGS

Appendix A – Construction Dust Assessment Methodology

Predicting Risk

The assessment of risk is determined by considering the predicted change in conditions as a result of the development. The risk category for potential dust effects arising from site works is defined into 4No. potential activities:

- demolition;
- earthworks;
- construction; and
- trackout.

The determination of risk categories presented above are based upon the descriptors presented within IAQM: Guidance on the assessment of dust from demolition and construction.

Sensitivity of Receptor

To determine the significance of dust effects associated with the construction phase of the development, an evaluation of the sensitivity of the surrounding area is required. Receptors can demonstrate different sensitivities to changes in their environment, and are classified as detailed within Table A-1.

Quoted distances to the nearest receptor are from the dust emission sources. Where this is not known, receptor distances are determined from the site boundary. The risk category is based upon the distance of site works to the nearest receptor.

Table A-1
Methodology for Defining Sensitivity to Dust Effects

Sensitivity of Area	Examples		
	Human Receptors		Ecological Receptors [A]
	Dust Soiling Effects	Health Effects of PM_{10}	
High	• users can reasonably expect an enjoyment of a high level of amenity; or • the appearance, aesthetics or value of their property would be diminished by soiling; and the people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. Indicative examples include dwellings, museums and other culturally important collections, medium and long term car parks and car showrooms.	• locations where members of the public are exposed over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). Indicative examples include residential properties. Hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.	• locations with an international or national designation and the designated features may be affected by dust soiling; or • locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List For Great Britain. Indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.
Medium	• users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level	• locations where the people exposed are workers, and exposure is over a time period relevant to the air quality objective for PM_{10} (in the case	• locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or

Sensitivity of Area	Examples		
	Human Receptors		Ecological Receptors [A]
	Dust Soiling Effects	Health Effects of PM_{10}	
	of amenity as in their home; or • the appearance, aesthetics or value of their property could be diminished by soiling; or • the people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. Indicative examples include parks and places of work.	of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). Indicative examples include office and shop workers, but will generally not include workers occupationally exposed to PM_{10}, as protection is covered by Health and Safety at Work legislation.	• locations with a national designation where the features may be affected by dust deposition. Indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features.
Low	• the enjoyment of amenity would not reasonably be expected; or • property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling; or • there is transient exposure, where the people or property would reasonably be expected	• locations where human exposure is transient. Indicative examples include public footpaths, playing fields, parks and shopping streets.	• locations with a local designation where the features may be affected by dust deposition. Indicative example is a local Nature Reserve with dust sensitive features.

Sensitivity of Area	Examples		
	Human Receptors		Ecological Receptors (A)
	Dust Soiling Effects	Health Effects of PM_{10}	
	to be present only for limited periods of time as part of the normal pattern of use of the land. Indicative examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads.		
Notes: (A) Only applicable if ecological habitats are present which may be sensitive to dust effects.			

Assessment of Impact Significance – Dust Effects

Table A-2 to Table A-4 illustrate how the sensitivity of the area may be determined for dust soiling, human health and ecosystem impacts, respectively. The highest level of sensitivity from each table should be recorded.

Table A-2
Sensitivity of Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from Source (m)			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10 – 100	Medium	Medium	Low	Low
	1 – 10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	<1	Low	Low	Low	Low

Table A-3
Sensitivity of Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
High	>32µg/m^3	>100	High	High	High	Medium	Low
		10 – 100	High	High	Medium	Low	Low
		1 – 10	High	Medium	Low	Low	Low
	28 – 32µg/m^3	>100	High	High	Medium	Low	Low
		10 – 100	High	Medium	Low	Low	Low
		1 – 10	High	Medium	Low	Low	Low
	24 – 28µg/m^3	>100	High	Medium	Low	Low	Low
		10 – 100	High	Medium	Low	Low	Low
		1 – 10	Medium	Low	Low	Low	Low
	<24µg/m^3	>100	Medium	Low	Low	Low	Low
		10 – 100	Low	Low	Low	Low	Low
		1 – 10	Low	Low	Low	Low	Low
Medium	>32µg/m^3	>10	High	Medium	Low	Low	Low
		1 – 10	Medium	Low	Low	Low	Low
	28 – 32µg/m^3	>10	Medium	Low	Low	Low	Low

		1 – 10	Low	Low	Low	Low	Low
	24 – 28µg/m^3	>10	Low	Low	Low	Low	Low
		1 – 10	Low	Low	Low	Low	Low
	<24µg/m^3	>10	Low	Low	Low	Low	Low
		1 – 10	Low	Low	Low	Low	Low
Low	-	1	Low	Low	Low	Low	Low

Table A-4
Sensitivity of Area to Ecological Impacts

Receptor Sensitivity	Distance from the Source (m) (A)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low
Note: (A) For trackout, the stand-offs should be measured from the side of the roads used by construction traffic.		

Defining the Risk of Impact

Table A-5 to Table A-8 illustrates how the dust emission magnitude should be combined with the sensitivity of the area to determine the risk of impacts with no mitigation measures applied.

Table A-5
Risk of Dust Impacts – Demolition

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table A-6
Risk of Dust Impacts – Earthworks

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table A-7
Risk of Dust Impacts – Construction

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table A-8
Risk of Dust Impacts – Trackout

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Negligible
Low	Low Risk	Low Risk	Negligible

APPENDIX B – Model Input and Verification

Model Input Summary

TO BE COMPLETED

APPENDIX C – Sensitivity Assessment Results

TO BE COMPLETED

EUROPEAN OFFICES

United Kingdom

AYLESBURY
T: +44 (0)1844 337380

BELFAST
belfast@slrconsulting.com

BRADFORD-ON-AVON
T: +44 (0)1225 309400

BRISTOL
T: +44 (0)117 906 4280

CARDIFF
T: +44 (0)29 2049 1010

CHELMSFORD
T: +44 (0)1245 392170

EDINBURGH
T: +44 (0)131 335 6830

EXETER
T: + 44 (0)1392 490152

GLASGOW
T: +44 (0)141 353 5037

GUILDFORD
T: +44 (0)1483 889800

LONDON
T: +44 (0)203 805 6418

MAIDSTONE
T: +44 (0)1622 609242

MANCHESTER (Denton)
T: +44 (0)161 549 8410

MANCHESTER (Media City)
T: +44 (0)161 872 7564

NEWCASTLE UPON TYNE
T: +44 (0)191 261 1966

NOTTINGHAM
T: +44 (0)115 964 7280

SHEFFIELD
T: +44 (0)114 2455153

SHREWSBURY
T: +44 (0)1743 23 9250

STIRLING
T: +44 (0)1786 239900

WORCESTER
T: +44 (0)1905 751310

Ireland

DUBLIN
T: + 353 (0)1 296 4667

France

GRENOBLE
T: +33 (0)6 23 37 14 14