Technical Note

Date:	10/11/2021	**Ref:**	422.11899.00001
Subject:	Planning Application: Symmetry Park – Oxford North Air Quality Assessment – Damage Cost Calculation		

1.0 INTRODUCTION

This Technical Note has been provided following consultation responses from Cherwell District Council (CDC) Environmental Health Officer (EHO)[1] on the scope and approach to the air quality assessment supporting the above planning application, in which it was stated that a Damage Cost Calculation would be required.

2.0 CONTEXT

2.1 Policy Context

The Cherwell District Council Air Quality Action Plan[2] includes measure G.3 which states:

> *"Damage cost calculations to be included in air quality assessments to show the financial impact of developments"*

It includes the further comment that the measure is "*to be included in development management policies as part of Local Plan Part 2 development*".

At the current time the only policy specifically mentioning air quality within the 'Adopted Cherwell Local Plan 2011-2031 Part 1 (incorporating Policy Bicester 13 re-adopted on 19 December 2016)' is Policy SD10, which does not specifically require Damage Costs in relation to air quality. Policy ESD10 states:

> *Policy ESD10: Protection and Enhancement of Biodiversity and the Natural Environment Air Quality:*
>
> *"Protection and enhancement of biodiversity and the natural environment will be achieved by the following:*
>
> *[…]*
>
> *Air quality assessments will also be required for development proposals that would be likely to have a significant adverse impact on biodiversity by generating an increase in air pollution."*

There is no specific policy requiring damage cost calculation or any CDC Supplementary Planning Guidance setting out the Damage Cost Calculation requirements. Notwithstanding the above, a calculation and presentation of cost off-setting has been provided within this Technical Note following national and best practice guidance as detailed in Section 3.0 below.

2.2 Impacts on Air Quality Context

The Air Quality Assessment included within the Environmental Statement, sets out the impacts at relevant receptors close to traffic routes 'affected' by the scheme. The findings of the assessment are that impacts are 'negligible' and effects can be considered 'not significant' according to EPUK-IAQM guidance[3]. As such, long-term

[1] Email correspondence, Trevor Dixon, Environmental Protection & Enforcement Manager 16th July 2021

[2] Cherwell District Council, Air Quality Action Plan In fulfilment of Part IV of the Environment Act 1995 Local Air Quality Management (March 2017)

scheme-specific mitigation measures are not considered to be necessary. Notwithstanding, a number of measures are proposed to encourage future employees at the Site to travel by sustainable methods and away from the conventional fossil-fuel private vehicles (detailed further in Section 5.0).

3.0 METHODOLOGY

The Damage Cost Calculation has been undertaken in accordance with the methods prescribed within the following resources:

- Environmental Protection UK (EPUK) & Institute of Air Quality Management (IAQM): Land-Use Planning & Development Control[3]; and
- Department for Environment, Food and Rural Affairs (Defra): Air Quality Appraisal: Damage Cost Guidance[4].

Pollutant emissions costs associated with additional operational development trips over a 5-year period (from the first year of operation – i.e. 2024 to 2028) have been calculated. The latest version of Defra's Emission Factor Toolkit (EFT) (presently v10.1) has been used to determine vehicle emission factors for NOx and PM_{10} as input into the Damage Cost Calculation. As per applied guidance, calculated PM_{10} emissions have been multiplied by 0.635 ($PM_{10}/PM_{2.5}$ road traffic conversion factor) to derive a corresponding $PM_{2.5}$ annual emission estimate. Furthermore, annual calculated damage costs for NOx and $PM_{2.5}$ have been discounted in line with Defra guidance (as presented).

4.0 DAMAGE COST CALCULATION

Table 1-1 and Table 1-2 details the Damage Cost Calculation inputs and outputs, respectively.

Table 1-1
Damage Cost Calculation – Inputs

Parameter	Unit	Value
Total Trips (LDVs)	AADT	1,900
Average Trip Length	km	10
Speed	mph	30.0
NOx Damage Cost (Road Transport)	£/tonne	9,066
$PM_{2.5}$ Damage Cost (Road Transport)	£/tonne	81,518

Table 1-2
Damage Cost Calculation – Outputs

Parameter	Unit	Value				
Year	Year	2024	2025	2026	2027	2028
Annual NOx Emissions	Tonnes/year	1.31	1.19	1.07	0.96	0.86
Annual PM_{10} Emissions	Tonnes/year	0.22	0.22	0.22	0.22	0.22
Annual $PM_{2.5}$ Emissions	Tonnes/year	0.14	0.14	0.14	0.14	0.14
Annual NOx Damage Cost (Discounted)	£	15,659	13,923	12,348	10,901	9,631

[3] EPUK and IAQM, Land-Use Planning and Development Control: Planning for Air Quality, v1.2 2017.

[4] https://www.gov.uk/government/publications/assess-the-impact-of-air-quality/air-quality-appraisal-damage-cost-guidance

Annual $PM_{2.5}$ Damage Cost (Discounted)	£	14,857	14,588	14,339	14,102	13,875
Total Damage Cost	*£*	*134,223*				

In summary, over a 5-year period (commencing from 2024 – the assumed opening year of development), an aggregate emission cost has been calculated at £134,223.

5.0 OFFSETTING OF EMISSIONS

The above damage costs provide an indicator of the financial commitment required to off-set 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[5]:

> *"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."*

As part of the proposals at the Site, a Travel Plan will be in operation. This will seek to encourage future employees at the Site to travel by sustainable methods and away from conventional fossil-fuelled private car. There are a number of EV parking spaces proposed at the Site, which aligns with government policy. Furthermore, there are bus stops located adjacent to the Site and as such there are opportunities to promote and facilitate travel by bus to and from the Site. The approximate costs associated with these measures are provided below:

- Travel plan (consultancy, drafting, and implementation) = £25,000
- Electric Vehicle charging facilities (planning, installation, on-going maintenance) = £270,000
- Enhancement of bus-stops adjacent to the site (planning, installation, on-going maintenance) = £35,000

The total cost of these measures is £330,000, which fully off-sets the calculated damage cost.

6.0 CONCLUSION

In response to consultation responses from CDC, damage cost calculations have been undertaken. The calculated damage cost has been considered alongside measures in place to promote sustainable forms of transport and reduce reliance on the conventional fossil-fuelled private car. The costs of providing these measures (£330,000) fully off-set the calculated damage cost (£134,223).

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