HALIFAX ROAD, PENISTONE

Residential Development

Air Quality Emissions Mitigation Statement
Prepared for: Barratt David Wilson Homes West Yorkshire

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DOCUMENT REFERENCES

TABLES

1.0 INTRODUCTION

SLR Consulting Ltd (SLR) has been commissioned by Barratt and David Wilson Homes Yorkshire West (BDW) to provide an Air Quality Mitigation Statement to support the discharge of a pre-commencement condition for a consented c410 dwelling (C3 use-class) residential development (the 'Development) on land to the south of Halifax Road, Penistone, Barnsley (the 'Application Site').

1.1 Background

BDW submitted a planning application for a residential development on land to the south of Halifax Road, Penistone, Barnsley (the 'Application Site') (Barnsley Metropolitan Borough Council (BMBC) application reference: 2020/0274). The application has a resolution to grant, subject to completion of a Section 106 agreement.

The following pre-commencement condition was included on the grant of planning and relates to air quality:

> *"Condition 12: Prior to commencement of development, details of proposals to mitigate the air quality impact of the development (mitigation strategy) shall be submitted to and approved in writing by the Local Planning Authority, taking into account the mitigation proposals submitted by the applicant's air quality consultant within their assessment dated November 2018, reference LDP2246-001, along with the requirements of the Barnsley MBC Air Quality and Emissions Good Practice Planning Guidance. The development shall be undertaken in accordance with the approved details unless otherwise agreed in writing by the Local Planning Authority.*
>
> *Reason: In the interests of minimising the impact of the proposal on air quality in accordance with Local Plan Policy Poll1."*

1.2 Scope of Assessment

This Air Quality Mitigation Statement is provided to discharge the above Condition 12, to calculate the damage costs in line BMBC *Air Quality and Emissions Technical Planning Guidance* and outline the proportionate mitigation measures to be included as part of the Development which will be beneficial to air quality. Where possible the measures have been itemised and costed to aid in comparison to the calculated damage costs value.

Consultation with the Environment Health Officer (EHO) at BMBC[1] was undertaken to agree upon the methodology of the Air Quality Mitigation Strategy. The scope of this assessment is as follows:

- Road Transport Emission Calculation – A calculation of pollutant monetary emission costs from additional operational phase traffic movements associated with the development, following the BMBC *Air Quality and Emissions Technical Planning Guidance* methodology; and
- Mitigation Measures – Identification of air quality specific mitigation measures proposed and cost itemisation of each measure.

[1] Email communication between SLR Consulting and Chris Shields, Technical Officer (Pollution Control) dated between 6th July 2021 and 13th August 2021.

2.0 RELEVANT AIR QUALITY LEGISLATION AND GUIDANCE

2.1 Legislative Context

2.1.1 Air Quality Standards

The Air Quality Standards Regulations 2010[2] (AQSR) transpose both the EU Ambient Air Quality Directive (2008/50/EC)[3], and the Fourth Daughter Directive (2004/107/EC)[4] within UK legislation, in order to align and bring together in one statutory instrument the Government's obligations. The AQSR includes Limit Values, Target Values, Objectives, Critical Levels and Exposure Reduction Targets for the protection of human health and the environment. Limit values are legally binding and are considered to apply everywhere with the exception of the carriageway and central reservation of roads and any location where the public do not have access (e.g. industrial sites). Compliance is regulated at a national level (based upon a series of zones and agglomerations).

In the interim period the UK has formally left the EU, however despite this, EU rules and regulations referred above have subsequently been written into UK law and are thus still of relevance.

2.1.2 Air Quality Strategy

Irrespective of the above, the UK Government and the devolved administrations are required under the Environment Act 1995 to produce a national air quality strategy to improve air quality. The latest Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland was published in 2007[5]. The AQS provides the over-arching strategic framework for air quality management in the UK and contains non-statutory national air quality standards and objectives established by the UK Government and Devolved Administrations for the protection of public health and the environment, taking into account epidemiological evidence and international regulations, as well as economic efficiency, practicability and technical feasibility. There is no legal requirement to meet these objectives except where they mirror an equivalent legally binding Limit Value as prescribed within EU legislation, however compliance is regulated at a local level by local planning authorities.

The AQS objectives apply at locations outside buildings or other natural or man-made structures above or below ground, where members of the public are regularly present and might reasonably be expected to be exposed to pollutant concentrations over the relevant averaging period – herein referred to as relevant exposure. Table 2-2 provides an indication of those locations.

The ambient air quality standards of relevance to human receptors in this assessment (collectively termed Air Quality Assessment Levels (AQALs) throughout this report) are provided in Table 2-1.

Table 2-1
Relevant Ambient AQALs

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)
Particles (PM_{10})	40	Annual Mean	-
	50	24-hour mean	90.41th percentile of 24-hour means (equivalent to 35 24-hour exceedences)
Particles ($PM_{2.5}$)	25	Annual Mean	-

[2] The Air Quality Standards Regulations (England) 2010, Statutory Instrument No 1001, The Stationary Office Limited.
[3] Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe.
[4] Directive 2004/107/EC of the European Parliament and of the Council of 15 December 2004.
[5] The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, DEFRA. July 2007.

Table 2-2
Human Health Relevant Exposure

AQAL Averaging Period	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

2.2 Local Air Quality Management

As reinforced within the AQS, Part IV of the Environment Act 1995 induces a statutory duty for local authorities to undergo a process of Local Air Quality Management (LAQM). This requires local authorities to Review and Assess air quality within their boundaries to determinedly the likeliness of compliance, regularly and systematically.

Where any of the prescribed AQS objectives are not likely to be achieved, the authority must designate an Air Quality Management Area (AQMA). For each AQMA, the local authority is required to prepare an Air Quality Action Plan (AQAP), which details measures the authority intends to introduce to deliver improvements in local air quality in pursuit of the objective. AQMAs can give rise to potential constraints to development, or at least a higher degree of scrutiny to air quality assessment work. Local authorities therefore have formal powers to control air quality through a combination of LAQM and through application of wider planning policies.

After a high number of declarations across the UK, it has become standard practice for planning authorities to require an air quality assessment to be carried out for a proposed development.

2.3 Clean Air Strategy

The Clean Air Strategy (CAS)[6], 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.

2.4 Planning Policy

2.4.1 National Policy

In the interim since the original BMBC 2020/0274 planning application was submitted, there has been an update to the National Planning Policy Framework (NPPF). This air quality mitigation strategy considers the wording of the 2021 update, but the overall policy content remains the same.

The 2021 update to the NPPF describes the policy context in relation to pollutants including air pollutants:

> *'Para 174: Planning policies and decisions should contribute to and enhance the natural and local environment by:*

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

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 185: 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 186: 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.'

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 air quality assessment.

2.4.2 Local Policy

The Barnsley Local Plan was adopted by BMBC on 3rd January 2019. The following policies relate to air quality:

Policy Poll1 Pollution Control and Protection

"Development will be expected to demonstrate that it is not likely to result, directly or indirectly, in an increase in air, surface water and groundwater, noise, smell, dust, vibration, light or other pollution which would unacceptably affect or cause a nuisance to the natural and built environment or to people.

We will not allow development of new housing or other environmentally sensitive development where existing air pollution, noise, smell, dust, vibration, light or other pollution levels are unacceptable and there is no reasonable prospect that these can be mitigated against.

Developers will be expected to minimise the effects of any possible pollution and provide mitigation measures where appropriate."

Policy AQ1 Development in Air Quality Management Areas

"Development which impacts on areas sensitive to air pollution in air quality management areas will be expected to demonstrate that it will not have a harmful effect on the health or living conditions of any future users of the development in terms of air quality (including residents, employees, visitors and customers), taking into account any suitable and proportionate mitigation required for the development.

We will only allow residential development which impacts on areas sensitive to air pollution, where the developer provides an assessment that shows living conditions will be acceptable for future residents, subject to any required mitigation.

We will only allow development which impacts on areas sensitive to air pollution which could cause more air pollution, where the developer provides an assessment that shows there will not be a significantly harmful effect on air quality, subject to any required mitigation.

Furthermore, development which impacts on areas sensitive to air pollution due to traffic emissions will be expected to demonstrate suitable and proportionate mitigation relative to the increased traffic emissions generated by the development."

The above policies have been addressed within this Air Quality Mitigation Strategy.

2.5 Assessment Guidance

The Air Quality Mitigation Strategy has been carried out in accordance with the following principles contained within the guidance documents below.

2.5.1 BMBC Air Quality and Emissions Good Practice Planning Guidance

Air Quality and Emissions Good Practice Planning Guidance has been published for use within Barnsley[7].

With reference to the criteria presented within BMBC's AQ Technical Guidance, the Proposed Development is believed to be 'major', given the number of proposed dwellings and in line with the pre-commencement condition. As such, this assessment has been undertaken with reference to these requirements.

2.5.2 Local Air Quality Management Technical Guidance (2016)

Department of Environment Food and Rural Affairs (DEFRA) Local Air Quality Management Technical Guidance (LAQM.TG(16))[8] was published for use by local authorities in their LAQM review and assessment work. The document provides key guidance on all aspects of air quality assessments.

2.5.3 Land-Use Planning & Development Control: Planning for Air Quality

Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) have together published guidance[9] to help ensure that air quality is appropriately accounted for in the development control process. The guidance clarifies when an air quality assessment should be undertaken, as well as the likely proportional scope,

[7] Air Quality and Emissions Good Practice Planning Guidance, Barnsley Metropolitan Borough Council, March 2020.

[8] 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. April 2021.

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

with reference to indicative screening criteria, and provides a significance criterion for use to evaluate and describe potential developmental impacts and effects. The guidance also details the 'damage cost approach' to be utilised for 'major' developments.

3.0 EMISSIONS IMPACT OF THE DEVELOPMENT

An estimation of the likely emission impact of the Application Site has been undertaken, in accordance with the methodology outlined within DEFRA's Interdepartmental Group on Costs and Benefits (IGCB) 'damage cost approach' method[10],[11]. It is noted that the applied methodology is referenced within the EPUK and IAQM guidance[12], and the BMBC *Air Quality and Emissions Technical Planning Guidance*.

The Emission Impact Calculation has utilised the most up to date version of the emissions factors toolkit (EFT v10.1) at the time of assessment, as produced by DEFRA, to calculate emissions of nitrogen oxide (NOx) (as NO_2) and PM_{10}, with inputs derived from the National Travel Survey (NTS)[13] in accordance with the DEFRA 'damage cost approach'.

The Emissions Impact Calculation has used the build out rate for the Development provided by BDW. This approach has been agreed with BMBC[14]. It is understood that construction is proposed to begin in September 2022 and end in 2027, with a proposed build out rate of 80 dwellings per year. The total dwellings proposed as part of the scheme is 410.

The by-dwelling trip rate for the development is 4.455 annual average daily traffic (AADT) flow. This trip rate was provided by the transport consultants for the development, Optima Highways and Transportation Consultancy Limited. This by-dwelling trip rate has been multiplied by the number of dwellings to calculate the total Development AADT trip generation (i.e. 4.455 x 410 = 1,827AADT, rounded). It has been assumed that all generated trips are as cars (i.e. light duty vehicles (LDV)).

It has been assumed that all LDVs travel to the site via the surrounding road network. Therefore, for the purpose of the damage cost calculation 100% of the trips have been calculated using a total speed related emission based on an average surrounding road network speed of 48kph (30mph).

The damage cost calculation considers damage costs calculated using an average trip length of 10km as stated within the BMBC *Air Quality and Emissions Technical Planning Guidance*. There were no site-specific trip lengths available at the time of the assessment.

Table 3-1
Emission Impact Calculation – Inputs 2023 - 2027

Input Parameter	LDVs from A-roads				
	2023	2024	2025	2026	2027
Number of dwellings (cumulative)	80	160	240	320	410
Total Trips [(A)]	356	713	1,069	1,426	1,827
Average trip length (km) [(B)]	10				
Speed (kph)	48				
HGV%	0				

[10] Air Quality Damage Cost Guidance, January 2019, DEFRA.

[11] Air Quality Appraisal – Damage Cost Methodology, January 2019, DEFRA.

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

[13] National Travel Survey: England 2019, Department for Transport, August 2020.

[14] Email correspondence between SLR Consulting and Chris Shields, Technical Officer (Pollution Control) at BMBC, dated between 20th July 2021 and 13th August 2021.

2017 Road Transport Base Damage cost NOx (£ per tonne) (B)	9,066
2017 Road Transport Base Damage cost $PM_{2.5}$ (£ per tonne) (B)	81,518

Notes:
(A) Based on trip data provided by Optima Highways and Transportation Consultancy Ltd.
(B) An uplift of 2% per year (from the 2017 base-year damage cost) has been applied to calculate the corresponding damage cost at the 2023 opening year.

Table 3-2
Emission Impact Calculation – Outputs 2023 - 2027

Output Parameter	Year				
	2023	2024	2025	2026	2027
Annual NOx Emissions (tonnes/year)	0.27	0.49	0.67	0.80	0.92
Annual PM_{10} Emissions (tonnes/year)	0.04	0.08	0.12	0.16	0.21
Annual $PM_{2.5}$ Emissions (tonnes/year) (A)	0.03	0.06	0.08	0.11	0.14

Note:
(A) Converted utilising Central Transport PM_{10} to $PM_{2.5}$ factor of 0.673.

Table 3-3
Emission Impact Calculation – Outputs 2023 - 2027

Output Parameter	Year					
	2023	2024	2025	2026	2027	5-Year Total (£)
NOx contribution (£)	3,253	5,819	7,841	9,226	10,457	36,595
$PM_{2.5}$ contribution (£)	6,870	13,540	17,792	24,109	30,239	92,549
					Total	129,144

In summary, over 5-year period a damage cost has been calculated of £129,144.

The above damage costs provide an indicator of the financial commitment required to offset emissions. The amount (value) determined is not a direct indication of the monetary contribution required to off-set impacts upon air quality. Rather, the scale of damage cost will determine the level of appropriate mitigation required for specific proposals. The Interdepartmental Group on Costs and Benefits (IGCB) department of DEFRA, who produced the 'Damage Cost' guidance, has stated that[15]:

[15] E-mail communication between Interdepartmental Group on Costs and Benefits department of DEFRA, and SLR Consulting Ltd, dated 28th January 2016.

"The damage costs methodology was designed for economic appraisal of government policies that lead to air quality changes and wider cost-benefit analysis. While our guidance can be used to estimate the damage to society caused per tonne of emissions, we don't provide any recommendations for the right level of compensation required to offset the impacts of air pollution."

4.0 MITIGATION MEASURES

This section presents any mitigation measures required during the operational phase of the Development in order to be commensurate with the calculated damage costs.

4.1 Mitigation Hierarchy

An IAQM position statement[16] recommends basic hierarchy principles for determining appropriate mitigation measures for a development scheme. These are as follows:

1. Preventing and Avoiding – the initial step should be to, if possible, prevent or avoid exposure to the pollutant by isolating or removing potential sources. The design process should take air quality into account.
2. Reduction and Minimisation – all options for avoiding exposure and preventing exposure should be implemented. Preference should be given to measures which are close to the potential source, then those which act on the pathway and finally measures close to the point of exposure.
3. Off-setting – compensating for impacts associated with the new development by contributing to air quality improvements elsewhere.

These hierarchy principles have been taken into account when suggesting appropriate measures for the development.

4.2 BMBC Air Quality Planning Guidance Mitigation Requirements

In line with BMBC's *Air Quality and Emissions Technical Planning Guidance* for 'major' developments Type 1, Type 2 and Type 3 mitigation measures should be included as part of the development. Table 4-1 displays these mitigation measures.

Table 4-1
Type 1, 2 and 3 Mitigation Measures

Mitigation Measure	
Type 1	1 charging point per unit (dwelling with dedicated parking)
Type 2	Travel Plan, including an agreed mechanism for discouraging high emission vehicle use and encouraging modal shift, as well as uptake of low emission fuels and technologies
	Improved pedestrian access to public transport
	New or improved bus stop infrastructure including shelters; raised kerbing; information displays
	Provision of subsidised or free public transport ticketing
	Site layout designed to encourage walking;
	Improved, convenient and segregated cycle paths to link to local cycle network
Type 3	Support measures to reduce the need to travel: • Alternative working practices; • Local sourcing of staff, products and materials; • Development and use of hub distribution centres employing low emission deliveries; and • Provision of discounted on-site shopping, eating, child-care, banking facilities.
	Support measures to reduce private car use: • Development of car clubs and car sharing with financial incentives and promotion;

[16] Institute of Air Quality Management, Position Statement - Mitigation of Development Air Quality Impacts, 2015.

	• Use of pooled low emission vehicles; • Provision of dedicated low emission shuttle bus; • Contribution to the emerging low emission vehicle infrastructure; • Contribution to low emission waste collection service; • Incentives for the take up of low emission vehicle technologies and fuels; and • Support driver training schemes.
	Measures to support improved public transport: • Provision of new or enhanced public transport services to the site; • Shuttle services to public transport interchange, rail station or park and ride facilities; • Support improving information services for public transport; • Promoting low emission bus service provision; and • Support air quality monitoring programmes.
	Further measures to promote cycling and walking: • Improvements to district walking and cycling networks including lighting, shelters and information points and timetables; • Support cycle and training awareness schemes; • Bike/e-bike hiring schemes; • Guaranteed ride home in emergencies; and • Support secure and safe cycle parking facilities.
	Further measures to promote sustainable travel plans: • Support local travel to school and school travel plan initiatives; • Marketing aimed at encouraging a switch to sustainable modes with incentives; • Promotion of subsidised/sponsored travel plan measures through social or other media; and • Supporting community/local organisation groups to promote sustainable travel.

4.3 Proposed Mitigation to be Implemented

4.3.1 Type 1

In line with BMBC's *Air Quality and Emissions Technical Planning Guidance*, electric vehicle (EV) charging will be provided for the scheme, with a 100% provision rate for all units with side drives and garages.

- 410 x 32Amp EV charging points which will be installed as part of the development. This equates to a charging point per dwelling plot.

However, it should also be noted that the following correspondence with BMBC[17], the BMBC technical officer states, *'the provision of electric vehicle charge points shall be separate to inclusion within the damage costs. There is a separate condition for the provision of electric vehicle charge points (condition 10 of 2020/0274)'*.

4.3.2 Type 2

A number of Type 2 mitigation measures have also proposed to be implemented as part of the Development:

- cycle parking at all dwellings, and
- a Travel Plan.

There is also the possibility of reducing the speed limit along Halifax Road from 60mph to 50mph.

The Travel Plan outlines the following measures that will also help to improve air quality:

[17] Email correspondence between SLR Consulting and Chris Shields, Technical Officer (Pollution Control) at BMBC, dated between 20th July 2021 and 13th August 2021.

- appoint a Travel Plan Co-ordinator (TPC) to oversee, implement and manage the TP;
- undertake a travel survey to help inform targets and trave patterns;
- production and distribution of a Travel Information Leaflet including key pedestrian routes and destinations, key cycle routes and public transport informationin order to encourage trips on foot, cycling and use of public transport;
- contribution towards the provision of two new bus stop poles and one shelter on Well House Lane and similar within the development;
- the TPC will encourage car sharing amongst residents and will facilitate matches. The Lift Share Car Share scheme will be promoted by the TPC;
- the Enterprise Car Club will be promoted by the TPC; and
- the TPC will encourage the use of electric vehicles and EVCPs will be provided for each dwelling.

4.3.3 Type 3

A S106 Sustainable Travel SPD including contribution towards upgrade of the local Railway station/parking nearby and sustainable travel is proposed.

4.3.4 Mitigation Costings

A summary of all the proposed mitigation measures which are able to be item costed are outlined in Table 4-1. These measures are subject to change if the post occupation travel surveys suggest that there is a high demand for any particular mode of sustainable transport.

Table 4-2
Costed Mitigation Measures

Mitigation Measures	Cost (£)
Travel Plan	15,000
410 x 32amp Electric Vehicle Charging (1 per dwelling) (£500/plot)	205,000
224 x specific cycle storage (£500/plot) (where the dwelling doesn't have a garage)	112,000
S106 Sustainable Travel SPD including contribution towards upgrade of the local Railway station/parking nearby and sustainable travel	400,000
Total	732,000
Total (minus EV Charging Points)	**527,000**

As indicated in Table 4-2, mitigation to the value of £527,000 (discounting the total costs for EV charging) is proposed to be included as part of commensurate mitigation for the Development.

The 'damage cost calculation' undertaken, as presented in Section 3.0, has determined a 5-year total NOx and PM_{10} cost of £129,144. The BMBC *Air Quality and Emissions Technical Planning Guidance* references the purpose of the 'damage cost calculation' as "[…] *the derived calculated damage costs for each major development are not for local authority use, but to assist the developer in assessing the proportionate financial commitment for the required mitigation*".

On the basis that the total cost of mitigation proposed is over and above the damage cost calculation, the emissions associated with the Development are considered to be fully mitigated through those measures proposed. Therefore, no additional 'further mitigation' contribution is considered to be required.

5.0 CONCLUSIONS

SLR Consulting has been commissioned to undertake an Air Quality Mitigation Strategy in order to address the pre-commencement condition associated with planning application for the proposed residential development at land south of Halifax Road, Penistone (BMBC application reference: 2020/0274).

An 'damage cost calculation' following the BMBC *Air Quality and Emissions Good Practice Planning Guidance* has been undertaken to scale the level of required mitigation compensation to negate the predicted impact. The calculated pollutant damage cost is £129,144.

Mitigation measures will be employed at the Proposed Development as detailed in Section 4.0. The mitigation measures include the following:

- Type 1 measure: EV charging points at each dwelling;
- Type 2 measure: cycle parking at each dwelling;
- Type 2 measure: Travel Plan; and
- Type 3 measure: S106 Sustainable Travel SPD.

The total value of the above mitigation is £527,000 (discounting the total costs for EV charging). This mitigation is proportionate to the calculated pollutant damage cost, and no further mitigation is considered to be required.

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