

Emissions Mitigation Assessment

West Hoathly Brickworks, East Grinstead

October 2025

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1. Introduction

Client and Proposed Development

- 1.1 Phlorum Limited has been commissioned by CALA Homes (South Home Counties) to undertake an Emissions Mitigation Assessment for the proposed development of the West Hoathly Brickworks site, located at Hamsey Road, Sharpthorne, in East Grinstead.
- 1.2 The proposed development comprises 108 residential dwellings (Class C3) and associated works, including the provision of on-site SANG access, landscaping, parking and associated works. The layout of the proposed development is displayed in Figure 1.
- 1.3 The site is located within the administrative boundary of Wealden District Council (WDC), who are responsible for managing local air quality.
- 1.4 Full planning permission for the proposed development (application reference: DM/23/0827) was granted by WDC on 18th October 2024, pursuant to a number of planning conditions. One such condition, Condition 9, relates to an Emissions Mitigation Assessment, stating the following:

"Prior to the commencement of any development above ground/slab level, a scheme of mitigation measures to improve air quality relating to the development shall be submitted to, and approved in writing by, the Local Planning Authority. The scheme shall be in accordance with, and to a value derived in accordance with, the "Air Quality and Emissions Mitigation Guidance for Sussex" which is current at the time of the application. All works which form part of the approved scheme shall be completed before any part of the development is occupied and shall thereafter be maintained in accordance with the approved details."

Scope

- 1.5 This Emissions Mitigation Assessment has been undertaken to determine the proposed development's air quality 'damage' cost in accordance with the *Air Quality and Emissions Mitigation Guidance for Sussex* and outline the mitigation package being implemented within / alongside the proposed development, to offset the calculated cost, thereby providing the information necessary to allow for the discharge of Planning Condition 9.

2. Methodology

- 2.1 'Emissions Mitigation' or 'Damage Cost' Assessments provide an alternative way to assess the impact of a development on air quality and ensure that all developments, even those developments which are not expected to have a significant impact on air quality, include mitigation measures to offset any potential incremental impacts.

Guidance

- 2.2 This Emissions Mitigation Assessment has been produced in-line with the Sussex Air Quality Partnership's latest (2021) *Air quality and emissions mitigation guidance for Sussex*¹ (AQEMGFS).
- 2.3 The AQEMGFS, which has been developed by the Sussex Local Authorities, provides guidance on how Air Quality Assessments are carried out for new developments in Sussex. The AQEMGFS follows best-practice UK guidance and is aligned to the National Planning Policy Framework² and National Planning Practice Guidance³.
- 2.4 The calculation used in determining the proposed development's air quality 'damage' cost has been undertaken following the AQEMGFS and Defra's latest (2023) Damage Cost Guidance⁴. Defra's latest Emissions Factor Toolkit (EFT) (version 13.1)⁵ has been used to calculate vehicle emissions for use in the 'damage' cost calculation and Defra's latest (2023) *Damage Cost Toolkit*⁶ was used to determine the monetary value of additional emissions generated by the proposed development.
- 2.5 In-line with best-practice guidance from the Sussex-Air Partnership and Defra, the damage cost calculation has calculated the proposed development's air quality damage costs from traffic-related emissions of nitrogen oxides (NO_x) and fine particulate matter (PM_{2.5}).

1 Sussex Air Quality Partnership (2021). *Air quality and emissions mitigation guidance for Sussex* (2021).

2 Ministry of Housing, Communities and Local Government (2024). *National Planning Policy Framework*.

3 Planning Practice Guidance (PPG) 32. (Updated November 2019). Air Quality.

4 Defra (2023). *Air quality appraisal: damage cost guidance*. Available from: <https://www.gov.uk/government/publications/assess-the-impact-of-air-quality/air-quality-appraisal-damage-cost-guidance>

5 Defra (2025). *Emissions Factor Toolkit* (v13.1).

6 Defra (2023). *Air Quality Damage Costs Appraisal Toolkit*.

Emission Mitigation Assessment

- 2.6 The Sussex-Air Partnership's AQEMGFS advocates that a pollutant damage cost calculation should be undertaken to quantify damage costs associated with a proposed development. The calculated pollutant damage cost can then be used as a guide to determine the appropriate scale and kind of mitigation required to ensure a proposed development can offset its potential air quality impacts.

Pollutant Damage Cost Calculation

- 2.7 The pollutant damage cost calculation included within Chapter 3 of this report utilised Defra's latest available EFT (v13.1)⁵ to determine additional transport related emissions (NO_x & PM_{2.5}) expected to be generated by the proposed development.
- 2.8 The proposed development's transport related emissions were calculated based on traffic flows provided in Table 5.1 of the Air Quality Assessment⁷ submitted to accompany the full planning application.
- 2.9 The transport related emissions were then combined with Defra's latest 'damage costs', which are a set of impact values, defined per tonne of pollutant for use in damage cost calculations. Transport related emissions were combined with Defra's damage cost values in the following equation to calculate an approximate valuation of the cost to society caused by the proposed development:

$$EFT\ output \times Damage\ costs \times 5\ years = 5\ year\ exposure\ cost\ value\ (in\ £)$$

- 2.10 As a number of the inputs are based on assumptions, it is emphasised that the resulting figure should be treated with caution, but that it can be used to give an idea of the scale of a development in terms of total generated transport emissions and therefore a gauge of what level of mitigation might be appropriate.

7 Mayer Brown Limited (2023). *Air Quality Assessment for Proposed Residential Development at West Hoathly Brickworks, Sharpthorne*.

3. Pollutant Damage Cost

Damage Cost Calculation

- 3.1 The damage cost calculation undertaken below was carried out to estimate the monetary value of the impact of NO_x and PM_{2.5} emitted as a result of traffic expected to be generated by the proposed development, in-line with guidance from Defra and the AQEMGFS.
- 3.2 To evaluate the scale of the proposed development's increase in emissions, the damage cost calculation set out within Section 2.9 of this report has been utilised. Defra's latest EFT (v13.1)⁵ was used for determining total transport related emissions expected to be generated by the proposed development. The inputs used in this calculation are provided in Table 3.1, below.

Table 3.1: Damage Cost Calculation Inputs

Input	Value	Unit	Source / Guidance
Trip Length	10	km	AQEMGFS ¹
Total Traffic Generation	455 LDVs	AADT	Air Quality Assessment ⁷
EFT Road Type	Urban (not London)	-	EFT (v13.1) ⁵
EFT Year	2027 – 2031	-	Opening year + 4 years (In line with EFT estimates)
Average Speed	50	km.hr ⁻¹	AQEMGFS
Appraisal period	5	years	AQEMGFS

- 3.3 The total emission damage costs for NO_x and PM_{2.5} were calculated using Defra's latest air quality appraisal toolkit⁶, and are presented in Tables 3.2 and 3.3 below. The calculation accounts for an 'uplift factor' of 2% cumulatively per annum and a 'discount rate', in line with the latest damage cost guidance. Central estimate damage costs for *Road Transport Urban Small* were calculated based on Defra 2025 prices.

Table 3.2: Damage Cost Calculation for NO_x

	2027	2028	2029	2030	2031
NO _x increase (tonnes)	0.2426	0.2105	0.1804	0.1531	0.1291
Central Damage cost (NO _x)	£8,002	£8,002	£8,002	£8,002	£8,002
Adjusted Damage cost (NO _x)	£1,941	£1,659	£1,401	£1,171	£973
Total	£7,146				

Table 3.3: Damage Cost Calculation for PM_{2.5}

	2027	2028	2029	2030	2031
PM_{2.5} increase (tonnes)	0.0288	0.0284	0.0279	0.0276	0.0273
Central Damage cost (PM_{2.5})	£55,269	£55,269	£55,269	£55,269	£55,269
Adjusted Damage cost (PM_{2.5})	£1,594	£1,544	£1,499	£1,457	£1,419
Total	£7,514				

Note: Any discrepancies in Tables 3.2 and 3.3 due to rounding.

3.4 The total air quality damage costs are summarised as follows:

NO_x emission 'damage' (cost, £) = £7,416

PM_{2.5} emission 'damage' (cost, £) = £7,514

Total (cost, £) = £14,660

3.5 The total air quality 'damage' cost for the proposed development is, therefore, calculated as **£14,660**, following the latest guidance and using the latest tools provided by Defra.

4. Mitigation Package

- 4.1 The resultant 'damage' cost, as presented in Chapter 3 of this Emissions Mitigation Assessment, is indicative of the value of an appropriate package of mitigation to offset any potential air quality impacts arising from the proposed development's operation.
- 4.2 For all residential development considered as *major* under the AQEMGFS, the following mitigation measures should be included as a minimum:
- 🌱 All gas-fired boilers are expected to meet a minimum standard of <40mgNO_x/kWh, with consideration given to renewable sources of energy such as air source heat pumps (ASHPs); and
 - 🌱 Meet any applicable electric vehicle charging point (EVCP) standards set out within West Sussex County Council's (WSCC) *Guidance on Parking at New Development*⁸.
- 4.3 The proposed development is set to utilise a non-emitting heating and hot-water strategy, comprising of Air Source Heat Pumps (ASHPs), to meet heating and hot water demands. The position of each proposed ASHP is shown in the Site Layout Plan presented at Figure 1. There will be no use of gas-fired boilers and ASHPs do not directly emit air pollutants, thereby aligning with the requirements of the AQEMGFS.
- 4.4 In order to minimise emissions from private car usage, each of the proposed 108 residential dwellings will be provided with a 7kW EVCP, thereby aligning with the requirements on Building Regulations Part S⁹ and the WSCC parking guidance. The location of the proposed EVCPs is also displayed in Figure 1.
- 4.5 Additional mitigation measures focus on the encouragement of a modal shift away from private car usage and towards more sustainable modes of transport, in-line with recommendations from the AQEMGFS.
- 4.6 To this end, a Travel Plan¹⁰ was produced to accompany the planning application. The Travel Plan includes measures and mechanisms to encourage the use of public transport, walking and cycling as alternatives to private car use, thereby helping to encourage a model shift towards more active and sustainable means of transport.
- 4.7 As part of the Travel Plan, a welcome pack will be provided to future residents, providing information regarding local public transport services and walking and cycling networks, to encourage the use of public transport, walking and cycling as alternatives to private car use.

⁸ West Sussex County Council (2020). *Guidance for Parking at New Developments*.

⁹ The Building Regulations 2010. Part S of Schedule 1. *Infrastructure for the charging of electric vehicles*.

¹⁰ RGP Consulting Engineers Limited (2023). *Travel Plan for West Hoathly Brickworks, Sharpthorne, East Grinstead*.

- 4.8 Additionally, each dwelling will be provided with secure cycle storage spaces in accordance with WSCC standards, to help encourage a modal shift away from private car use towards more sustainable and active modes of transport, such as cycling. Improvements and connections to the local cycle network will also be provided.
- 4.9 Furthermore, cable-to-property broadband will be provided for each of the proposed dwellings to reduce private car usage by encouraging home-working.
- 4.10 Lastly, the proposed development will utilise green infrastructure, such as trees and shrubs, to help reduce the exposure of future occupants to air pollution.
- 4.11 The total costs associated with the provision of the emissions mitigation measures discussed in Sections 4.3 – 4.10 are set out in Table 4.1, below.

Table 4.1: Proposed Mitigation and Costs

Measure	No. of Units	Unit Cost (£)	Total Cost (£)
Electric Vehicle Charging Points (including on-street)	108	£1,000	£108,000
Air Source Heat Pumps	108	£5,000	£540,000
Travel Plan	-	-	-
Welcome Packs for Future Occupants	-	-	-
Secure Cycle Storage Spaces	108	£450	£48,600
Improvements / Connections to local cycle network	-	-	-
Cable to Property Broadband	-	-	-
Total Cost			£696,600

Note: The cost associated with many of the measures could not be quantified and as such, has been excluded from the calculation above.

- 4.12 The combined cost of the mitigation measures outlined in Table 4.1 equates to **£696,600** and therefore goes well beyond offsetting the 'emissions' cost (**£14,660**) calculated for the proposed development.
- 4.13 It should be noted that the value of many of the proposed mitigation measures could not be accurately quantified. Therefore, the actual value of the proposed mitigation package is expected to exceed £648,000.
- 4.14 The majority of the measures outlined within the mitigation package focus on reducing emissions from road transport and would therefore help to minimise any potential air quality impacts associated with the development's operational traffic.

5. Summary

- 5.1 CALA Homes (South Home Counties) commissioned Phlorum Limited to undertake an Emissions Mitigation Assessment for the proposed residential development of West Hoathly Brickworks, as granted planning permission by Mid Sussex District Council on 18th October 2024 under planning permission *DM/23/0827*.
- 5.2 Utilising the most recent available guidance from the Sussex-Air Partnership, and tools from Defra, an air quality 'damage' cost of **£14,660** was calculated for the proposed development. The value of this damage cost is indicative of the value of an appropriate mitigation package to be provided for the proposed development.
- 5.3 The proposed mitigation package focuses on reducing emissions from road transport, which is expected to be responsible for the majority of emissions from the development, noting that a zero emission heating and hot-water strategy is being utilised.
- 5.4 The mitigation package comprises of electric vehicle charging points for each of the proposed residential dwellings, along with a non-emitting heating and hot water strategy comprising Air Source Heat Pumps. In addition to these, a number of measures will be incorporated to encourage a modal shift towards sustainable modes of transport and away from private car use, including a Travel Plan and welcome packs, provision of cycle storage spaces and connections to the local cycle network, and cable-to-property fibre-optic broadband to encourage home-working. The proposed development will also utilise green infrastructure to help minimise the exposure of future occupants to air pollution.
- 5.5 The combined value of the proposed mitigation package (**£696,600**) is expected to go well beyond offsetting the calculated damage cost.
- 5.6 This Emissions Mitigation Assessment provides details of the proposed development's mitigation package, how this aligns with the Sussex Air Quality Partnership's guidance, and how this offsets the proposed development's damage cost, calculated using the latest available best-practice methods and tools. Therefore, it is considered that this report presents the information necessary to enable the discharge of Planning Condition 9.

Figures & Appendices

Figure 1: Site Layout Plan



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