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Air Quality CONSULTANTS

Air Quality Mitigation Statement:

Land off Scamps Hill, Walstead Grange, Lindfield

February 2024

Experts in air quality management & assessment

Document Control

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Job Number	J20/14967A/10

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Document Status and Review Schedule

Report No.	Date	Status	Reviewed by
J20/14967A/10/3	14 February 2024	Final	Dr Denise Evans (Associate Director)

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1 Introduction

1.1 This report provides an Emissions Mitigation Statement for the proposed residential development (the 'Development') on land off Scamps Hill, Walstead Grange, Lindfield. Outline planning permission is being sought for the Development of up 90 dwellings.

1.2 Mid Sussex District Council (MSDC), as part of the Sussex-air partnership, has produced an Air Quality and Emissions Mitigation Guidance for Sussex document (Sussex Air, 2021) which aims to minimise the impacts new developments may have on local air quality. The guidance document provides a methodology for calculating damage costs and defines standard mitigation measures to be implemented by new developments across Sussex.

1.3 It has been agreed with the MSDC Senior Environmental Health Officer (EHO) that an air quality assessment is not required for the scheme; however, they have requested an Emissions Mitigation Statement, in line with the above guidance, to be produced. This report presents the calculated damage costs associated with emissions of nitrogen oxides (NOx) and fine airborne particulate matter ($PM_{2.5}$); it also describes the mitigation measures incorporated into the design for the operational phase, and an estimate of implementation costs for each measure for comparison with the calculated damage cost total.

1.4 The plan for the proposed Development is shown in Figure 1.

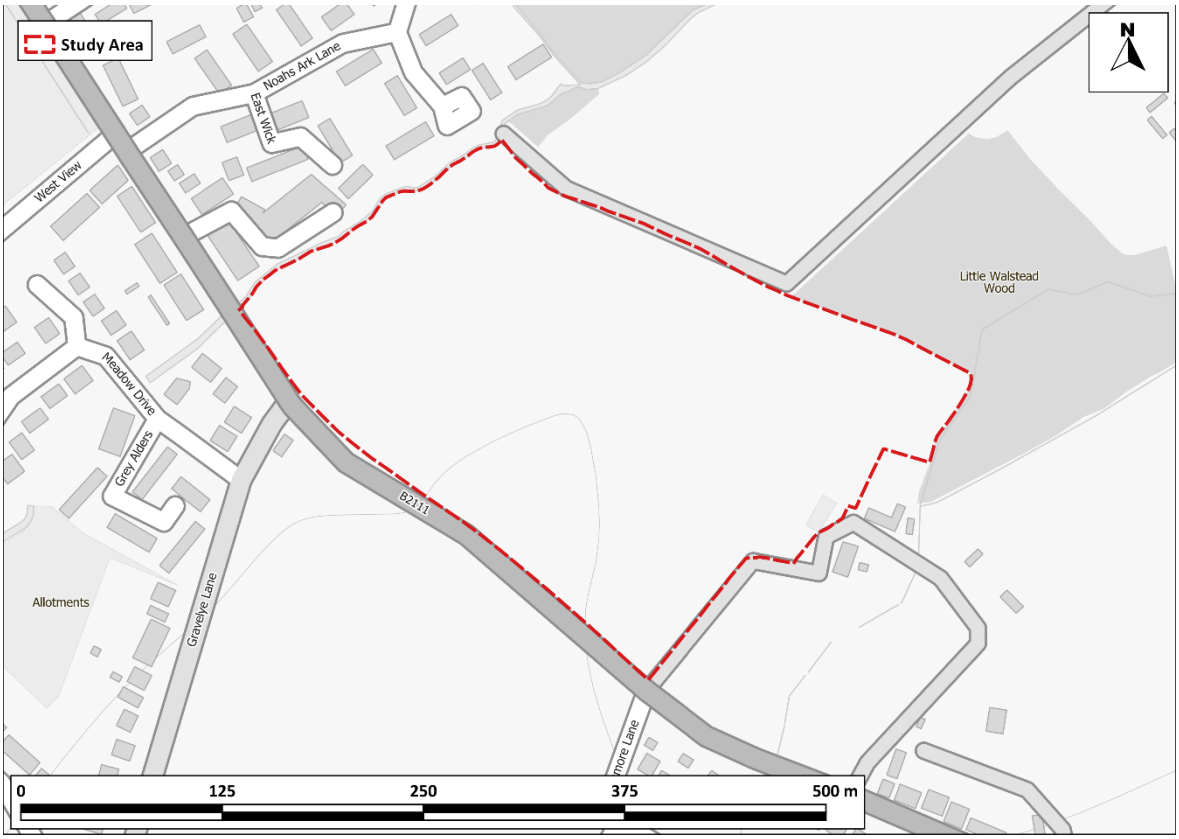

Figure 1: Proposed Development

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2 Assessment Approach

2.1 This assessment follows the approach agreed with MSDC via correspondence between Nicholas Bennett (Senior EHO at MSDC) and Ben Collier (Air Quality Consultants) during October and November 2023. Specifically, the following key points were discussed:

- an air quality assessment for the planning submission is not required, due to the traffic generation associated with the proposed Development being below published screening thresholds and locally measured roadside nitrogen dioxide concentrations being well below the relevant objective;
- an Emissions Mitigation Statement is required following the methodology set out in the Air Quality and Emissions Mitigation Guidance for Sussex (Sussex Air, 2021); and
- the preferred mitigation is to provide electric vehicle (EV) charging infrastructure.

Background

2.2 Defra developed the damage cost approach to enable proportionate analysis when assessing relatively small impacts on air quality. The damage costs are a set of impact values which were derived using the more detailed Impact Pathway Approach. These values estimate the societal costs associated with small changes in pollutant emissions, including effects on human health, biodiversity, and agricultural productivity. Combined with emission change estimates, they provide an approximate valuation of the aggregate societal impacts of a policy. Such impacts can then be set against the direct monetary costs of a scheme to provide a cost-benefit calculation. Thus, damage costs do not provide a figure for the abatement of emissions to a given level.

2.3 Abatement costs are usually derived from a marginal abatement cost curve (MACC) which gives the incremental cost of measures to achieve a certain outcome, such as the removal of an exceedance of the air quality objectives. However, the measures available and their associated costs are quite time-specific which means that they need to be updated on a regular basis. Defra's last MACC for NO_2 exceedances was produced several years ago and has now been withdrawn. There are therefore no Defra approved abatement costs for air quality currently available. Thus, while damage costs are not the same as abatement costs, they provide a current and available resource for assigning value to air pollution emissions.

Calculations

2.4 The calculation of damage costs has utilised the most recent Emission Factor Toolkit (EFT) (Version 11.0) (Defra, 2023a) to determine the Development's transport emissions. Defra's damage cost toolkit (Defra, 2023b) has then been used to determine the associated damage costs for those emissions.

2.5 The calculation process includes:

- identifying the vehicle trips that will be generated by the Development;
- calculating the emissions from these trips for the pollutants of concern (NOx and $PM_{2.5}$) using the EFT, for each of five assessment years, starting with the year of opening (2028). This calculation has assumed a 10 km trip length and an average speed of 50 kph in line with the requirements of the Air Quality and Emissions Mitigation Guidance for Sussex document (Sussex Air, 2021);
- calculating the damage costs for the specific pollutant emissions using the latest Defra's damage cost toolkit, based on the costs for Road Transport Urban Medium (DfT, 2023) and a price base year of 2022. The toolkit allows for reductions in emissions over time and applies a health discount rate in line with HM Treasury's Green Book (1.5%); and
- extracting the 'Central' total value for each pollutant and summing these for use as the damage cost total for the Development.

2.6 The transport consultants for the scheme (Ashley Helme Associates) have advised that the proposed Development will generate 560 two-way movements per day, of which 1.1% will be heavy duty vehicle movements.

3 Emissions Mitigation Assessment

3.1 The annual emissions from additional trips generated by the proposed Development in the five-year period between 2028 and 2032 have been calculated using the EFT (Defra, 2023a) and entered into Defra's damage cost toolkit (Defra, 2023b), as described in Section 2. The calculations and results are presented in Table 1.

3.2 Summing the values for NOx and $PM_{2.5}$ gives a total damage cost of **£20,935**.

Table 1: Damage Cost Calculation

Year	2028	2029	2030	2031[a]	2032 [a]
NOx					
Total Emissions (tonnes)	0.2536	0.2288	0.2079	0.2079	0.2079
Central Damage Cost (£/tonne) [b]	9,054	9,054	9,054	9,054	9,054
Discounted Central Benefit (£)	2,296	2,041	1,827	1,800	1,773
Central Present Value (£)	**£9,737**				
$PM_{2.5}$					
Total Emissions (tonnes)	0.0363	0.0362	0.0361	0.0361	0.0361
Central Damage Cost (£/tonne) [b]	63,766	63,766	63,766	63,766	63,766
Discounted Central Benefit (£)	2,315	2,275	2,236	2,203	2,170
Central Present Value (£)	**£11,198**				

[a] The EFT tool provides a warning regarding the use of its emission factors past 2030. To provide a conservative approach, values from 2030 have been used for all years past 2030.

[a] Road Transport Urban Medium.

4 Mitigation Measures and Implementation Costs

4.1 The Development is required to demonstrate the implementation of mitigation measures to improve air quality and reduce emissions, totalling at least £20,935.

4.2 Table 2 describes one of the mitigation measures which is being proposed and indicates the approximate monetary cost of its implementation.

Table 2: Key Mitigation and Costs

Item	Description	Approximate Cost (£)
1	Installation of a new pedestrian/cycle link, circa 180 m in length	34,200

4.3 The cost proposed in table 2 is considered an estimate. The cost is based on the amount estimated to resurface a cycle route (£0.19 million per km), contained within the Department for Transport's Typical Costs of Cycling Interventions document (Department for Transport, 2017). This cost does not consider any inflation or changes in pricing.

4.4 In addition to the measure outlined in Table 2, the proposed Development is assumed to comply with the electric vehicle requirements of the Building Regulations. Requirement S1 and regulation 44D set out by the UK Government's Infrastructure for the charging of electric vehicles approved document (HM Government, 2021) states:

1) "*A new residential building with associated parking must have access to electric vehicle charge points as provided for in paragraph (2).*

2) *The number of associated parking spaces which have access to electric vehicle charge points must be—*

   a) *the total number of associated parking spaces, where there are fewer associated parking spaces than there are dwellings contained in the residential building; or*

   b) *the number of associated parking spaces that is equal to the total number of dwellings contained in the residential building, where there are the same number of associated parking spaces as, or more associated parking spaces than, there are dwellings.*

3) *Cable routes for electric vehicle charge points must be installed in any associated parking spaces which do not, in accordance with paragraph (2), have an electric vehicle charge point where—*

   a) *a new residential building has more than 10 associated parking spaces; and*

b) there are more associated parking spaces than there are dwellings contained in the residential building."

4.5 Furthermore, bus stop enhancements are proposed on Graveley Lane. There are existing bus stops within approximately 240 m to 280 m of the site to encourage public transport use. It is proposed to upgrade these to provide shelters, real time information and low floor kerb access.

4.6 Overall, it can be concluded that the estimated costs of the measures to be implemented in the Development exceed the calculated damage cost (Table 1).

5 Conclusions

5.1 This report has set out the damage cost calculation and mitigation statement to support the outline planning application for the Development of up 90 dwellings on land off Scamps Hill, Walstead Grange, Lindfield. It has shown that the monetary cost of providing the mitigation designed into the Development will be in excess of the calculated air quality damage costs. It is thus concluded that no additional air quality mitigation is required.

5.2 As the proposed Development is an outline application, the exact configuration of the scheme is still to be determined. Once parking details are known, it is assumed that the scheme will comply with the electric vehicle requirements of the Building Regulations.

6 Glossary

AQC	Air Quality Consultants Ltd
Defra	Department for Environment, Food and Rural Affairs
EFT	Emissions Factor Toolkit
EV	Electric Vehicle
kph	Kilometres per hour
NO_x	Oxides of nitrogen
NO_2	Nitrogen dioxide
$PM_{2.5}$	Small airborne particles less than 2.5 micrometres in aerodynamic diameter

7 References

Defra (2023a) *Local Air Quality Management (LAQM) Support Website*, Available: http://laqm.defra.gov.uk/.

Defra (2023b) 'Damage Costs Appraisal Toolkit'.

Department for Transport (2017) *Typical Costs of Cycling Interventions*.

DfT (2023) *TAG Unit A5.4 Marginal External Costs*.

HM Government (2021) *Infrastructure for the charging of electric vehicles*.

Sussex Air (2021) *Air Quality and Emissions Mitigation Guidance for Sussex*.