11 AIR QUALITY

Introduction

11.1 This chapter of the ES assesses the likely significant effects of the Development on the environment in respect of air quality, in particular relating to existing sensitive receptors and future residents once the Development is operational. The chapter considers the effects of dust from construction activities, as well as the effect of emissions from road traffic as a result of the operational Development.

11.2 This chapter is supported by the following technical appendices, provided in Volume 2 of this ES:

- Appendix 11.1 Air Quality Assessment Detailed Methodology.

11.3 This chapter is supported by the following figures, provided at the end of this chapter:

- Figure 11.1 Site Plan and Receptor Locations
- Figure 11.2 Construction Phase Assessment Bands and Air Quality Management Areas

Policy Context

National Planning Policy Framework[i]

11.4 The National Planning Policy Framework (NPPF), published in July 2021 sets out the Government's planning policies for England and how these should be applied.

11.5 Paragraph 105 states:

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

11.6 Paragraph 174 states:

> '*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, taking into account relevant information such as river basin management plans*.'

11.7 Paragraph 185 states:

> '*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*.'

11.8 Paragraph 186 states

> '*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*.'

Planning Practice Guidance[ii]

11.9 The Government's national Planning Practice Guidance (PPG) states that air quality concerns are more likely to arise where development is proposed within an area of existing poor air quality, or where it would adversely impact upon the implementation of air quality strategies and / or action plans. The PPG notes that when deciding whether air quality is relevant to a planning application, considerations would include whether the development would lead to:

- Significant effects on traffic, such as volume, congestion, vehicle speed, or composition;
- The introduction of new point sources of air pollution, such as furnaces, centralised boilers and Combined Heat and Power (CHP) plant; and

- Exposing occupants of any new developments to existing sources of air pollutants and areas with poor air quality.

Local Planning Policy

Central Lancashire Adopted Core Strategy[iii]

11.10 The Central Lancashire Adopted Core Strategy is a key document setting out sustainable managed growth, whilst protecting and enhancing green spaces and access to open countryside. Relevant to air quality, Policy 30 key objective states to '*improve air quality through delivery of Green Infrastructure initiatives and through taking account of air quality when prioritising measures to reduce road traffic congestion'.*

South Ribble Borough Council Local Plan[iv]

11.11 The South Ribble Borough Council (SRBC) Local Plan identifies and allocates land required over a 15 year period in order to achieve the vision for growth as outlined in the Central Lancashire Adopted Core Strategy. Consequently, there is no additional specific policy related to air quality from that detailed in Policy 30 above.

Cuerden Strategic Site Masterplan Report[v]

11.12 The Masterplan Report states that climate change, inclusive of air quality, must be covered in detailed planning applications for the Cuerden Strategic Site area.

South Ribble Borough Council Air Quality Action Plan 2016, 2015[vi]

11.13 The SRBC Air Quality Action Plan (AQAP) covers the whole of the borough of South Ribble. The AQAP aims to raise awareness of South Ribble's air quality issues and proposed solutions to improve air quality, identify and assess potential options for improving local air quality within the designated Air Quality Management Area's (AQMA's) and propose implementation of those options that are relevant to Local Air Quality Management and are capable of bringing about improvements in air quality within the AQMA's.

Legislative Context

Air Quality Standards Regulations, 2010[vii]

11.14 The Air Quality Standards Regulations 2010 implement limit values prescribed by the Directive 2008/50/EC. The Limit Values are legally binding and the Secretary of State, on behalf of the UK Government, is responsible for their implementation as they relate to reducing diesel emissions throughout the UK.

The UK Air Quality Strategy[viii]

11.15 The current UK Air Quality Strategy (AQS) was published in 2007 and sets out air quality objectives for local authorities to meet when undertaking their Local Air Quality Management (LAQM) duties. Objectives in the UK AQS are in some cases more onerous than the Limit Values set out within the relevant EU Directives and the Air Quality Standards Regulations 2010. In addition, objectives have been established for a wider range of pollutants.

11.16 Currently it is a Local Authority's responsibility to determine the effect of a development against the UK AQS objectives, as such the UK Air Strategy Objectives of air pollutants relevant to this assessment are summarised in in Table 11.1 below.

Table 11.1: Summary of Relevant Air Quality UK AQS Objectives

Pollutant	Objective		Date by which Objective to be Met
	Concentration	Measured as	
Nitrogen Dioxide (NO_2)	200µg/m^3	1 hour mean not to be exceeded more than 18 times per year	31/12/2005
	40µg/m^3	Annual Mean	31/12/2005
Particulate Matter (PM_{10}) (a)	50µg/m^3	24 hour mean not to be exceeded more than 35 times per year	31/12/2004
	40µg/m^3	Annual Mean	31/12/2004
Particulate Matter ($PM_{2.5}$) (b)	Target of 15% reduction in concentrations at urban background locations	Annual Mean	Between 2010 and 2020
	25µg/m^3	Annual Mean	01/01/2020

Note:
(a) Particulate matter with a mean aerodynamic diameter less than 10 microns (or micrometres – µm)
(b) Particulate matter with a mean aerodynamic diameter less than 2.5 microns

11.17 There are currently no statutory UK standards in relation to deposited dust and its propensity to cause nuisance. A deposition rate of 200mg/m^2/day (averaged over a month) is sometimes used as a threshold value for potentially significant nuisance effects[ix].

The Environment Act 1995[x]

11.18 In a parallel process, the Environment Act 1995 required the preparation of a national air quality strategy setting health-based air quality objectives for specified pollutants and outlining measures to be taken by local authorities in relation to meeting these (the Local Air Quality Management (LAQM) regime).

11.19 Part IV of the Environment Act 1995 provides a system of Local Air Quality Management (LAQM) under which LPAs are required to review and assess the future quality of the air in their area by way of a staged process. Should this process suggest that any of the AQS objectives will not be met by the target dates, the LPA must consider the declaration of an AQMA and the subsequent preparation of an Air Quality Action Plan (AQAP) to improve the air quality in that area in pursuit of the AQS objectives.

Assessment Methodology

Overview

11.20 This air quality assessment has been undertaken using a variety of information and procedures as follows:

- Proposed methodology was sent to the Environmental Health Officer (EHO) at SRBC in June 2016 and the Scoping Opinion received March 2022 to agree the methodology to be used within the assessment (see Appendix 11.1);
- A review of SRBC's air quality review and assessment documents in order to quantify baseline conditions in the area of the Site and monitoring data to be used to verify the unadjusted predicted air quality modelled results;
- A review of the local area to identify potentially sensitive receptor locations that could be affected by changes in air quality that result from the Development;
- A review and use of traffic flow data from the transport consultant for the project (see Chapter 9 Transport and Access); Dispersion modelling of pollutant emissions using the ADMS-Roads model to predict the likely pollutant concentrations at the Site and the likely effect of the completed and operational Development on local air quality in terms of traffic emissions generated. The latest NO_2 from NO_X Calculator available from the

LAQM Support website[xi] has been applied to derive the road-related NO_2 concentrations from the modelled NO_X concentrations (further details are provided in Appendix 11.1);

- Comparison of the predicted air pollutant concentrations with monitored concentrations from two SRBC diffusion tubes, located in the vicinity of the Site (one along Station Road and the other on Watkin Lane), and adjustment of modelled results where necessary (model verification details are provided in Appendix 11.1);
- Determination of the likely significant effects of construction works and activities, and consideration of the environmental management controls likely to be employed during the works;
- Determination of the likely significant effects of the operational phase of the Development on air quality, based on the application of the Environmental Protection UK (EPUK) / Institute of Air Quality Management (IAQM) Guidance significance criteria to modelled results; and
- Identification of mitigation measures, where appropriate.

11.21 The UK AQS identifies the pollutants associated with road traffic emissions and local air quality as:

- Nitrogen oxides (NO_X);
- Particulate matter (as PM_{10} (particles with a diameter up to 10µm) and $PM_{2.5}$ (particles with a diameter up to 2.5µm));
- Carbon monoxide (CO);
- 1, 3-butadiene (C_4H_6); and
- Benzene (C_6H_6).

11.22 Emissions of total NO_X from motor vehicle exhausts comprise nitric oxide (NO) and nitrogen dioxide (NO_2). NO oxidises in the atmosphere to form NO_2.

11.23 The most significant pollutants associated with road traffic emissions in relation to human health, are NO_2 and PM_{10}. SRBC currently has declared five AQMAs in the Borough for the annual mean NO_2 objectives, attributable to road traffic emissions. This assessment therefore focuses on NO_2 and particulate matter (as PM_{10} and $PM_{2.5}$).

Demolition and Construction

Dust Emissions

11.24 The assessment of the effects of the construction activities in relation to dust has been based on the guidance published by the IAQM (2014) and the following:

- Consideration of planned construction activities and their phasing; and
- A review of the sensitive uses in the area immediately surrounding the Site in relation to their distance from the Site.

11.25 Following the IAQM (2014) guidance, construction activities can be divided into the following four distinct activities:

- Demolition – any activity involved in the removal of an existing building;
- Earthworks – the excavation, haulage, tipping and stockpiling of material, but may also involve levelling the site and landscaping;
- Construction – any activity involved with the provision of a new structure; and
- Trackout – the movement of vehicles from unpaved ground on a site, where they can accumulate mud and dirt, onto the public road network where dust might be deposited.

11.26 The IAQM guidance considers three separate dust effects, with the proximity of sensitive receptors being taken into consideration for:

- Annoyance due to dust soiling;
- Potential effects on human health due to significant increase in exposure to PM10; and
- Harm to ecological receptors.

11.27 A summary of the four step process which has been undertaken for the dust assessment of construction activities as set out in the IAQM guidance is presented in Table 11.2.

Table 11.2: Summary of the IAQM (2014) Guidance for Undertaking a Construction Dust Assessment

Step		Description
1	Screen the Need for a Detailed Assessment	Simple distance based criteria are used to determine the requirement for a detailed dust assessment. An assessment will normally be required where there are 'human receptors' within 350m of the boundary of the site and / or within 50m of the route(s) used by construction vehicles on public highway, up to 500m from the site entrance or 'ecological receptors' within 50m of the boundary of the site and/or within 50m of the route(s) used by construction vehicles on public highway, up to 500m from the site

Step		Description
		entrance.
2	Assess the Risk of Dust Effects	The risk of dust arising in sufficient quantities to cause annoyance and/or health or ecological effects should be determined using three risk categories: low, medium and high based on the following factors: • the scale and nature of the works, which determines the risk of dust arising (i.e. the magnitude of potential dust emissions) classed as small, medium or large; and • the sensitivity of the area to dust effects, considered separately for ecological and human receptors (i.e. the potential for effects) defined as low, medium or high.
3	Site Specific Mitigation	Determine the site specific measures to be adopted at the site based on the risk categories determined in Step 2 for the four activities. For the cases where the risk is 'negligible' no mitigation measures beyond those required by legislation are required. Where a local authority has issued guidance on measures to be adopted these should be taken into account.
4	Determine Significant Effects	Following Steps 2 and 3, the significance of the potential dust effects should be determined, using professional judgement, taking into account the factors that define the sensitivity of the surrounding area and the overall pattern of potential risks.

Construction Vehicle Exhaust and Construction Plant Emissions

11.28 The IAQM guidance on assessing construction impacts states that:

> *"Experience of assessing the exhaust emissions from on-site plant and site traffic suggests that they are unlikely to make a significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed".*

11.29 In accordance with the IAQM (2014) guidance, it is considered that a quantitative assessment of the exhaust emissions from construction plant and traffic is not required, and a qualitative assessment is appropriate.

Completed Development

ADMS-Roads Model

11.30 The likely effects on local air quality from traffic movements generated from the completed and operational Development have been assessed using the atmospheric dispersion model ADMS-Roads. Appendix 11.1 presents the details of the dispersion modelling.

11.31 For the purposes of modelling, traffic data for the relevant local road network has been provided by the Applicant's transport consultant (see Chapter 10 Transport and Access). Further details are provided in Appendix 11.1. The baseline year of 2019 has been assessed (as this is the latest full year of representative SRBC monitoring data prior to the COVID-19

pandemic) together with the 'without Development' and 'with Development' scenarios for the year 2032 (the anticipated year of completion of the Development).

11.32 It is noted the ADMS-Roads model predicts future concentrations to the year 2030, and therefore this year has been used to represent the opening year 2032. This approach is considered conservative as trends in pollutant concentrations have helped to predict that overall pollutant concentrations will decline. The year 2032 was used for the 'without Development' and 'with Development' scenarios, which is the anticipated year of completion of the Development.

11.33 The ADMS-Roads dispersion model predicts how emissions from roads, and small scale industrial sources combine with local background pollution levels, taking account of meteorological conditions, to affect local air quality. The model has been run for the completion year, using background data and vehicle emission rates for 2032 as inputs. For the verification assessment (referred to later in this chapter), background data and vehicle emission rates for 2019 have been used, which would be higher than the 2032 data. Pollutant concentrations have been modelled at a number of locations representative of nearby sensitive receptors.

11.34 Full details of the dispersion modelling study, including the road traffic data used in the assessment, are presented within Appendix 11.1.

Model Uncertainty

11.35 Analyses of historical monitoring data by Defra[xii] identified a disparity between actual measured NO_X and NO_2 concentrations and the expected decline associated with emission forecasts, which form the basis of air quality modelling as described above. In February 2020, Air Quality Consultants published a report on Performance of Defra's Emission Factor Toolkit 2013-2019[xiii]. The report concluded that recent analysis of recent NO_X measurements provides evidence that vehicle controls are working, and as a result, the Emission Factor Toolkit (EFT) is now reflecting the rate of observed reductions. This air quality assessment has been undertaken using the latest emission factors published by Defra in the EFT version 11, which accounts for the uptake of low carbon passenger cars and light good vehicles with electric and hybrid electric propulsion systems.

Background Pollutant Concentrations

11.36 To estimate the total concentrations due to the contribution of any other nearby sources of pollution, background pollutant concentrations need to be added to the modelled

concentrations. Full details of the background pollution data used within the air quality assessment are included in Appendix 11.1.

Model Verification

11.37 Model verification is the process of comparing monitored and modelled pollutant concentrations and, if necessary, adjusting the modelled results to reflect actual measured concentrations, in order to improve the accuracy of the modelling results. The model has been verified by comparing the predicted annual mean NO_2 concentrations for the baseline 2019, with the results from two SRBC diffusion tubes (located on Station Road and Watkin Lane). Modelled concentrations have then been adjusted accordingly. The verification and adjustment process is described in detail in Appendix 11.1.

Potentially Sensitive Receptors

11.38 The approach adopted by the UK AQS is to focus on areas at locations at, and close to, ground level where members of the public (in a non-workplace area) are likely to be exposed over the averaging time of the objective in question (i.e. over 1-hour, 24-hour or annual periods). Objective exceedences principally relate to annual mean NO_2 and PM_{10}, and 24-hour mean PM_{10} concentrations, so that associated potentially sensitive locations relate mainly to residential properties and other sensitive locations (such as schools) where the public may be exposed for prolonged periods.

11.39 Table 11.3 presents existing sensitive receptors selected due to their proximity to the road network likely to be affected by the Development. Table 11.3 also presents future sensitive receptor locations which are representative of sensitive uses proposed within the Development itself. The future sensitive receptor locations represent areas of the Development (rather than specific properties) that are closest to road traffic and likely be exposed to the worst-case air quality conditions. The location of the selected existing and future receptors assessed are presented in Figure 11.1.

Table 11.3: Selected Receptor Locations

Receptor Number	Address of Receptor	Receptor Type	Grid Reference	
1	Clayton Farm	Residential	355098	424017
2	1 White Houses, Fowler Lane	Residential	354991	424290
3	Stoney Lane Farm	Residential	355207	424640
4	Brookhouse Farm	Residential	355089	424658
5	Elmar, Stoney Lane	Residential	355149	424713
6	Walmsleys Farm	Residential	355150	424761
7	Fieldside, Old School Lane	Residential	355191	424848
8	Old School House	Residential	355213	424929

9	Mayflower, Old School Lane	Residential	355189	424935
10	6 Woodcock Estate	Residential	354943	424633
11	1 Crow Tree Cottages	Residential	355078	425122
12	Chestnuts, Lostock Lane	Residential	355555	425291
13	Stone Bridge, Todd Lane South	Residential	355206	425181
14	Lydiate Head Cottage	Residential	355784	423498
15	Dixons Farm	Residential	356129	424938
16	**Proposed:** Residential North-West Of Plot E	Residential	355047	424998
17	**Proposed:** Residential North-East Of Plot E	Residential	355188	425921
18	**Proposed**: Nursery /Creche	Nursery/ Creche	355440	424805

All selected receptors have been modelled at ground level (0m above ground) to represent the closest location of the receptor to the tailpipe vehicle emissions

Determining Significance of Effects

Construction

11.40 The significance of effects of construction activities on air quality have been assessed based on professional judgement and with reference to the criteria set out in the IAQM (2014) guidance. Appropriate site specific mitigation measures that would need to be implemented to minimise any adverse effect have also been considered. Details of the assessors experience and competence to undertake the dust assessment is provided in Appendix 11.1.

11.41 The assessment of the risk of dust effects arising from each of the construction activities, as identified by the IAQM guidance, is based on the magnitude of potential dust emissions and the sensitivity of the area. The risk category matrix for each of the construction activity types, taken from the IAQM (2014) guidance, are presented in Table 11.4 to Table 11.7. Examples of the magnitude of potential dust emissions for each construction activity and factors defining the sensitivity of an area are provided in Appendix 11.1.

Table 11.4: Risk Category from Demolition Activities

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 11.5: Risk Category from Earthworks Activities

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 11.6: Risk Category from Construction Activities

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 11.7: Risk Category from Trackout Activities

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

11.42 The risk category determined for each of the construction activity types is used to define the appropriate, site specific, mitigation measures that should be applied. The IAQM (2014) guidance recommends that significance is only assigned to the effect after considering mitigation and assumes that all actions to avoid or reduce the environmental effects are an inherent part of the Development, and that in the case of construction mitigation (secured through planning conditions, legal requirements or required by regulations), this will ensure that potential significant adverse effects will not occur.

11.43 Experience of implementing mitigation measures for construction activities demonstrates that total mitigation is normally possible. Accordingly, the IAQM (2014) guidance recommends that the significance of construction activity effects should only be considered post-mitigation where the residual effects (in accordance with the above evidence based theory) would not be 'significant'. It therefore follows that, within this assessment no significance criteria are provided for the pre-mitigation likely effects of the construction work.

Construction Vehicle Exhaust and Plant Emissions

11.44 The significance of the effects from construction vehicle exhaust emissions and construction plant emissions on air quality were based on professional judgement in line with the IAQM Guidance on the assessment of dust from demolition and construction (2014).

Completed Development

11.45 The aforementioned EPUK / IAQM Guidance provides an approach to assigning the magnitude of changes as a result of a development as a proportion of a relevant assessment level, followed by examining this change in the context of the new total

concentration and its relationship with the assessment criterion to provide a description of the impact at selected receptor locations.

11.46 Table 11.8 presents the IAQM framework for describing the impacts (the change in concentration of an air pollutant) at individual receptors. The term Air Quality Assessment Level (AQAL) is used to include air quality objectives or limit values, where these exist.

Table 11.8: Impact Descriptors for Individual Receptors

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

Notes: AQAL may be an air quality objective, EU limit value, or an Environment Agency 'Environmental Assessment Level (EAL)'
The table is intended to be used by rounding the change in percentage pollutant concentration to whole numbers. Changes of 0% (i.e. less than 0.5%) are described as Negligible.
The table is only to be used with annual mean concentrations
The table has been changed to be consistent with the terminology of the ES; 'slight' has been changed to 'minor', and 'substantial' has been changed to 'major'

11.47 The approach set out in the EPUK / IAQM Guidance provides a method for describing the impact magnitude at individual receptors only. The Guidance outlines that this change may have an effect on the receptor depending on the severity if the impact and other factors that may need to be taken into account. The assessment framework for describing impacts can be used as a starting point to make a judgement on significance of effect. However, whilst there may be 'minor', 'moderate' or 'major' impacts described at one or more receptors, the overall effect may not necessarily be judged as being significant in some circumstances.

11.48 Following the approach to assessing significance outlined in the EPUK / IAQM Guidance, the significance of likely residual effects of the completed Development on air quality has been established through professional judgement and the consideration of the following factors:

- the geographical extent (local, district or regional) of effects;
- their duration (temporary or long term);
- their reversibility (reversible or permanent);
- the magnitude of changes in pollution concentrations;
- the exceedance of standards (e.g. AQS objectives); and
- changes in pollutant exposure.

Limitations and Assumptions

11.49 For the purposes of the assessment of dust nuisance during construction it has been assumed that the works would be carried out at the boundary of the Site to provide a worst case assessment.

11.50 The limitations with regards to the air quality model are discussed in Appendix 11.1 and where necessary appropriate model refinement, including a model verification, has been undertaken.

11.51 At the time of writing the Development is predicted to be complete and operational in 2030. However, for consistency with the traffic data provided - the air quality assumes the Development is complete and operational in 2032.

11.52 The Emissions Factor Toolkit and Background Pollutant Concentrations are only projected into the future to the year 2030. Therefore, the vehicle emissions and background concentrations from 2030 have been used in the assessment year of 2032. This represents a conservative assumption as both emission factors and background concentrations are predicted to decrease year on year.

11.53 There is no standard or recognised methodology to predict the reduction in pollutant concentrations from all air quality mitigation measures or measures likely to have a positive impact on local air quality (such as cycle spaces, electric charging points, sustainable transport options, green infrastructure etc) as these measures are either based on holistic behavioural changes and/or there is a lack of real-world quantifiable data (in $\mu g/m^3$).

11.54 The Energy Strategy for the Development, prepared by Ridge and Partners LLP states '*at outline planning stages detailed specific solutions cannot be set out for the type buildings and individual plots*'. The proposed heating plant is subject to further detailed design but would be designed to meet relevant guidance. Any emissions would be released from vents or stacks in locations and at heights that provide adequate dispersion and ensure there would not be any risk of impact at relevant receptors. It is therefore anticipated the operation of the proposed heating plant would not result in a significant increase in emissions to air. The final proposed heating and energy plant along with the emissions to air and the air quality effects will be submitted to SRBC at the appropriate time. This would demonstrate to SRBC that there would be no significant effects to air quality associated with the proposed plant. It is considered the effect of the proposed energy plant as part of the operational Development would be negligible. The proposed heating plant has therefore not been considered further in this report.

Baseline Conditions

South Ribble Borough Council Review and Assessment Process

11.55 As required under Section 82 of the Environment Act (1995), SRBC has conducted an ongoing exercise to review air quality within their area of jurisdiction. The assessments have indicated that concentrations of NO_2 are above the annual mean AQS objectives at locations of relevant public exposure within the Borough. The council has therefore designated five AQMAs, which are:

- AQMA No.1 – Junction of Priory Lane and A59 Liverpool Road, Penwortham;
- AQMA No.2 – Victoria Road, Walton-le-Dale;
- AQMA No.3 – Junction of Leyland Road, Watkin Lane and Brownedge Road;
- AQMA No.4 – Station Road, Bamber Bridge; and
- AQMA No.5 – Leyland

11.56 The Site is not located within any of these AQMA's. AQMA 4 (Station Road, Bamber Bridge) and AQMA 3 (Junction of Leyland Road, Watkin Lane and Brownedge Road) are located approximately 750m north-east and 800m north-west of the Site boundary respectively (see Figure 11.2).

Local Monitoring

11.57 SRBC does not undertake any automatic monitoring of any of the Air Quality Objective pollutants. However, NO_2 is measured using diffusion tubes at 27 locations.

11.58 The results for the nearest NO_2 diffusion tubes (located within 2km of the centre of the Site) are presented in Table 11.9.

Table 11.9: Measured Concentrations at the SRBC NO_2 diffusion tubes within 2km of the centre of the Site

Site ID / Location	Distance to centre of Site	AQMA	2019 Data*
309-311 Station Road, Bamber Bridge	1.33km	4	No data
361 Station Road, Bamber Bridge	1.40km	4	35.9
28-30 Watkin Lane, Lostock Hall	1.63km	3	30.2
266 Station Road, Bamber Bridge	1.70km	4	33.9
244 Station Road, Bamber Bridge	1.78km	4	22.3
Spar, Watkin Lane, Lostock Hall	1.79km	3	32.1
243 Station Road, Bamber Bridge	1.83km	4	29.0
146/Library, Station Road, Bamber Bridge	1.84km	3	29.8

Site ID / Location	Distance to centre of Site	AQMA	2019 Data*
Tardy Gate PH, Leyland Rd, Lostock Hall	1.85km	3	35.4^
477 Leyland Road, Lostock Hall	1.93km	3	30.5
36 Golden Hill Lane	1.99km	N/A	36.2^

Notes: 2019 data obtained directly from South Ribble Borough Council
*Annual Mean Concentration (Bias Adjustment factor 0.89)
^ Average of triplicate tubes

Future Baseline

11.59 With regards to air quality, future baseline conditions are expected to improve as there will likely be a reduction in vehicle emission rates and background concentrations following the uptake of less polluting vehicles.

Likely Significant Effects

Construction Phase

Nuisance Dust

11.60 Construction activities of the Development have the potential to affect local air quality through Demolition, Earthworks, Construction and Trackout activities, as described above.

11.61 The Site is located in a semi-rural area with residential uses to the north and east of the Site. The nearest residential properties are located on Stoney Lane and Old School Lane, within 50m of the Site boundary. The construction phase assessment bands are shown on Figure 11.2. Additionally, there are no ecologically designated sites within the vicinity of the Site and so ecological receptors have been scoped out. For further information on the Site and surrounds, please refer to Chapter 3 Site and Development Description.

11.62 Based on the criteria set out in Tables A11.1 to A11.5 of Appendix 11.1 and the methodology described above, the sensitivity of the area surrounding the Site is presented in Table 11.10.

Table 11.10: Summary of the Sensitivity of the Area

Receptor Sensitivity		Sensitivity of the Surrounding Area		
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium	Medium	Medium	Medium
Human Health	Low	Low	Low	Low

Demolition

11.63 Agricultural buildings to the east of Stoney Lane House would be demolished to facilitate the Development. It is estimated that the total volume of buildings to be demolished is below 20,000m^3. Based on this and considering the criteria in Table A11.1 in Appendix 11.1, the potential dust emissions during demolition activities would be of small magnitude.

Earthworks

11.64 The Site is approximately 60.92ha or 609,200m^2. Based on this, and considering the criteria in Table A11.1 in Appendix 11.1, the potential dust emissions during earthworks activities would be of large magnitude.

Construction

11.65 The total volume of buildings to be constructed would exceed 100,000m^3. Based on this, and considering the criteria in Table A11.1 in Appendix 11.1, the potential dust emissions during construction activities would be of large magnitude.

Trackout

11.66 It is estimated the number of Heavy-Duty Vehicles (HDVs) would peak at approximately 100 HDV trips in any one day during the excavation phase. The estimation of 100 HDVs has been assumed as the worst-case scenario following the 2016 planning application whereby the same number was used as part of the assessment, the two developments comprise of a scale and size of similar magnitudes, therefore it can be assumed that 100 HDVs is of a reasonable estimate. Considering the criteria in Table A11.1 in Appendix 11.1, the potential for dust emissions due to trackout activities would be of large magnitude.

11.67 The dust risk categories, based on the potential magnitude of dust emissions and the sensitivity of the area to dust, are presented in Table 11.11.

Table 11.11: Summary of Risk for the Construction Phase

Potential Effect	Risk			
	Demolition	**Earthworks**	**Construction**	**Trackout**
Dust Soiling	Low Risk	Medium Risk	Medium Risk	Medium Risk
Human Health	Negligible	Low Risk	Low Risk	Low Risk

11.68 As outlined in Table 11.11, the Site is considered to be medium risk with regard to dust soiling effects. In line with the methodology above, no significance is prescribed to pre-

mitigation impacts and effects. However, such effects would likely be temporary, local and minor adverse. Consequently, mitigation would be required to ensure that adverse effects be minimised, reduced and, where possible, eliminated.

11.69 Should the residential part of the Development (Zone E) be constructed prior to the rest of the Development (Zones A to D), the effect of nuisance dust on future residential receptors would be negligible. The effect on future residential receptors would accord with the effect on existing receptors detailed above.

Construction Vehicle Exhaust Emissions

11.70 Construction vehicles and plant operating on the Site would have the potential to increase local air pollutant concentrations, particularly in respect of NO_2 and particulate matter (both PM_{10} and $PM_{2.5}$).

11.71 As outlined above, it was estimated that the number of Heavy Duty Vehicles (HDVs) entering and egressing Site would peak at approximately 100 HDV trips in any one day. However, given the Site is adjacent to main distributer roads surrounding the Site including Stanifield Lane and the M65 with 20,429 existing daily vehicles including 4.4% HDVs and 69,350 daily vehicles including 6.5% HDVs respectively. Emissions from construction traffic would therefore be relatively small compared to existing road traffic emissions (for further information, see Appendix 11.1).

11.72 Taking into account the current traffic movements and background pollutant concentrations around the Site, it is considered that the likely effect of construction vehicles entering and egressing the Site to air quality would be negligible during the construction period.

11.73 Should the residential part of the Development (Zone E) be constructed prior to the rest of the Development (Zones A to D), the effect of construction vehicle exhaust emissions on future residential receptors would be negligible. The effect on future residential receptors would accord with the effect on existing receptors detailed above.

Construction Plant Emissions

11.74 Emissions from plant operating on the Site would be very small in comparison to the emissions from traffic movements on the roads adjacent to the Site. It is therefore considered that even in the absence of mitigation, their likely effect on local air quality would be negligible.

11.75 Should the residential part of the Development (Zone E) be constructed prior to the rest of the Development (Zones A to D), the effect of construction plant emissions on future residential receptors would be negligible. The effect on future residential receptors would accord with the effect on existing receptors detailed above.

Operational Phase

11.76 Impact on local air quality associated with the Development would likely result from changes to traffic flows. Table 11.12 and Table 11.13 present the predicted concentrations at relevant existing and proposed receptors nearest to road traffic.

Nitrogen Dioxide

Table 11.12: Results of the ADMS Modelling at Sensitive Receptors (NO_2)

ID	Receptor Location	NO^2 Annual Mean (µg/$m^{3)}$			
		2019 Baseline	2032 Without Development	2032 With Development	2032 Change
1	Clayton Farm	25.0	13.8	13.9	0.1
2	1 White Houses, Fowler Lane	22.8	13.0	13.2	0.2
3	Stoney Lane Farm	19.8	11.8	12.0	0.2
4	Brookhouse Farm	21.3	12.4	12.6	0.2
5	Elmar, Stoney Lane	20.4	12.0	12.2	0.2
6	Walmsleys Farm	20.6	12.1	12.4	0.3
7	Fieldside, Old School Lane	20.8	12.2	12.6	0.4
8	Old School House	21.5	12.5	12.8	0.3
9	Mayflower, Old School Lane	21.6	12.5	12.8	0.3
10	6 Woodcock Estate	16.3	10.5	10.6	0.1
11	1 Crow Tree Cottages	56.8	28.6	29.3	0.7
12	Chestnuts, Lostock Lane	35.5	18.4	18.8	0.4
13	Stone Bridge, Todd Lane South	35.6	18.6	19.0	0.4
14	Lydiate Head Cottage	33.3	16.9	17.2	0.3
15	Dixons Farm	36.7	18.7	19.1	0.4
16	**Proposed:** Residential North-West Of Plot E	-	-	25.3	-
17	**Proposed:** Residential North-East Of Plot E	-	-	12.8	-
18	**Proposed**: Nursery /Creche	-	-	16.0	-

11.77 The results in Table 11.12 indicate that for 2019, the NO_2 annual mean concentrations are predicted to exceed the NO_2 objective at Receptor 11 with a predicted annual mean NO_2 concentration of 56.8µg/m^3. Receptor 11 is located on Lostock Lane, in close proximity to the A582 roundabout with Stanifield Lane and Watkin Lane. The 2019 annual mean NO_2 objective would not be exceeded at the other 14 existing receptors.

11.78 As discussed in Appendix 11.1, the 1-hour mean AQS objective for NO_2 is unlikely to be exceeded at a roadside location where the annual mean NO_2 concentration is less than 60µg/m^3. As shown in Table 11.12, the predicted NO_2 annual mean concentrations in 2019 are below 60µg/m^3 at all of the existing sensitive receptors modelled and therefore the 1-hour mean objective is met at these locations.

11.79 In 2032, both 'without' and 'with' the Development, all existing sensitive receptors modelled are predicted to be below the NO_2 annual mean objective. Therefore, the 1-hour mean objective is also predicted to be met at these locations.

11.80 Using the impact descriptors outlined in Table 11.8, the Development is predicted to result in a 'negligible' impact at all 15 existing sensitive receptors modelled.

11.81 The predicted NO_2 concentrations within the Development (Table 11.12) are below the relevant objectives in 2032, and as such, it is considered concentrations within the Development for future users are negligible.

11.82 All the NO_2 annual mean concentrations are below 60µg/m^3, and so it is considered that the Development would have a 'negligible' impact on hourly NO_2 concentrations.

11.83 Using professional judgement, based on the severity of the impact and the concentrations predicted at the existing sensitive receptors (all predicted to be below the annual and 1-hour mean objectives), it is considered that the effect of the Development on NO_2 concentrations would be **not significant/negligible**. The Development is not predicted to lead to any new objective exceedances or the designation, or extension, of an AQMA.

Particulate Matter (PM_{10} and $PM_{2.5}$)

Table 11.13: Results of the ADMS Modelling at Sensitive Receptors (PM_{10} and $PM_{2.5}$)

ID	PM_{10} Annual Mean (µg/m^3)				PM_{10} - Number of Days >50µg/m^3				$PM_{2.5}$ Annual Mean (µg/m^3)			
	2019 Baseline	2032 Without Development	2032 With Development	2032 Change	2019 Baseline	2032 Without Development	2032 With Development	2032 Change	2019 Baseline	2032 Without Development	2032 With Development	2032 Change
1	14.8	14.2	14.3	0.1	0	0	0	0	9.3	8.8	8.8	0.0
2	13.6	13.1	13.3	0.2	0	0	0	0	8.7	8.2	8.3	0.1
3	13.6	12.9	13.0	0.1	0	0	0	0	8.7	8.1	8.1	0.0
4	14.0	13.3	13.4	0.1	0	0	0	0	8.9	8.3	8.3	0.0
5	13.7	13.1	13.2	0.1	0	0	0	0	8.7	8.1	8.2	0.1

ID	PM_{10} Annual Mean (µg/m³)				PM_{10} - Number of Days >50µg/m³				$PM_{2.5}$ Annual Mean (µg/m³)			
	2019 Baseline	2032 Without Development	2032 With Development	2032 Change	2019 Baseline	2032 Without Development	2032 With Development	2032 Change	2019 Baseline	2032 Without Development	2032 With Development	2032 Change
6	13.8	13.1	13.2	0.1	0	0	0	0	8.7	8.2	8.2	0.0
7	13.8	13.1	13.3	0.2	0	0	0	0	8.8	8.2	8.3	0.1
8	13.9	13.3	13.4	0.1	0	0	0	0	8.8	8.2	8.3	0.1
9	13.9	13.3	13.4	0.1	0	0	0	0	8.8	8.3	8.3	0.0
10	12.1	11.5	11.5	0.0	1	1	1	0	7.9	7.3	7.3	0.0
11	20.6	21.3	21.7	0.4	4	5	5	0	13.1	13.0	13.3	0.3
12	15.9	15.7	15.9	0.2	0	0	0	0	10.4	9.9	10.0	0.1
13	16.6	16.6	16.8	0.2	0	0	0	0	10.7	10.4	10.5	0.1
14	16.9	16.2	16.3	0.1	0	0	0	0	10.5	9.9	10.0	0.1
15	16.1	15.7	15.9	0.2	0	0	0	0	10.2	9.6	9.8	0.2
16	-	-	20.4	-	-	-	3	-	-	-	12.2	
17	-	-	13.4	-	-	-	0	-	-	-	8.3	-
18	-	-	14.7	-	-	-	0	-	-	-	9.1	-

11.84 As shown in Table 11.13, the annual mean concentrations of PM_{10} are predicted to be well below the AQS Objective of 40µg/m³ in 2019 and in 2032, both 'without' and 'with' the Development, at all the existing sensitive receptors modelled. The maximum predicted concentration is 20.6µg/m³ at Receptor 11 in 2019. Using the impact descriptors outlined in Table 11.8, the Development is predicted to result in a 'negligible' impact at all existing sensitive receptors modelled.

11.85 The results in Table 11.13 indicate that in 2019 and in 2032, both 'without' and 'with' the Development, all existing sensitive receptors are predicted to be below the 24-hour mean PM_{10} objective value of 35 days exceeding 50µg/m³. The maximum predicted concentration is five days at Receptor 11 in 2032 in both the 'without' and 'with' Development scenarios.

11.86 The results in Table 11.13 indicate that in 2019 and in 2032, both 'without' and 'with' the Development, all existing sensitive receptors are predicted to be below the annual mean $PM_{2.5}$ AQS Objective value of 25µg/m³. The maximum predicted concentration is 13.3µg/m³ at Receptor 11 in the 2032 'with' Development scenario.

11.87 Using the impact descriptors outlined in Table 11.8, the Development is predicted to result in a 'negligible' impact at all existing sensitive receptors.

11.88 The predicted PM_{10} and $PM_{2.5}$ concentrations within the Development (Table 11.13) are also below the relevant objectives in 2032, and as such, it is considered concentrations within the Development for future users are negligible.

11.89 Using professional judgement, based on the severity of the impact and the concentrations predicted at the existing sensitive receptors modelled, it is considered that the effect of the Development on particulate matter would be not significant/ negligible.

Mitigation Measures

Construction Phase

Nuisance Dust

11.90 A range of environmental management controls would be developed, secured through planning conditions, and set out in a Construction Environmental Management Plan (CEMP), with reference to the IAQM guidance relating to medium risk sites and would include:

- removal of materials that have potential to produce dust, where possible;
- enclosure of material stockpiles at all times and damping down of dusty materials during dry weather;
- provision of appropriate hoarding and / or fencing to reduce dust dispersion and restrict public access;
- maintenance of Site fencing, barriers and scaffolding clean using wet methods;
- control of cutting or grinding of materials on the Site and avoidance of scabbling;
- dust generating machinery e.g. disk cutters to be fitted with vacuums;
- appropriate handling and storage of materials, especially stockpiled materials;
- restricting drop heights onto lorries and other equipment;
- fitting equipment with dust control measures such as water sprays, wherever possible;
- using a wheel wash, avoiding of unnecessary idling of engines and routing of Site vehicles as far from sensitive properties as possible;
- ensuring bulk cement and other fine powder materials are delivered in enclosed tankers and stored silos with suitable emission control systems to prevent escape of material and overfilling during delivery;
- using gas powered generators rather than diesel if possible and ensuring that all plant and vehicles are well maintained so that exhaust emissions do not breach statutory emission limits;
- switching off all plant when not in use;
- no fires would be allowed on the Site; and
- ensuring that a road sweeper is available to clean mud and other debris from hard-standing, roads and footpaths.

Construction Vehicle Exhaust Emissions

11.91 As a matter of good practice, measures to control construction traffic would be proposed. Such measures would include:

- Establishment of the most suitable construction traffic routes;
- Limiting the use of 'sensitive' roads (to include residential roads, congested roads etc.); and
- Timing large-scale vehicle movements outside of peak hours.

Construction Plant Emissions

11.92 No mitigation is required to control plant emissions on the Site, although best practice measures would be followed.

Operational Phase

11.93 Table 11.14 presents the measures included in the Development (as such included within the impact assessment) to be secured by condition or considered in the Reserved Matters Application, which are likely to have a benefit to air quality and to ensure the Development does not delay compliance to the EU Limit Value. The details of the mitigation measures presented in Table 11.14 will be developed as the Development progresses into detail design (particularly for the parts of the application currently in outline).

Table 11.14: Summary of Mitigation Measures

Phase	Mitigation Measures
Measures included in the design of the Development and to be included in the Reserved Matters Application	For the Reserved Matters Application, the location, orientation and internal room layout of the residential buildings would be considered and located away from direct sources of emissions to air (such as road traffic, car park, heating plant and industrial activities).
	Provision of cycle spaces
	Provision of trees and plants in public realm
	The proposed heating plant is subject to further detailed design but would be designed to meet relevant guidance
Operational Phase	Provision and monitoring of a Workplace Travel Plan
	Provision and monitoring of a Framework Delivery and Servicing Management Plan
	Provision of public transport to the Site.
	Provision of notice boards to display walking and cycling information (including maps), details of the Bicycle User Group, public transport information, Travel Plan Coordinator contact details and other relevant information.

Residual Effects

Construction Phase

Nuisance Dust

11.94 The mitigation measures detailed in the mitigation section above are routinely and successfully applied to construction projects throughout the UK, and are proven to reduce significantly the potential for adverse nuisance dust effects associated with the various stages of the construction work. Therefore, it is considered that residual effect of fugitive emissions would be negligible.

Construction Vehicle Exhaust and Plant Emissions

11.95 The likely residual effects of construction related traffic emissions and construction plant emissions of the Development are considered to be negligible.

Operational Phase

11.96 The completed and operational Development is predicted to have negligible effects on local air quality which would result in a not significant/ negligible residual air quality effect to relevant existing receptors and proposed receptors.

Cumulative Effects

Construction Phase

Nuisance Dust

11.97 A type 2 cumulative residual effect combines the effects from the Development together with other reasonably foreseeable schemes (hereafter referred to as 'cumulative schemes'), which individually might be negligible, but when considered together could create a significant cumulative effect. The Brookhouse Farm Development is the only cumulative scheme and it is encompassed in the western part of the Site. Due to the proximity there is the potential for Type 2 cumulative residual effects during the construction phase, should they occur concurrently. The main effects to air quality as a result of construction works are in relation to dust nuisance. Owing to the typical dispersal and deposition rates of dust with distance from source, it is considered that Type 2 cumulative dust effects could be an issue

for cumulative schemes within 700m of the Site, but only if they were to be constructed at the same time.

11.98 There are only two cumulative schemes within 700m (Land adjoining Cuerden residential Park 12/00872/FULMAJ and Lydiate Quarry 07/2006/0672/CM). Due to their proximity to the Development there is the potential for Type 2 cumulative residual effects during the construction phase, should they occur concurrently.

11.99 However, the Development and all cumulative schemes would implement their own CEMP (or equivalent) to mitigate potential dust nuisance. Accordingly, it is unlikely that there would be any Type 2 cumulative dust effects at the nearest sensitive receptors specific to the Site. It is therefore considered that the potential Type 2 cumulative residual effects of dust nuisance would be negligible.

Construction Vehicle Exhaust Emissions

11.100 Exhaust emissions from the combined construction traffic of the Development and the cumulative scheme could give rise to Type 2 cumulative residual effects on local air quality. However, this would depend upon the extent to which the implementation of the Development and the cumulative scheme overlap. However, due to the size of the cumulative scheme, in the worst-case scenario, whereby the construction of overlap with the Development, and use the same, or nearby construction traffic routes, it is generally the case that construction traffic would add a very small proportion of additional traffic to the local highway network. The likely Type 2 residual effect is therefore considered to be negligible. It is assumed that appropriate traffic management measures would be implemented to reduce as much traffic disruption as is practically possible.

Construction Plant Emissions

11.101 It is considered that even if plant was operating on the Site and the Brookhouse Farm Development concurrently, the effect would be negligible in the context of the existing adjacent road traffic and exhaust emissions.

Operational Phase

11.102 The assessment of likely significant air quality effects once the Development is completed and operational is inextricably linked to the predicted changes in operational traffic flows. The traffic data used to establish the likely significant air quality effects of the Development in has already accounted for the cumulative schemes.

11.103 Therefore, it is considered that the likely Type 2 cumulative residual effects of traffic emissions upon local air quality from the Development and the cumulative scheme would be equivalent to the identified likely residual effects presented above (i.e. negligible).

Summary

11.104 The effect of construction activities including vehicle exhaust and plant emissions on air quality were assessed based on professional judgement and with reference to the criteria set out in the IAQM (2014) guidance.

11.105 Computer modelling has been carried out to predict the effect of future traffic-related exhaust emissions and the likely changes in local air quality following the completion of the Development.

11.106 The baseline monitoring results surrounding the Site indicate that the annual mean NO_2 objective of 40µg/m^3 was met at all 11 diffusion tube monitoring locations within 2km of the centre of the Site, in 2014.

11.107 The main likely effects on local air quality during construction relate to dust. A range of measures to minimise or prevent dust generated from construction activities would be set out in a Construction Environmental Management Plan and implemented throughout the works.

11.108 Therefore, it is considered that any likely residual effects due to fugitive emissions would not be significant.

11.109 Table 11.15 contains a summary of the likely significant effects of the Development.

Table 11.15: Table of Significance – Air Quality

Potential Effect	Nature of Effect (Permanent/ Temporary)	Significance (Major/Moderate/Minor) (Beneficial/Adverse/ Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/ Minor) (Beneficial/Adverse/ Negligible)
				I	UK	E	R	C	B	L	
Construction											
Nuisance Dust	Temporary	Minor Adverse	A range of environmental management controls would be developed and set out in a CEMP							X	Negligible
Construction Vehicle Exhaust Emissions	N/A	Negligible	Not Required – Good practice measures to control construction traffic would be proposed							X	Negligible
Construction Plant Emissions	N/A	Negligible	Not Required							X	Negligible
Completed Development											
Nitrogen Dioxide	N/A	Negligible	Negligible							X	Negligible
Particulate Matter (PM_{10} and $PM_{2.5}$)										X	
Cumulative Effects											
Construction											
Nuisance Dust	Temporary	Minor Adverse	Development and cumulative schemes would implement CEMP's							X	Negligible
Construction Vehicle Exhaust Emissions	N/A	Negligible	Not Required							X	Negligible
Construction Plant Emissions	N/A	Negligible	Not Required							X	Negligible
Operation											
Nitrogen Dioxide	N/A	Negligible	Negligible							X	Negligible
Particulate Matter (PM_{10} and $PM_{2.5}$)										X	

*** Geographical Level of Importance**

I = International; UK = United Kingdom; E = England; R = Regional; C = County; B = Borough; L = Local

REFERENCES

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xiii Air Quality Consultants (2020): 'Performance of Defra's Emission Factor Toolkit 2013 – 2019'. February 2020.