

## Appendix 14.12 – Air Quality Damage Calculator

As the Proposed Development has been classified as 'Major' in line with the Barnsley (2021) SPG document, an evaluation of changes in vehicle related emissions ('damage costs' assessment) has been completed in line with the process set out in the guidance. Damage costs are a simple way to value changes in air pollution; they estimate the cost of a change in emissions of different pollutants.

The UK Government Website provides advice for policy appraisers on assessing the air quality impacts associated with both policies and projects.

This calculation has been based on the calculation on the DEFRA (2023) Air Quality Appraisal: Damage Cost Guidance, the Barnsley (2019) SPG and professional experience of undertaking similar assessments to carry out this valuation exercise. In summary, the method involved the following:

- The relevant emissions of pollutants from the scheme (tonnes per year) were quantified, in this case NO<sub>x</sub> and PM<sub>10</sub> emissions associated with traffic generated by the Development; and
- In order to reflect the assumption that willingness to pay for health will rise in line with economic growth; a further uplift of 2% per annum was applied from the current year of known costs (2022), through to 2026, to encompass the first full year of full occupation.

The following assumptions have been built into the damage calculation:

- EFT v11.0 to calculate quantum of emissions;
- Total Additional Daily Trips = 6,657 (38% HGV);
- Average Distance Travelled = 10 km (in line with Barnsley (2021) SPG); and
- Assumed Average Speed = 50 kph (in line with the EPUK & IAQM Guidance and Barnsley (2021) SPG).

Table 14.12.1 sets out the uplift central damage costs from 2026, and this calculation has then been multiplied to cover five years (in line with the guidance).

**Table 14.12.1: Air Quality Damage Calculation**

<b>Pollutant</b>	<b>2026 Average Link Emissions (tonne/annum)</b>	<b>2026 National Damage Costs Central (£/tonne)</b>	<b>5 year Present Valuation (£)</b>
NO <sub>x</sub>	5.35	12,644.97	338,005.64
PM <sub>10</sub>	1.24	56,923.87	351,936.01
		<b>Total</b>	<b>£689,941.66</b>

To note, the total damage costs provide an indication as to the costs associated with the effect from the Proposed Development on the wider area. The calculated figure will be put towards various mitigation measures listed with the Barnsley (2019) SPG document.

It is noted that there will be four units constructed, and therefore the damage cost calculated could be split based on the floor area of each unit. A summary of the distributed damage cost is provided below:

- Plot 1 – 52,815 m<sup>2</sup> - £184,709.31
- Plot 2 – 34,374 m<sup>2</sup> - £120,215.81
- Plot 3 – 78,038 m<sup>2</sup> - £272,921.43; and
- Plot 4 – 32,052 m<sup>2</sup> - £112,095.10.

To note, this calculated cost has been further split to consider the impacts of the Development on the village of Hickleton. The redistributed amount, which considers the cost of the damage in Hickleton, is set out in Appendix 14.14.