



Response to Further Information Request, Reference: EPR/JP3020LL/A001

DATE:	31 October 2025	CONFIDENTIALITY:	Public
SUBJECT:	Environment Agency Further Information Request		
PROJECT:	Cory Decarbonisation Project	AUTHOR:	Conor Lyons
REVIEWED:	Matt Derbyshire	APPROVED:	Stuart Clayton

On 30/09/2025 Cory Environmental Holdings Limited, hereinafter referred to as Cory, submitted three environmental permit applications, as detailed below:

- Bespoke Environmental Permit Application for Cory Decarbonisation Project (EPR/JP3020LL/A001);
- Permit Variation Application for Riverside 1 (EPR/BK0825IU/V013); and
- Permit Variation Application for Riverside 2 (EPR/EP3245QR/V004).

Cory received a Request for Further Information (Ref: EPR/JP3020LL/A001) from the Regulator on 21/10/2025 for the information detailed below. This request has been made as the information requested is required to support the duly making process prior to determination.

1. ENERGY BALANCE

For Riverside 1 and 2 provide calculations to show what the energy efficiency will be when steam is being exported to the carbon capture plant as follows:

- i) Gross electrical efficiency based on portion of steam going to the condensing turbine to generate electricity and the electricity generated from that proportion of steam.
- ii) Gross energy efficiency based on portion of steam being exported to the back-pressure turbine and the amount of electricity produced and heat used from that portion of steam.

Note: The calculations shall use the method shown in the General Consideration of the waste incineration BAT Conclusions.

Applicant Response

As requested by the Environment Agency, the calculations from the General Conclusions of the Waste Incineration Bat Conclusions are included in Appendix A.

The calculations have been undertaken with current operational and design data. As the design continues to progress, the data is subject to change, and we will review and update accordingly.

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2. AIR QUALITY MODELLING

Please provide updated dispersion modelling to include the following:

- i) All incineration pollutants specified in IED chapter IV and the BAT conclusions. Currently missing are dioxins and furans, all group 3 metals (currently assessed as Nickel, but this is not worst-case), Polyaromatic Hydrocarbons (PAH) as Benzo[a]pyrene (BaP) and Polychlorinated Biphenyls (PCBs). ***[Note this is required because the emission location and dispersion characteristics are changing]***
- ii) An assessment of impacts from the proposed carbon capture facility at all relevant ecological receptors within the screening distances. The relevant habitat sites are listed in Table 7-2 of the Environmental Risk assessment, but some are missing from the air quality assessment:
 - (a) The following SSSIs are missing: Hangman’s Wood and Deneholes, Grays Thurrock Chalk Pit, Ruxley Gravel Pits, Thorndon Park, Curtismill Green, Crofton Woods, Farningham Wood, Swanscombe Peninsula, Hainault Forest, and Darenth Wood.
 - (b) The following local wildlife sites are missing: Lower River Beam and Ford Works Ditches, Wennington, Aveley and Rainham Marshes, Belvedere Dykes, Southmere Park and Yarnton Way, Dagenham Breach, Crossways Local Nature Reserve and Thameside Walk Scrub, Thamesview Golf Course, Crossway Park and Trump 52, The Ridgeway, Erith Marshes, Crossness Sewage Treatment Works Pond, St John the Baptist Churchyard, Franks Park, and River Thames and Tidal Estuaries.
- iii) The long-term (LT) and short-term (ST) emission concentrations and rates for nitrogen oxides and sulphur dioxide, presented in Table 4-2 of the AQA, appear to be the wrong way round. Please could this typo be corrected.

Applicant Response

As requested by the Environment Agency, the above questions (2i – 2iii) have been reviewed and answered in full within an addendum to the Air Emissions Risk Assessment, and is included in Appendix B.

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3. PUBLIC REGISTER

Before we put the application on the public register we need remove the director dates of birth from application form part A. However, the submitted pdf file cannot be edited. Please could you provide the following:

- i. Submit the application forms as a separate PDF file
- ii. Split the main pdf CCF application document into smaller PDF files to reduce the file size. We suggest having the drawings and the air quality assessment as separate pdfs. (This will make it easier for us to upload to citizen space and for people to access it from citizen space during the consultation).
- iii. Ensure PDFs documents have verified signatures. The current PDF has unverified signatures which means we are unable to edit it ourselves to split in smaller documents or redact personal information.

Applicant Response

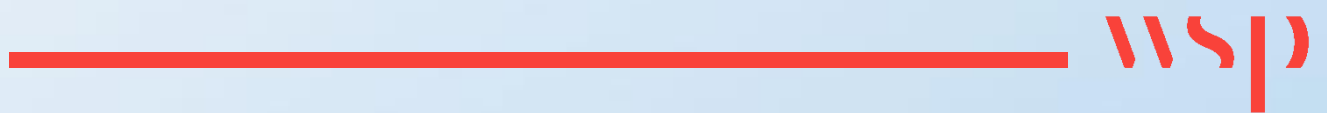
WSP has, as requested, prepared and re-submitted the individual application forms and supporting documents as separate PDF files to support the Regulator in their document management, reduce the file sizes and ease and support the process for the submission to be uploaded to the public register.

WSP has submitted the pdf documents with verified signatures, that gives editing permission so that the Regulator can further separate documents and redact information.

Application form Part A, for Cory Decarbonisation Project, Riverside 1 and Riverside 2 has been submitted with the directors' Date of Births Removed.

Appendix A

ENERGY BALANCE



Term	Description	R1	R2	CCF (each Train)
We	Electrical power generated (with CCF)	61.05	42.5	
	Power generation with diverted steam	48.25	29.7	12.8
Qhe	thermal power supplied to the heat exchangers on the primary side	0	0	0
Qde	directly exported thermal power (as steam or hot water) less the thermal power of the return flow	58.6	58.6	58.6
Qb	thermal power produced by the boiler (total)	219.3	175.6	N/A
	thermal power produced by the boiler (BPT)	74.21	69.68	
	thermal power produced by the boiler (ET)	145.09	105.92	
Qi	thermal power (as steam or hot water) that is used internally (e.g. for flue-gas reheating)	15	13.6	N/A
Qth	thermal input to the thermal treatment units (e.g. furnaces), including the waste and auxiliary fuels that are used continuously (excluding for example for start-up), in MWth expressed as the lower heating value.	242.2	204.7	N/A
Qth	Pro-rated for BPT only	81.96	81.23	
Qth	Pro-rated for ET only	160.24	123.47	

BPT - Gross Energy Efficiency	87.1%	87.9%
ET - Gross Electrical Efficiency	34%	28%

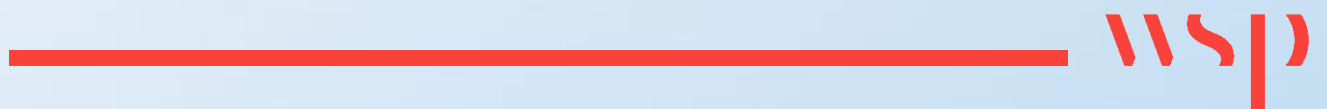
Gross electrical efficiency	$\eta_e = \frac{W_e}{Q_{th}} \times (Q_b - (Q_b - Q_i))$
Gross energy efficiency	$\eta_h = \frac{W_e + Q_{he} + Q_{de} + Q_i}{Q_{th}}$

Where:

- W_e : electrical power generated, in MW;
- Q_{he} : thermal power supplied to the heat exchangers on the primary side, in MW;
- Q_{de} : directly exported thermal power (as steam or hot water) less the thermal power of the return flow, in MW;
- Q_b : thermal power produced by the boiler, in MW;
- Q_i : thermal power (as steam or hot water) that is used internally (e.g. for flue-gas reheating), in MW;
- Q_{th} : thermal input to the thermal treatment units (e.g. furnaces), including the waste and auxiliary fuels that are used continuously (excluding for example for start-up), in MW_{th} expressed as the lower heating value.

Appendix B

AIR QUALITY MODELLING





Cory Environmental Holdings Limited

CORY DECARBONISATION PROJECT

Air Emissions Risk Assessment Addendum -
Response to Q2 of Request for Additional
Information Oct 2025





Cory Environmental Holdings Limited

CORY DECARBONISATION PROJECT

Air Emissions Risk Assessment Addendum - Response to
Q2 of Request for Additional Information Oct 2025

TYPE OF DOCUMENT (VERSION) PUBLIC

PROJECT NO.

OUR REF. NO. AQ03

DATE: OCTOBER 2025



Cory Environmental Holdings Limited

CORY DECARBONISATION PROJECT

Air Emissions Risk Assessment Addendum - Response to
Q2 of Request for Additional Information Oct 2025

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QUALITY CONTROL

Issue/revision	First issue
Remarks	Final v1.0
Date	31/10/2025
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Report number	AQ03

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1 INTRODUCTION

1.1 PURPOSE OF ADDENDUM

1.1.1. On October 21st, 2025, Environment Agency made a request for additional information in support of Application References: EPR/JP3020LL/A001, EPR/BK0825IU/V013, EPR/EP3245QR/V004.

1.1.2. With respect to air quality, the following requests were made:

Air quality modelling

2. Please provide updated dispersion modelling to include the following:

- i. All incineration pollutants specified in IED chapter IV and the BAT conclusions. Currently missing are dioxins and furans, all group 3 metals (currently assessed as Nickel, but this is not worst-case), Polyaromatic Hydrocarbons (PAH) as Benzo[a]pyrene (BaP) and Polychlorinated Biphenyls (PCBs). ***[Note this is required because the emission location and dispersion characteristics are changing]***
- ii. An assessment of impacts from the proposed carbon capture facility at all relevant ecological receptors within the screening distances. The relevant habitat sites are listed in Table 7-2 of the Environmental Risk assessment, but some are missing from the air quality assessment:
 - a) The following SSSIs are missing: Hangman's Wood and Deneholes, Grays Thurrock Chalk Pit, Ruxley Gravel Pits, Thorndon Park, Curtismill Green, Crofton Woods, Farningham Wood, Swanscombe Peninsula, Hainault Forest, and Darenth Wood.
 - b) The following local wildlife sites are missing: Lower River Beam and Ford Works Ditches, Wennington, Aveley and Rainham Marshes, Belvedere Dykes, Southmere Park and Yarnton Way, Dagenham Breach, Crossways Local Nature Reserve and Thameside Walk Scrub, Thamesview Golf Course, Crossway Park and Trump 52, The Ridgeway, Erith Marshes, Crossness Sewage Treatment Works Pond, St John the Baptist Churchyard, Franks Park, and River Thames and Tidal Estuaries.
- iii. The long-term (LT) and short-term (ST) emission concentrations and rates for nitrogen oxides and sulphur dioxide, presented in Table 4-2 of the AQA, appear to be the wrong way round. Please could this typo be corrected.

1.1.3. Sections 2 – 4 of this report provide the required information for Q2i to Q2iii respectively.

2 QUESTION 2i

2.1 OVERVIEW

2.1.1. The exhaust bulk parameters for the pre and post carbon capture stacks were provided in *Table 4-1* of the September 2025 Air Emissions Risk Assessment (AERA), with the pollutant emission limit values and mass emissions set out *Table 4-2* (minor correction made in Section 4 of this addendum). *Table 4-2* included, *inter alia*, emissions for:

- Cadmium and Thallium
- Mercury
- Group III Metals (Antimony, Arsenic, Chromium, Cobalt, Copper, Lead, Manganese, Nickel, Vanadium)

2.1.2. Emissions of Polycyclic Aromatic Hydrocarbons (PaH), Polychlorinated Biphenyls (PCB) and dioxins were not explicitly included in the AERA. PaH and PCB do not have emission limit values within the permits for either Riverside 1 or Riverside 2, whilst dioxins are assessed via intake through the foodchain rather than as an absolute concentration in air.

Metals

2.1.3. The air quality assessment levels (AQAL) for metals are provided in **Table 2-1** below.

2.1.4. *Table 2-1* of the AERA stated that Cadmium and Thallium were assessed as Cadmium, whilst 'other metals' were assessed as Nickel, and these metals were assumed to be emitted at the emission limit for their respective groups. The assessment results were reported in *Table 5-1* as a maximum anywhere within the study area and *Table 5-2* as a maximum within residential areas.

2.1.5. With respect to the Cadmium and Thallium group, there are no Environmental Assessment Levels for Thallium and, therefore, no additional assessment is required for this metal. Similarly, the assessment of Mercury was fully reported in the AERA and no additional information is required for this metal.

2.1.6. With respect to Group III metals, Nickel was reported as a worst case, since it has a low environmental assessment level and is the Group III metal emission reported at the highest rate within Environment Agency guidance document: *Guidance on assessing group 3 metal stack emissions from incinerators, version 4*. Notwithstanding this, the assessment results for the full suite of Group III metals are provided below, with the exception of Cobalt for which no environmental assessment levels have been published by Environment Agency.

2.1.7. The emission concentrations and mass emission rates in **Table 2-2** below. For Group III metals, emission rates are provided for the group as a whole ('Other Metals', taken from the permits for Riverside 1 – BK0825IU/V009 and Riverside 2 – GP3535QS) and, following Environment Agency guidance, at the maximum emission concentration reported to the Environment Agency for currently permitted facilities (as reported in *Guidance on assessing group 3 metal stack emissions from incinerators, version 4*). Mass emissions are assumed to be unchanged with the installation of carbon capture.

2.1.8. Background concentrations for metals were taken to be the maximum concentration reported for the UK's Heavy Metals monitoring network sites at London Westminster and London Marylebone Road in 2024.

PAH and PCB

- 2.1.9. The air quality assessment levels (AQAL) for PAH (as benzo(a)pyrene) and PCB are provided in **Table 2-1** below and the emission concentrations and mass emission rates are provided in **Table 2-2**.
- 2.1.10. Neither PAH nor PCB have emission limit values in the current environmental permits. Therefore, following the permit application for Riverside 2 (Dec 2018, Air Quality Assessment Dispersion Modelling Report):
- Emissions of PAH are assumed to occur at 0.105ug/Nm³ which is the highest recorded emission concentration of benzo(a)pyrene (BaP) from the EA's public register.
 - Emissions of PCB are taken to be 0.005mg/Nm³, reported as obtained from the Waste Incineration BAT Reference Document.
- 2.1.11. Background concentrations of PAH and PCB are taken from London Marylebone Road (2024) and London Nobel House (2023) respectively.

Dioxins

- 2.1.12. The emission concentrations and mass emission rates for Dioxins are provided in **Table 2-2**.
- 2.1.13. The emission limit value is 0.06 ng-ITEQ/Nm³ for both Riverside 1 and Riverside 2, as specified within their current permits.
- 2.1.14. Background concentrations of dioxins are not considered since there are no air quality assessment levels for dioxins.

Table 2-1 – Environmental standards (AQAL) for the assessment of impacts on human health

Emission	Long Term AQAL (µg/m³)		Short Term AQAL (µg/m³)		Origin
	Standard (µg/m³)	Averaging Period	Standard (µg/m³)	Averaging Period	
Combustion Emissions (BECCS and non-BECCS sources)					
Cadmium	0.005	Annual Mean	0.03	Daily Mean	Air Quality Standards Regulations 2010 (Target Value) Non-statutory EAL, derived by Environment Agency
Thallium	No published EAL / Targets / Limit Values / Objectives				
Antimony	5	Annual Mean	150	Hourly Mean	Non-statutory EAL, derived by Environment Agency
Arsenic	0.006	Annual Mean	None published		Air Quality Standards Regulations 2010 (Target Value)
Chromium	2	Daily Mean	None published		Non-statutory EAL, derived by Environment Agency
Chromium VI	0.00025	Annual Mean	None published		Non-statutory EAL, derived by Environment Agency
Cobalt	No published EAL / Targets / Limit Values / Objectives				
Copper	0.05	Daily Mean	None published		Non-statutory EAL, derived by Environment Agency
Lead	0.25	Annual Mean	None published		Air Quality Standards Regulations 2010 (Limit Value)
Manganese	0.15	Annual Mean	1500	Hourly Mean	Non-statutory EAL, derived by Environment Agency
Nickel	0.02	Annual Mean	0.7	Hourly Mean	Air Quality Standards Regulations 2010 (Target Value) Non-statutory EAL, derived by Environment Agency
Vanadium	1	Annual Mean	None published		Non-statutory EAL, derived by Environment Agency
Dioxins/furans	No published EAL / Targets / Limit Values / Objectives				
Benzo[a]pyrene	0.25ng/m³	Annual Mean	None published		UK Air Quality Strategy Objective

Emission	Long Term AQAL ($\mu\text{g}/\text{m}^3$)		Short Term AQAL ($\mu\text{g}/\text{m}^3$)		Origin
	Standard ($\mu\text{g}/\text{m}^3$)	Averaging Period	Standard ($\mu\text{g}/\text{m}^3$)	Averaging Period	
PCBs	0.2	Annual Mean	6	Hourly Mean	Non-statutory EAL, derived by Environment Agency

Table 2-2 – Proposed (With Carbon Capture) and Existing (Baseline) Emission Limit Values and equivalent mass emission rates at full load operation. (LT = Long Term, ST = Short Term)

Emission	Concentration (mg/Nm3 @ 11%O2, dry)				Emission Rate (g/s)				
	Baseline		With Carbon Capture		Baseline			With Carbon Capture	
	Riverside 1 (A1, A2, A3)	Riverside 2 (A1, A2)	CC1	CC2	R1	R2-A1	R2-A2	CC1	CC2
	As presented in AERA Table 4-2								
Cadmium and Thallium - LT	0.02	0.02	No change to mass emissions in post carbon capture flue gases		0.00306	0.00136	0.00136	0.00306	0.00272
Mercury - ST/LT	0.02	0.02			0.00306	0.00136	0.00136	0.00306	0.00272
Group III Metals - LT	0.3	0.3			0.0459	0.0204	0.0204	0.0459	0.0408
	Additional Information Requested (Group III metal emissions following Environment Agency guidance note)								
Antimony – ST/LT	0.0115	0.0115	No change to mass emissions in post carbon capture flue gases		0.00176	0.000782	0.000782	0.00176	0.001565
Arsenic – LT	0.0250	0.0250			0.00383	0.00170	0.00170	0.00383	0.00340
Total Chromium – LT	0.0920	0.0920			0.0141	0.00626	0.00626	0.0141	0.01252
Copper – LT	0.0290	0.0290			0.00444	0.00197	0.00197	0.00444	0.00395
Lead – LT	0.0503	0.0503			0.00770	0.00342	0.00342	0.00770	0.00684
Manganese – ST / LT	0.0600	0.0600			0.00918	0.00408	0.00408	0.00918	0.00816

Emission	Concentration (mg/Nm ³ @ 11%O ₂ , dry)				Emission Rate (g/s)				
	Baseline		With Carbon Capture		Baseline			With Carbon Capture	
	Riverside 1 (A1, A2, A3)	Riverside 2 (A1, A2)	CC1	CC2	R1	R2-A1	R2-A2	CC1	CC2
Nickel – ST / LT	0.220	0.220			0.0337	0.0150	0.0150	0.0337	0.0299
Vanadium – LT	0.0060	0.0060			0.000918	0.000408	0.000408	0.000918	0.000816
Chromium VI – LT	1.3 x 10 ⁻⁴	1.3 x 10 ⁻⁴			1.99E-05	8.85E-06	8.85E-06	1.99E-05	1.77E-05
Cadmium – ST/LT	0.02	0.02			0.00306	0.00136	0.00136	0.00306	0.00272
PAH as benzo(a)pyrene - LT	105 ng/Nm ³	105 ng/Nm ³			1.61E-05	7.14E-06	7.14E-06	1.61E-05	1.43E-05
PCB – ST / LT	0.005	0.005			0.000765	0.000340	0.000340	0.000765	0.000680
Dioxins/furans – LT	0.06 ng- ITEQ/Nm ³	0.06 ng- ITEQ/Nm ³			0.00918 µg/s	0.00408 µg/s	0.00408 µg/s	0.00918 µg/s	0.00816 µg/s

2.2 MODELLED IMPACTS

- 2.2.1. A summary of the modelled impacts is shown in **Table 2-3** for the point of maximum impact anywhere within the study area, and **Table 2-4** for the maximum impact at residential receptors. These expand on data provided in *Table 5-1* and *Table 5-2* of the AERA.
- 2.2.2. The baseline and with carbon capture modelled concentrations for each year are provided in **Appendix A**.
- 2.2.3. Note that in terms of the impact of the installation of carbon capture, there are both adverse and beneficial changes in ground level concentrations. In the following tables, only the maximum adverse impacts are provided.

Metals

- 2.2.4. For Cadmium, with emissions assumed to occur at the emission limit value, the short term PC is insignificant (6.2% of the AQAL, which is less than the screening criteria of 10%). As noted in AERA, the long term PC cannot be screened as insignificant, but the PEC is <70% and the impacts are, therefore, negligible.
- 2.2.5. Step 1 of the Environment Agency guidance for assessing Group III metals requires the PC to be considered for each metal with emissions, individually, at the emission limit value. This was undertaken for Nickel in the AERA and the PC itself did not screen as insignificant (7.1% of the long term AQAL, and 31% of the short term AQAL). If this exercise were to be repeated for all other metals, then Arsenic, Copper and Chromium (most notably Chromium VI) would also exceed the insignificance screening criteria.
- 2.2.6. Moving to Step 2 of the Environment Agency guidance, the PC is assessed with metal emissions at the maximum concentrations set in the guidance (as shown in **Table 2-2**). In this case, all metals screen as insignificant at the point of maximum impact except Arsenic (2% of the long term AQAL), Copper (5.4% of the AQAL) and Nickel (22.4% of the short term AQAL, and 5.2% of the long term AQAL). However, for these pollutants, there is no risk of exceedance of the AQAL and the impact is negligible.
- 2.2.7. At residential receptors, concentrations are markedly lower than at the point of maximum impact. The impacts still do not screen as insignificant for Arsenic, Copper and Nickel but as noted above, there is no risk of exceedance of the AQAL. Furthermore, the assessment remains conservative since it is based on the maximum recorded emission concentrations within the EA guidance. Impacts screen as insignificant for all Group III metals if modelled at typical emission concentrations within the EA guidance.

PAH and PCBs

- 2.2.8. The PCs for PAH and PCBs screen as insignificant, both as a maximum within the study area and at residential properties.

Dioxins

- 2.2.9. There is no ambient air standard for dioxins. However, it is readily apparent from **Table 2-3** and **Table 2-4** that maximum concentrations of dioxins **decreases** between the baseline and the with carbon capture scenarios, from 2.35fg-ITEQ/m³ to 1.52fg-ITEQ/m³ as a maximum within the study area.

- 2.2.10. Detailed assessments of dioxin intake were undertaken for the Riverside 2 DCO application (December 2018, SCO Application ES Appendix – Human Health Risk Assessment) and shown to be well below the tolerable daily intake, even when using worst case assumptions for the level of consumption of local produce e.g. maximum intake for adult farmers and their children of 0.06 and 0.08pg I-TEQ/kgBW/day respectively versus a tolerable daily intake of 2pg I-TEQ/kgBW/day.
- 2.2.11. Since the intake for any receptor is directly proportional to the concentration of dioxins in air and taking into account the reduction in maximum concentrations between the baseline and with carbon capture scenarios, it is robust to conclude that future dioxin intake with the carbon capture plant will be similarly well within the tolerable daily intake. As such, no significant health effects are likely.

Table 2-3 – Maximum Baseline and With Carbon Capture contributions to ground level concentration, plus the maximum With Carbon Capture PC (With Carbon Capture minus Baseline). Units: $\mu\text{g}/\text{m}^3$ for all except PAH (pg/m^3) and Dioxins (fg/m^3)

Pollutant	Averaging Period	AQAL	Max Baseline PC	Max With Scheme PC	Max Adverse Impact	Max Impact as % of EAL	Back-ground	PEC	PEC as % of EAL	Insignificant
<i>As reported in AERA Table 5-1</i>										
Cadmium and Thallium	Annual Mean	0.005	0.00078	0.00051	0.000095	1.9%	0.0001	0.00	12.1%	Negligible
Mercury	Hourly Mean	0.6	0.014	0.020	0.014	2.4%	0.02	0.04	6.6%	Yes
	Daily Mean	0.06	0.0067	0.0041	0.0018	3.1%	0.01	0.01	23.5%	Negligible
Other Metals	Annual Mean	0.02	0.0118	0.0076	0.0014	7.1%	0.002	0.01	45.9%	Negligible
<i>Additional Information Requested</i>										
Antimony	Hourly Mean	150	0.0081	0.0114	0.0082	0.01%		0.0114	0.01%	Yes
	Annual Mean	5	0.00045	0.00029	0.000054	0.00%		0.00029	0.01%	Yes
Arsenic	Annual Mean	0.006	0.00098	0.00063	0.000118	2.0%	0.00073	0.00136	22.6%	Negligible
Total Chromium	Daily Mean	2	0.031	0.019	0.0085	0.4%	0.007	0.026	1.3%	Yes
Copper	Daily Mean	0.05	0.010	0.006	0.0027	5.4%	0.025	0.031	62.4%	Negligible
Lead	Annual Mean	0.25	0.0020	0.0013	0.00024	0.10%	0.0054	0.0066	2.7%	Yes
Manganese	Hourly Mean	1500	0.042	0.059	0.043	0.003%	0.023	0.083	0.006%	Yes
	Annual Mean	0.15	0.0024	0.0015	0.00028	0.19%	0.0117	0.0132	8.8%	Yes
Nickel	Hourly Mean	0.7	0.155	0.218	0.157	22.4%	0.004	0.221	31.6%	Negligible
	Annual Mean	0.02	0.0086	0.0056	0.00104	5.2%	0.0018	0.0073	36.6%	Negligible
Vanadium	Annual Mean	1	0.00024	0.00015	0.00003	0.003%	0.0011	0.0013	0.1%	Yes
Chromium VI	Annual Mean	0.00025	0.0000059	0.0000038	0.00000071	0.3%		0.0000038	1.5%	Yes
Cobalt	Annual Mean		0.00022	0.000139	0.000026		0.00022	0.00036		Yes
Cadmium	Daily Mean	0.03	0.0067	0.0041	0.0018	6.2%	0.00020	0.0043184	14.4%	Yes
	Annual Mean	0.005	0.00078	0.00051	0.00009	1.9%	0.00010	0.0006040	12.1%	Negligible

Pollutant	Averaging Period	AQAL	Max Baseline PC	Max With Scheme PC	Max Adverse Impact	Max Impact as % of EAL	Back-ground	PEC	PEC as % of EAL	Insig-nificant
PAH as benzo(a)pyrene	Annual Mean	250	4.12	2.65	0.50	0.2%	60.3	63.0	25.2%	Yes
PCB	Hourly Mean	6	0.0035	0.0049	0.0036	0.1%	0.00008	0.0050320	0.1%	Yes
	Annual Mean	0.2	0.00020	0.00013	0.00002	0.01%	0.00004	0.0001673	0.1%	Yes
Dioxins	Annual Mean		2.35	1.52	0.28					Yes

Table 2-4 – Maximum Baseline and With Carbon Capture contributions to ground level concentration at residential receptors, plus the maximum With Carbon Capture PC (With Carbon Capture minus Baseline). Units: $\mu\text{g}/\text{m}^3$ for all except PAH (pg/m^3) and Dioxins (fg/m^3)

Pollutant	Averaging Period	AQAL ($\mu\text{g}/\text{m}^3$)	Max Baseline PC	Max With Scheme PC	Max Adverse Impact	Max Impact as % of EAL	Back-ground	PEC	PEC as % of EAL	Insig-nificant
As reported in AERA Table 5-2										
Cadmium and Thallium	Annual Mean	0.005	0.00025	0.00023	0.000056	1.1%	0.0000			Likely
Mercury	Hourly Mean	0.6	0.009	0.011	0.004	0.6%	0.02	0.03	5.1%	Yes
	Daily Mean	0.06	0.0028	0.0034	0.0012	2.0%	0.01	0.01	22.4%	Negligible
Other Metals	Annual Mean	0.02	0.0037	0.0034	0.0008	4.2%	0.000			Likely
Additional Information Requested										
Antimony	Hourly Mean	150	0.0050	0.0061	0.0022	0.00%		0.0061	0.00%	Yes
	Annual Mean	5	0.00014	0.00013	0.000032	0.00%		0.00013	0.00%	Yes
Arsenic	Annual Mean	0.006	0.00031	0.00028	0.000070	1.2%	0.00000	0.00028	4.7%	Negligible
Total Chromium	Daily Mean	2	0.013	0.016	0.0054	0.3%	0.000	0.016	0.8%	Yes
Copper	Daily Mean	0.05	0.004	0.005	0.0017	3.4%	0.000	0.005	10.0%	Negligible
Lead	Annual Mean	0.25	0.0006	0.0006	0.00014	0.06%	0.0000	0.0006	0.2%	Yes

Pollutant	Averaging Period	AQAL (ug/m3)	Max Baseline PC	Max With Scheme PC	Max Adverse Impact	Max Impact as % of EAL	Back-ground	PEC	PEC as % of EAL	Insig-nificant
Manganese	Hourly Mean	1500	0.026	0.032	0.012	0.001%	0.000	0.032	0.002%	Yes
	Annual Mean	0.15	0.0007	0.0007	0.00017	0.11%	0.0000	0.0007	0.5%	Yes
Nickel	Hourly Mean	0.7	0.095	0.117	0.043	6.1%	0.000	0.117	16.7%	Negligible
	Annual Mean	0.02	0.0027	0.0025	0.00062	3.1%	0.0000	0.0025	12.5%	Negligible
Vanadium	Annual Mean	1	0.00007	0.00007	0.000017	0.002%	0.00000	0.00007	0.0%	Yes
Chromium VI	Annual Mean	0.00025	0.0000018	0.0000017	0.00000042	0.2%		0.0000017	0.7%	Yes
Cobalt	Annual Mean		0.00007	0.000062	0.000015		0.00000	0.00006		Yes
Cadmium	Daily Mean	0.03	0.0028	0.0034	0.0012	3.9%	0.00000	0.0034451	11.5%	Yes
	Annual Mean	0.005	0.00025	0.00023	0.00006	1.1%	0.00000	0.0002269	4.5%	Negligible
PAH as benzo(a)pyrene	Annual Mean	250	1.29	1.19	0.29	0.1%	60.3	61.5	24.6%	Yes
PCB	Hourly Mean	6	0.0022	0.0027	0.0010	0.0%	0.00008	0.0027434	0.0%	Yes
	Annual Mean	0.2	0.00006	0.00006	0.00001	0.01%	0.00004	0.0000977	0.0%	Yes
Dioxins	Annual Mean		0.74	0.68	0.17					Yes

3 QUESTION 2ii

3.1 SITES AND ASSESSMENT STANDARDS

- 3.1.1. The Environment Agency identified a number of sites designated for nature conservation that were omitted from the AERA. These comprised:
- 10 Sites of Special Scientific Interest (SSSI)
 - 14 Sites of Importance for Nature Conservation (SINC)
- 3.1.2. For the SSSIs, it is noted that the identified sites are between 10 and 15km from the carbon capture plant and outside of the typical screening distance for SSSIs. For the AERA, only Epping Forest SSSI was included outside of 10km from the plant on the grounds that it may provide supporting habitat for the Epping Forest SAC.
- 3.1.3. The SINCs all lie within 2km of the plant.
- 3.1.4. The sites and their relevant critical loads and levels are provided in **Table 3-1**.
- 3.1.5. **Table 3-2** shows the background concentrations and deposition at each site.
- 3.1.6. For the SSSIs, background nitrogen oxides concentrations are generally within the critical level, with the exception of Swanscombe peninsula, whereas nitrogen deposition exceeds the critical load over all sites. Sulphur dioxide concentrations are within the critical level everywhere, but ammonia concentrations exceed the critical level where the critical level is $1\mu\text{g}/\text{m}^3$.
- 3.1.7. For the SINCs, exceedances of the critical level for nitrogen oxides occur over multiple sites but nitrogen deposition is within the critical load for all sites. Sulphur dioxide concentrations are within the critical level everywhere. Ammonia concentrations are close to $1\mu\text{g}/\text{m}^3$ and exceedance of the critical level is widespread where the critical level is $1\mu\text{g}/\text{m}^3$.

Table 3-1 – Environmental standards for the assessment of impacts on sites designated for nature conservation. (Moorland/Forest refer to deposition velocity classes for non-woodland and woodland habitats respectively)

Ecological Site	Critical Levels ($\mu\text{g}/\text{m}^3$)			Critical Loads		
	Nitrogen Oxides	Sulphur Dioxide	Ammonia	Most Sensitive Habitat/species in Study Area	Nitrogen Deposition ($\text{kgN}/\text{ha}/\text{yr}$)	Acid Deposition ($\text{keq}/\text{ha}/\text{yr}$) (minimum CL_{minN} CL_{maxN} CL_{maxS})
SSSI						
Hangman's Wood and Deneholes	Annual Mean: 30 Daily Mean 200	Annual Mean 10	3	Mixed species	5 ^s – Moorland 5 ^s – Forest	<i>Not sensitive</i>
Grays Thurrock Chalk Pits			3	Invertebrate assemblage	5 ^s – Moorland 5 ^s – Forest	<i>Not sensitive</i>
Ruxley Gravel Pits			3	Lowland open water and margin	5 ^s – Moorland	<i>Not sensitive</i>
Thorndon Park			1	Invertebrate assemblage Deciduous forest	5 ^s – Moorland 15 – Forest	0.142 2.065 1.708 - Forest
Curtismill Green			3	Low and medium altitude hay meadow	10 - Moorland	1.071 5.071 4.000 - Moorland
Crofton Wood			1	Deciduous forest	10 - Forest	0.0285 1.223 0.938 – Forest
Farningham Wood			1	Deciduous forest Dianthus armeria	5 ^s – Moorland 15 – Forest	0.142 1.507 1.365 - Forest
Swanscombe Peninsula			3	Invertebrate assemblage	5 ^s – Moorland	<i>Not sensitive</i>
Hainault Forest			1	Deciduous forest	5 ^s – Forest	0.357 2.907 2.550 - Forest
Darenth Wood			1	Invertebrate assemblage Deciduous forest	5 ^s – Moorland 15 – Forest	0.142 1.340 1.198 - Forest
SINC						
Lower River Beam and Ford Works Ditches		Annual Mean 10	1	<i>No data</i>	30 ⁺ – Moorland	<i>No data</i>

Ecological Site	Critical Levels (µg/m³)			Critical Loads		
	Nitrogen Oxides	Sulphur Dioxide	Ammonia	Most Sensitive Habitat/species in Study Area	Nitrogen Deposition (kgN/ha/yr)	Acid Deposition (keq/ha/yr) (minimum CL _{min} N CL _{max} N CL _{max} S)
Wennington, Aveley and Rainham Marshes	Annual Mean: 30 Daily Mean 200		1		20 [†] – Moorland	
Belvedere Dykes			1		30 [†] – Moorland	
Southmere Park & Yarnton Way/Viridion Way			1		30 [†] – Moorland	
Dagenham Breach and the lower Beam River in Dagenham			1		30 [†] – Moorland	
Crossways Lake Nature Reserve and Thameside Walk Scrub			1		20 [†] – Moorland	
Thamesview Golf Course			1		30 [†] – Moorland	
Crossway Park and Tump 52			1		20 [†] – Moorland	
The Ridgeway			1		20 [†] – Moorland	
Erith Marshes			1		20 [†] – Moorland	
Crossness SWT Pond			1		30 [†] – Moorland	
St John the Baptist Churchyard, Erith			1		20 [†] – Moorland	
Franks Park, Belvedere			1		20 [†] – Moorland	
River Thames and tidal tributaries			1		30 [†] – Moorland	
§ No CLs provided on APIS but habitat/species marked as potentially sensitive to nitrogen deposition, with decision required at site specific level. 5kgN/ha/yr used as default						
† Assessed by project ecologist						

Table 3-2 – Background pollutant concentration and deposition over sites designated for nature conservation. Values in bold exceed either the critical level or critical load.

Ecological Site	Pollutant Concentrations (µg/m ³)			Deposition	
	Nitrogen Oxides	Sulphur Dioxide	Ammonia	Nitrogen Deposition (kgN/ha/yr)	Acid Deposition (keq/ha/yr) [§]
SSSI					
Hangman's Wood and Deneholes	24.59	2.6	1.07	23.91 - F 12.52 - M	
Grays Thurrock Chalk Pits	27.34	3.53	1.08	23.96 - F 12.55 - M	
Ruxley Gravel Pits	26.1	1.67	1.03	12.81 - M	
Thorndon Park	19.53	1.98	1.09	24.58 - F 12.87 - M	2.065 - F
Curtismill Green	22.09	1.47	1.23	13.39 - M	1.02 - M
Crofton Wood	19.85	1.35	1.02	24.79 - F	1.84 - F
Farningham Wood	24.72	1.42	1.02	24.14 - F 12.93 - M	1.81 - F
Swanscombe Peninsula	36.12	3.76	1.06	12.49 - M	
Hainault Forest	21.9	1.83	1.1	25.06 - F	1.91 - F
Darenth Wood	26.95	2.02	1.04	23.71 - F 12.62 - M	1.79 - F
SINCs					
Lower River Beam and Ford Works Ditches	31.8	2.68	0.99	12.34 - M	
Wennington, Aveley and Rainham Marshes	31.56	3.81	0.92	12.24 - M	
Belvedere Dykes	35.16	2.45	1.04	12.37 - M	
Southmere Park &YarntonWay/Viridion Way	29.52	2.52	1.08	12.62 - M	
Dagenham Breach and the lower Beam River in Dagenham	39.04	4.27	1.09	12.43 - M	
Crossways Lake Nature Reserve and Thameside Walk Scrub	27.02	2.32	1.08	12.63 - M	
Thamesview Golf Course	30.74	3.45	1.08	12.63 - M	
Crossway Park and Tump 52	27.65	2.26	1.08	12.63 - M	
The Ridgeway	27.65	2.26	1.08	12.63 - M	
Erith Marshes	29.82	2.52	1.08	12.63 - M	
Crossness SWT Pond	29.52	2.38	1.01	12.51 - M	

Ecological Site	Pollutant Concentrations ($\mu\text{g}/\text{m}^3$)			Deposition	
	Nitrogen Oxides	Sulphur Dioxide	Ammonia	Nitrogen Deposition ($\text{kgN}/\text{ha}/\text{yr}$)	Acid Deposition ($\text{keq}/\text{ha}/\text{yr}$) [§]
St John the Baptist Churchyard, Erith	26.75	2.36	1.04	12.2 - M	
Franks Park, Belvedere	26.75	2.36	1.05	12.34 - M	
River Thames and tidal tributaries	31.71	3.81	0.99	12.24 - M	
§ Total acid deposition					

3.2 IMPACTS

- 3.2.1. The impacts of the installation of the carbon capture plant on concentrations and deposition are shown in **Tables 3-3 to 3-8**. Results for each year of meteorological data tested are provided in **Appendix A**.
- 3.2.2. Note that in terms of the impact of the installation of carbon capture, there are both adverse and beneficial changes in ground level concentrations and deposition. In the following tables, both the maximum adverse and maximum beneficial impacts are provided.
- 3.2.3. All PCs screen as insignificant (i.e. for SSSIs: <1% of the relevant AQAL for long term metrics and <10% of the relevant AQAL for short term metrics; for SINCs: <100% of any relevant AQAL).

Assessment against Current Baseline

- 3.2.4. As provided within the AERA, **Appendix B** provides an assessment of impacts on habitats site against the current baseline of the operation of Riverside 1 alone. This is not a realistic comparison, but the results of this numerical exercise are provided in **Appendix B**.
- 3.2.5. The comparison does not change the overall conclusions that no significant effects are likely with the operation of the carbon capture facility. Adverse impacts screen as insignificant for all sites and metrics, with the exception of Thorndon Park SSSI where impacts assessed against the current baseline are 2.5% of the critical load for acid deposition. However, the total acid deposition does not exceed the critical load, and no significant effects are likely.

Table 3-3 – Maximum contributions and PC for annual mean NO_x over sites designated for nature conservation (µg/m³). Values in bold exceed the critical level

Site	Designation	Critical Level	Baseline (max)	With Carbon Capture (max)	Max Beneficial PC	Max Adverse PC	Adverse PC as % of CL	PEC at Max Adverse Impact
Hangman's Wood and Deneholes	SSSI	30	0.112	0.114	0.000	0.004	0.01%	24.70
Grays Thurrock Chalk Pits	SSSI	30	0.150	0.147	-0.002	0.002	0.01%	27.49
Ruxley Gravel Pits	SSSI	30	0.088	0.090	0.000	0.003	0.01%	26.19
Thorndon Park	SSSI	30	0.303	0.309	0.000	0.011	0.04%	19.84
Curtismill Green	SSSI	30	0.073	0.074	0.000	0.001	0.00%	22.16
Crofton Wood	SSSI	30	0.060	0.059	-0.001	0.004	0.01%	19.91
Farningham Wood	SSSI	30	0.104	0.107	0.000	0.003	0.01%	24.83
Swanscombe Peninsula	SSSI	30	0.173	0.162	-0.011	0.003	0.01%	36.28
Hainault Forest	SSSI	30	0.077	0.072	-0.006	0.000	0.00%	21.97
Darenth Wood	SSSI	30	0.070	0.072	0.000	0.004	0.01%	27.02
Lower River Beam and Ford Works Ditches	SINC	30	4.482	2.995	-1.487	0.000	0.00%	34.79
Wennington, Aveley and Rainham Marshes	SINC	30	1.604	1.730	-0.091	0.180	0.60%	33.29
Belvedere Dykes	SINC	30	1.640	0.842	-0.839	0.081	0.27%	36.00
Southmere Park & Yarnton Way/Viridion Way	SINC	30	0.941	0.981	0.000	0.204	0.68%	30.50
Dagenham Breach and the lower Beam River in Dagenham	SINC	30	2.244	1.506	-0.821	0.000	0.00%	40.55
Crossways Lake Nature Reserve and Thameside Walk Scrub	SINC	30	0.824	0.602	-0.238	0.000	0.00%	27.62
Thamesview Golf Course	SINC	30	1.340	1.185	-0.624	0.075	0.25%	31.92
Crossway Park and Tump 52	SINC	30	1.047	1.058	-0.089	0.175	0.58%	28.71
The Ridgeway	SINC	30	0.943	0.990	0.000	0.170	0.57%	28.64
Erith Marshes	SINC	30	1.345	1.233	-0.880	0.270	0.90%	31.05
Crossness Sewage Treatment Works Pond	SINC	30	1.568	1.254	-0.380	0.000	0.00%	30.77
St John the Baptist Churchyard, Erith	SINC	30	0.282	0.284	-0.022	0.007	0.02%	27.03
Franks Park, Belvedere	SINC	30	0.342	0.334	-0.016	0.010	0.03%	27.08
River Thames and tidal tributaries	SINC	30	2.581	2.349	-0.326	0.167	0.56%	34.06

Table 3-4 – Maximum contributions and PC for daily mean NOx over sites designated for nature conservation (µg/m³)

Site	Designation	Critical Level	Baseline (max)	With Carbon Capture (max)	Max Beneficial PC	Max Adverse PC	Adverse PC as % of CL	PEC at Max Adverse Impact
Hangman's Wood and Deneholes	SSSI	200	1.254	1.262	-0.047	0.147	0.07%	50.44
Grays Thurrock Chalk Pits	SSSI	200	1.955	1.863	-0.102	0.170	0.08%	56.54
Ruxley Gravel Pits	SSSI	200	1.718	1.717	-0.044	0.084	0.04%	53.92
Thorndon Park	SSSI	200	1.964	1.952	-0.105	0.159	0.08%	41.01
Curtismill Green	SSSI	200	1.137	1.106	-0.032	0.165	0.08%	45.29
Crofton Wood	SSSI	200	1.093	1.093	-0.087	0.076	0.04%	40.79
Farningham Wood	SSSI	200	2.601	2.837	-0.166	0.236	0.12%	52.28
Swanscombe Peninsula	SSSI	200	2.266	2.117	-0.270	0.097	0.05%	74.36
Hainault Forest	SSSI	200	1.128	1.070	-0.269	0.070	0.03%	44.87
Darenth Wood	SSSI	200	1.452	1.595	-0.090	0.143	0.07%	55.50
Lower River Beam and Ford Works Ditches	SSSI	200	27.615	26.622	-6.699	1.533	0.77%	90.22
Wennington, Aveley and Rainham Marshes	SSSI	200	10.609	11.106	-2.093	1.412	0.71%	74.23
Belvedere Dykes	SSSI	200	41.391	13.234	-28.157	1.295	0.65%	83.55
Southmere Park & Yarnton Way/Viridion Way	SSSI	200	11.789	14.950	-1.920	4.185	2.09%	73.99
Dagenham Breach and the lower Beam River in Dagenham	SSSI	200	26.115	23.908	-4.700	0.405	0.20%	101.99
Crossways Lake Nature Reserve and Thameside Walk Scrub	SSSI	200	9.826	6.796	-3.252	0.000	0.00%	60.84
Thamesview Golf Course	SSSI	200	14.747	11.997	-7.172	1.214	0.61%	73.48
Crossway Park and Tump 52	SSSI	200	10.985	10.047	-1.699	0.886	0.44%	65.35
The Ridgeway	SSSI	200	10.668	9.797	-1.966	0.781	0.39%	65.10
Erith Marshes	SSSI	200	26.944	22.508	-21.763	7.500	3.75%	82.15
Crossness Sewage Treatment Works Pond	SSSI	200	17.186	13.911	-5.203	0.962	0.48%	72.95
St John the Baptist Churchyard, Erith	SSSI	200	5.624	5.989	-1.552	0.977	0.49%	59.49
Franks Park, Belvedere	SSSI	200	7.640	7.338	-1.551	1.116	0.56%	60.84
River Thames and tidal tributaries	SSSI	200	15.196	13.525	-2.584	1.592	0.80%	76.95

Table 3-5 – Maximum contributions and PC for annual mean SO₂ over sites designated for nature conservation (µg/m³)

Site	Designation	Critical Level	Baseline (max)	With Scheme (max)	Max Beneficial PC	Max Adverse PC	Adverse PC as % of CL	PEC at Max Adverse Impact
Hangman's Wood and Deneholes	SSSI	10	0.031	0.031	0.000	0.000	0.00%	2.63
Grays Thurrock Chalk Pits	SSSI	10	0.042	0.040	-0.002	0.000	0.00%	3.57
Ruxley Gravel Pits	SSSI	10	0.025	0.025	-0.001	0.000	0.00%	1.69
Thorndon Park	SSSI	10	0.086	0.086	-0.001	0.002	0.02%	2.07
Curtismill Green	SSSI	10	0.021	0.020	-0.001	0.000	0.00%	1.49
Crofton Wood	SSSI	10	0.017	0.016	-0.001	0.001	0.01%	1.37
Farningham Wood	SSSI	10	0.030	0.030	-0.001	0.000	0.00%	1.45
Swanscombe Peninsula	SSSI	10	0.049	0.045	-0.004	0.000	0.00%	3.80
Hainault Forest	SSSI	10	0.021	0.019	-0.002	0.000	0.00%	1.85
Darenth Wood	SSSI	10	0.020	0.020	0.000	0.000	0.00%	2.04
Lower River Beam and Ford Works Ditches	SINC	10	1.266	0.860	-0.497	0.000	0.00%	3.54
Wennington, Aveley and Rainham Marshes	SINC	10	0.427	0.470	-0.034	0.055	0.55%	4.28
Belvedere Dykes	SINC	10	0.469	0.233	-0.246	0.019	0.19%	2.68
Southmere Park & Yarnton Way/Viridion Way	SINC	10	0.274	0.275	-0.011	0.060	0.60%	2.80
Dagenham Breach and the lower Beam River in Dagenham	SINC	10	0.735	0.410	-0.349	0.000	0.00%	4.68
Crossways Lake Nature Reserve and Thameside Walk Scrub	SINC	10	0.254	0.167	-0.090	0.000	0.00%	2.49
Thamesview Golf Course	SINC	10	0.417	0.336	-0.225	0.011	0.11%	3.79
Crossway Park and Tump 52	SINC	10	0.307	0.299	-0.042	0.046	0.46%	2.56
The Ridgeway	SINC	10	0.274	0.277	0.000	0.045	0.45%	2.54
Erith Marshes	SINC	10	0.389	0.349	-0.223	0.089	0.89%	2.87
Crossness Sewage Treatment Works Pond	SINC	10	0.462	0.358	-0.131	0.000	0.00%	2.74
St John the Baptist Churchyard, Erith	SINC	10	0.081	0.079	-0.008	0.000	0.00%	2.44
Franks Park, Belvedere	SINC	10	0.099	0.094	-0.009	0.000	0.00%	2.45
River Thames and tidal tributaries	SINC	10	0.710	0.643	-0.093	0.055	0.55%	4.45

Table 3-6 – Maximum contributions and PC for annual mean NH₃ over sites designated for nature conservation (µg/m³). Values in bold exceed the critical level

Site	Designation	Critical Level	Baseline (max)	With Scheme (max)	Max Beneficial PC	Max Adverse PC	Adverse PC as % of CL	PEC at Max Adverse Impact
Hangman's Wood and Deneholes	SSSI	3	0.011	0.007	-0.004	0.000	0.00%	1.08
Grays Thurrock Chalk Pits	SSSI	3	0.015	0.009	-0.005	0.000	0.00%	1.09
Ruxley Gravel Pits	SSSI	3	0.009	0.006	-0.003	0.000	0.00%	1.04
Thorndon Park	SSSI	1	0.030	0.020	-0.010	0.000	0.00%	1.11
Curtismill Green	SSSI	3	0.007	0.005	-0.003	0.000	0.00%	1.23
Crofton Wood	SSSI	1	0.006	0.004	-0.002	0.000	0.00%	1.02
Farningham Wood	SSSI	1	0.010	0.007	-0.003	0.000	0.00%	1.03
Swanscombe Peninsula	SSSI	3	0.017	0.010	-0.007	0.000	0.00%	1.07
Hainault Forest	SSSI	1	0.008	0.005	-0.003	0.000	0.00%	1.10
Darenth Wood	SSSI	1	0.007	0.005	-0.002	0.000	0.00%	1.04
Lower River Beam and Ford Works Ditches	SINC	1	0.450	0.212	-0.243	0.000	0.00%	1.20
Wennington, Aveley and Rainham Marshes	SINC	1	0.153	0.111	-0.046	0.000	0.00%	1.03
Belvedere Dykes	SINC	1	0.164	0.054	-0.111	0.000	0.00%	1.09
Southmere Park & Yarnton Way/Viridion Way	SINC	1	0.096	0.065	-0.031	0.000	0.00%	1.15
Dagenham Breach and the lower Beam River in Dagenham	SINC	1	0.254	0.097	-0.161	0.000	0.00%	1.19
Crossways Lake Nature Reserve and Thameside Walk Scrub	SINC	1	0.087	0.039	-0.049	0.000	0.00%	1.12
Thamesview Golf Course	SINC	1	0.142	0.078	-0.096	0.000	0.00%	1.16
Crossway Park and Tump 52	SINC	1	0.107	0.069	-0.041	0.000	0.00%	1.15
The Ridgeway	SINC	1	0.096	0.065	-0.031	0.000	0.00%	1.15
Erith Marshes	SINC	1	0.137	0.083	-0.094	0.002	0.23%	1.16
Crossness Sewage Treatment Works Pond	SINC	1	0.161	0.082	-0.083	0.000	0.00%	1.09
St John the Baptist Churchyard, Erith	SINC	1	0.029	0.019	-0.011	0.000	0.00%	1.06
Franks Park, Belvedere	SINC	1	0.035	0.022	-0.012	0.000	0.00%	1.07
River Thames and tidal tributaries	SINC	1	0.254	0.153	-0.104	0.000	0.00%	1.14

**Table 3-7 - Maximum contributions and PC for nitrogen deposition over sites designated for nature conservation (kgN/ha/yr).
Values in bold exceed the critical load**

Site	Designation	Deposition Type	Critical Load	Baseline (max)	With Carbon Capture (max)	Max Beneficial PC	Max Adverse PC	Adverse PC as % of CL	PEC at Max Adverse Impact
Hangman's Wood and Deneholes	SSSI	Forest	5	0.109	0.080	-0.029	0.000	0.00%	23.99
Hangman's Wood and Deneholes	SSSI	Moorland	5	0.069	0.050	-0.019	0.000	0.00%	12.57
Grays Thurrock Chalk Pits	SSSI	Forest	5	0.147	0.104	-0.043	0.000	0.00%	24.06
Grays Thurrock Chalk Pits	SSSI	Moorland	5	0.093	0.064	-0.029	0.000	0.00%	12.61
Ruxley Gravel Pits	SSSI	Moorland	5	0.055	0.039	-0.016	0.000	0.00%	12.85
Thorndon Park	SSSI	Forest	15	0.296	0.219	-0.077	0.000	0.00%	24.80
Thorndon Park	SSSI	Moorland	5	0.187	0.136	-0.051	0.000	0.00%	13.01
Curtismill Green	SSSI	Moorland	10	0.045	0.032	-0.013	0.000	0.00%	13.42
Crofton Wood	SSSI	Forest	10	0.059	0.042	-0.017	0.000	0.00%	24.83
Farningham Wood	SSSI	Forest	15	0.102	0.076	-0.026	0.000	0.00%	24.22
Farningham Wood	SSSI	Moorland	5	0.065	0.047	-0.018	0.000	0.00%	12.98
Swanscombe Peninsula	SSSI	Moorland	5	0.106	0.071	-0.035	0.000	0.00%	12.56
Hainault Forest	SSSI	Forest	5	0.075	0.051	-0.024	0.000	0.00%	25.11
Darenth Wood	SSSI	Forest	15	0.068	0.050	-0.018	0.000	0.00%	23.76
Darenth Wood	SSSI	Moorland	5	0.043	0.031	-0.012	0.000	0.00%	12.65
Lower River Beam and Ford Works Ditches	SINC	Moorland	30	2.789	1.407	-1.398	0.000	0.00%	13.79
Wennington, Aveley and Rainham Marshes	SINC	Moorland	20	0.958	0.752	-0.236	0.000	0.00%	12.99
Belvedere Dykes	SINC	Moorland	30	1.016	0.369	-0.659	0.000	0.00%	12.77
Southmere Park & Yarnton Way/Viridion Way	SINC	Moorland	30	0.593	0.438	-0.155	0.017	0.06%	13.07
Dagenham Breach and the lower Beam River in Dagenham	SINC	Moorland	30	1.544	0.659	-0.918	0.000	0.00%	13.13
Crossways Lake Nature Reserve and Thameside Walk Scrub	SINC	Moorland	20	0.535	0.265	-0.275	0.000	0.00%	12.90
Thamesview Golf Course	SINC	Moorland	30	0.870	0.524	-0.559	0.000	0.00%	13.15
Crossway Park and Tump 52	SINC	Moorland	20	0.662	0.469	-0.215	0.000	0.00%	13.10
The Ridgeway	SINC	Moorland	20	0.593	0.440	-0.153	0.000	0.00%	13.07



Erith Marshes	SINC	Moorland	20	0.845	0.558	-0.578	0.040	0.20%	13.19
Crossness Sewage Treatment Works Pond	SINC	Moorland	30	0.995	0.555	-0.469	0.000	0.00%	13.07
St John the Baptist Churchyard, Erith	SINC	Moorland	20	0.177	0.126	-0.058	0.000	0.00%	12.33
Franks Park, Belvedere	SINC	Moorland	20	0.214	0.150	-0.066	0.000	0.00%	12.49
River Thames and tidal tributaries	SINC	Moorland	30	1.578	1.035	-0.570	0.000	0.00%	13.34

Table 3-8 - Maximum contributions and PC for acid deposition over sites designated for nature conservation (keq/ha/yr). Values in bold exceed the critical load

Site	Designation	Deposition Type	Critical Load	Baseline (max)	With Carbon Capture (max)	Max Beneficial PC	Max Adverse PC	Adverse PC as % of CL	PEC at Max Adverse Impact
Thorndon Park	SSSI	Forest	2.065	0.118	0.111	-0.007	0.000	0.00%	1.981
Curtismill Green	SSSI	Moorland	5.071	0.013	0.012	-0.001	0.000	0.00%	1.032
Crofton Wood	SSSI	Forest	1.223	0.023	0.021	-0.002	0.000	0.00%	1.861
Farningham Wood	SSSI	Forest	1.507	0.041	0.038	-0.003	0.000	0.00%	1.848
Hainault Forest	SSSI	Forest	2.907	0.030	0.025	-0.004	0.000	0.00%	1.935
Darenth Wood	SSSI	Forest	1.340	0.027	0.026	-0.002	0.000	0.00%	1.816

4 QUESTION 2iii

4.1 TABLE CORRECTION

- 4.1.1. As noted, the Short Term and Long Term emission concentrations and rates for NO_x and SO₂ had been reversed in *Table 4-2* of the AERA.
- 4.1.2. A corrected version of the table is provided overleaf in **Table 4-1**. No changes other than the emission labels for NO_x and SO₂ were required.

Table 4-1 – Proposed (With Carbon Capture) and Existing (Baseline) Emission Limit Values and equivalent mass emission rates at full load operation. (LT = Long Term, ST = Short Term) [Amended text shown in blue bold]

Emission	Concentration (mg/Nm3 @ 11%O2, dry)				Emission Rate (g/s)				
	Baseline		With Carbon Capture		Baseline			With Carbon Capture	
	Riverside 1 (A1, A2, A3)	Riverside 2 (A1, A2)	CC1	CC2	R1	R2-A1	R2-A2	CC1	CC2
Nitrogen Oxides – ST	400	400	Assumed compliance assessed pre-carbon capture & no change to mass emissions in post carbon capture flue gases		61.204	27.216	27.216	61.204	54.432
Nitrogen Oxides – LT	180	75			27.542	5.103	5.103	27.542	10.206
Sulphur Dioxide – ST	200	200			30.602	13.608	13.608	30.602	27.216
Sulphur Dioxide – LT	40	30			6.120	2.041	2.041	6.120	4.082
Particulate Matter - LT	5	5			0.765	0.340	0.340	0.765	0.680
Hydrogen Chloride – ST	60	60			9.181	4.082	4.082	9.181	8.165
Hydrogen Fluoride – ST/LT	8	1			1.224	0.068	0.068	1.224	0.136
TOC (as Benzene) - ST	20	20			3.060	1.361	1.361	3.060	2.722
TOC (as Benzene) - LT	10	10			1.530	0.680	0.680	1.530	1.361
Carbon Monoxide - ST	150	150			22.952	10.206	10.206	22.952	20.412
Carbon Monoxide - LT	50	50			7.651	3.402	3.402	7.651	6.804
Ammonia ST/LT	15	10	10	10	2.295	0.680	0.680	1.186	1.213
Cadmium and Thallium - LT	0.02	0.02	As above, no change to mass emissions in post carbon capture flue gases		0.00306	0.00136	0.00136	0.00306	0.00272
Mercury - ST/LT	0.02	0.02			0.00306	0.00136	0.00136	0.00306	0.00272
Group III Metals - LT	0.3	0.3			0.0459	0.0204	0.0204	0.0459	0.0408

Emission	Concentration (mg/Nm3 @ 11%O2, dry)				Emission Rate (g/s)				
	Baseline		With Carbon Capture		Baseline			With Carbon Capture	
	Riverside 1 (A1, A2, A3)	Riverside 2 (A1, A2)	CC1	CC2	R1	R2-A1	R2-A2	CC1	CC2
Amine 1 - ST ^{§†}	No emissions		0.6	0.6	No emissions			0.0712	0.0728
Amine 1 - LT [†]			0.3	0.3				0.0356	0.0364
Amine 2 - ST ^{§†}			0.0024	0.0024				0.000285	0.000291
Amine 2 - LT [†]			0.0012	0.0012				0.000142	0.000146
Direct Nitrosamine 1 - LT [†]			0.00017	0.00017				0.0000202	0.0000206
Direct Nitrosamine 2 - LT [†]			0.0026	0.0026				0.000308	0.000315
Aldehydes - ST ^{§†}			2	2				0.237	0.243
Aldehydes - LT [†]			1	1				0.119	0.121
Amides - LT [†]			0.023	0.023				0.00273	0.00279
Degradant 100 – LT [†]			0.081	0.081				0.00961	0.00983
Degradant 101 – LT [†]			0.032	0.032				0.00380	0.00388
Degradant 102 – LT [†]			0.29	0.29				0.0344	0.0352
§Short Term ELV set at 2 x Long Term ELV									
†Appendix B provides further details of the emissions									

5 CONCLUSIONS

- 5.1.1. The overall conclusion of the AERA was that **no significant effects are likely** on either human health or local habitats.
- 5.1.2. This conclusion is not affected by the additional data provided in this Addendum Report.

Appendix A

MODEL RESULTS



Table A-1 – Maximum With Carbon Capture Scenario contribution to ground level concentrations anywhere within the study area ($\mu\text{g}/\text{m}^3$). Units: $\mu\text{g}/\text{m}^3$ for all except PAH (pg/m^3) and Dioxins (fg/m^3)

Pollutant	Averaging Period	AQAL ($\mu\text{g}/\text{m}^3$)	Baseline 2018	Baseline 2019	Baseline 2020	Baseline 2021	Baseline 2022	Max over 5 years
<i>As presented in the AERA</i>								
Cadmium and Thallium	Annual Mean	0.005	0.00059	0.00070	0.00078	0.00059	0.00060	0.00078
Mercury	Hourly Mean	0.6	0.0118	0.0112	0.0113	0.0126	0.0141	0.0141
	Daily Mean	0.06	0.0041	0.0042	0.0067	0.0048	0.0041	0.0067
Other Metals	Annual Mean	0.02	0.0089	0.0105	0.0118	0.0088	0.0090	0.0118
<i>Additional Information Requested</i>								
Antimony	Hourly Mean	150	0.0068	0.0064	0.0065	0.0072	0.0081	0.0081
	Annual Mean	5	0.00034	0.00040	0.00045	0.00034	0.00035	0.00045
Arsenic	Annual Mean	0.006	0.00074	0.00087	0.00098	0.00074	0.00075	0.00098
Total Chromium	Daily Mean	2	0.019	0.019	0.031	0.022	0.019	0.031
Copper	Daily Mean	0.05	0.006	0.006	0.010	0.007	0.006	0.010
Lead	Annual Mean	0.25	0.0015	0.0018	0.0020	0.0015	0.0015	0.0020
Manganese	Hourly Mean	1500	0.035	0.034	0.034	0.038	0.042	0.042
	Annual Mean	0.15	0.0018	0.0021	0.0024	0.0018	0.0018	0.0024
Nickel	Hourly Mean	0.7	0.130	0.123	0.125	0.138	0.155	0.155
	Annual Mean	0.02	0.0065	0.0077	0.0086	0.0065	0.0066	0.0086
Vanadium	Annual Mean	1	0.00018	0.00021	0.00024	0.00018	0.00018	0.00024
Chromium VI	Annual Mean	0.00025	0.0000045	0.0000052	0.0000059	0.0000044	0.0000045	0.0000059
Cobalt	Annual Mean		0.00016	0.00019	0.00022	0.00016	0.00017	0.00022
Cadmium	Daily Mean	0.03	0.0041	0.0042	0.0067	0.0048	0.0041	0.0067
	Annual Mean	0.005	0.00059	0.00070	0.00078	0.00059	0.00060	0.00078
PAH as benzo(a)pyrene	Annual Mean	250	3.12	3.67	4.12	3.09	3.15	4.12
PCB	Hourly Mean	6	0.0030	0.0028	0.0028	0.0031	0.0035	0.00351
	Annual Mean	0.2	0.00015	0.00017	0.00020	0.00015	0.00015	0.000196
Dioxins	Annual Mean		1.78	2.10	2.35	1.77	1.80	2.35

Table A-2 – Maximum With Carbon Capture Process Contribution anywhere within the study area ($\mu\text{g}/\text{m}^3$). Units: $\mu\text{g}/\text{m}^3$ for all except PAH (pg/m^3) and Dioxins (fg/m^3)

Pollutant	Averaging Period	AQAL	Baseline 2018	Baseline 2019	Baseline 2020	Baseline 2021	Baseline 2022	Max over 5 years
<i>As presented in the AERA</i>								
Cadmium and Thallium	Annual Mean	0.005	0.00040	0.00046	0.00051	0.00040	0.00040	0.00051
Mercury	Hourly Mean	0.6	0.015	0.016	0.012	0.011	0.020	0.02
	Daily Mean	0.06	0.0036	0.0038	0.0038	0.0041	0.0040	0.00
Other Metals	Annual Mean	0.02	0.0059	0.0070	0.0076	0.0060	0.0060	0.01
<i>Additional Information Requested</i>								
Antimony	Hourly Mean	150	0.0084	0.0091	0.0072	0.0061	0.0114	0.0114
	Annual Mean	5	0.00023	0.00027	0.00029	0.00023	0.00023	0.00029
Arsenic	Annual Mean	0.006	0.00050	0.00058	0.00063	0.00050	0.00050	0.00063
Total Chromium	Daily Mean	2	0.016	0.017	0.017	0.019	0.018	0.019
Copper	Daily Mean	0.05	0.005	0.006	0.005	0.006	0.006	0.006
Lead	Annual Mean	0.25	0.0010	0.0012	0.0013	0.0010	0.0010	0.0013
Manganese	Hourly Mean	1500	0.044	0.047	0.037	0.032	0.059	0.059
	Annual Mean	0.15	0.0012	0.0014	0.0015	0.0012	0.0012	0.0015
Nickel	Hourly Mean	0.7	0.161	0.173	0.137	0.116	0.218	0.218
	Annual Mean	0.02	0.0044	0.0051	0.0056	0.0044	0.0044	0.0056
Vanadium	Annual Mean	1	0.00012	0.00014	0.00015	0.00012	0.00012	0.00015
Chromium VI	Annual Mean	0.00025	0.0000030	0.0000035	0.0000038	0.0000030	0.0000030	0.0000038
Cobalt	Annual Mean		0.00011	0.00013	0.00014	0.00011	0.00011	0.0001389
Cadmium	Daily Mean	0.03	0.0036	0.0038	0.0038	0.0041	0.0040	0.0041209
	Annual Mean	0.005	0.00040	0.00046	0.00051	0.00040	0.00040	0.0005052
PAH as benzo(a)pyrene	Annual Mean	250	2.08	2.43	2.65	2.12	2.11	2.65
PCB	Hourly Mean	6	0.0037	0.0039	0.0031	0.0026	0.0049	0.0049500
	Annual Mean	0.2	0.00010	0.00012	0.00013	0.00010	0.00010	0.0001263
Dioxins	Annual Mean		1.19	1.39	1.52	1.21	1.21	1.52

Table A-3 - Modelled concentrations and process contribution to Annual Mean Nitrogen Oxides (µg/m³)

Ecological Site	Designation	Baseline				
		Max PC 2018	Max PC 2019	Max PC 2020	Max PC 2021	Max PC 2022
Hangman's Wood and Deneholes	SSSI	0.08	0.09	0.07	0.09	0.11
Grays Thurrock Chalk Pits	SSSI	0.11	0.12	0.10	0.12	0.15
Ruxley Gravel Pits	SSSI	0.08	0.04	0.06	0.09	0.06
Thorndon Park	SSSI	0.24	0.29	0.26	0.30	0.27
Curtismill Green	SSSI	0.06	0.05	0.07	0.06	0.07
Crofton Wood	SSSI	0.05	0.04	0.05	0.05	0.06
Farningham Wood	SSSI	0.10	0.10	0.08	0.10	0.10
Swanscombe Peninsula	SSSI	0.13	0.17	0.15	0.15	0.17
Hainault Forest	SSSI	0.07	0.07	0.08	0.06	0.07
Darenth Wood	SSSI	0.05	0.06	0.06	0.07	0.06
Lower River Beam and Ford Works Ditches	SINC	3.35	3.91	4.48	3.17	3.38
Wennington, Aveley and Rainham Marshes	SINC	1.19	1.29	1.60	1.07	1.17
Belvedere Dykes	SINC	1.47	1.64	1.56	1.38	1.28
Southmere Park &YarntonWay/Viridion Way	SINC	0.94	0.65	0.79	0.83	0.79
Dagenham Breach and the lower Beam River in Dagenham	SINC	2.03	2.24	2.22	2.08	2.20
Crossways Lake Nature Reserve and Thameside Walk Scrub	SINC	0.82	0.82	0.74	0.65	0.79
Thamesview Golf Course	SINC	1.34	1.34	1.19	1.14	1.26
Crossway Park and Tump 52	SINC	1.05	0.99	0.86	0.91	0.97
The Ridgeway	SINC	0.94	0.73	0.76	0.82	0.82
Erith Marshes	SINC	1.35	0.93	1.20	1.19	1.09
Crossness Sewage Treatment Works Pond	SINC	1.57	1.42	1.33	1.37	1.42
St John the Baptist Churchyard, Erith	SINC	0.27	0.25	0.18	0.28	0.24
Franks Park, Belvedere	SINC	0.34	0.27	0.18	0.33	0.27
River Thames and tidal tributaries	SINC	1.89	2.25	2.58	1.89	1.98

Ecological Site	Designation	With Carbon Capture				
		Max PC 2018	Max PC 2019	Max PC 2020	Max PC 2021	Max PC 2022
Hangman's Wood and Deneholes	SSSI	0.08	0.09	0.08	0.10	0.11
Grays Thurrock Chalk Pits	SSSI	0.11	0.12	0.10	0.12	0.15
Ruxley Gravel Pits	SSSI	0.08	0.04	0.06	0.09	0.06
Thorndon Park	SSSI	0.24	0.29	0.26	0.31	0.27
Curtismill Green	SSSI	0.07	0.05	0.07	0.06	0.07
Crofton Wood	SSSI	0.05	0.04	0.05	0.05	0.06
Farningham Wood	SSSI	0.10	0.10	0.09	0.11	0.10
Swanscombe Peninsula	SSSI	0.12	0.16	0.14	0.14	0.16
Hainault Forest	SSSI	0.07	0.06	0.07	0.05	0.06
Darenth Wood	SSSI	0.05	0.06	0.06	0.07	0.07
Lower River Beam and Ford Works Ditches	SINC	2.37	2.77	2.99	2.42	2.39
Wennington, Aveley and Rainham Marshes	SINC	1.29	1.43	1.73	1.17	1.28
Belvedere Dykes	SINC	0.79	0.84	0.84	0.79	0.80
Southmere Park &YarntonWay/Viridion Way	SINC	0.98	0.80	0.80	0.84	0.87
Dagenham Breach and the lower Beam River in Dagenham	SINC	1.31	1.47	1.40	1.34	1.51
Crossways Lake Nature Reserve and Thameside Walk Scrub	SINC	0.60	0.59	0.54	0.48	0.59
Thamesview Golf Course	SINC	1.15	1.18	1.04	1.02	1.12
Crossway Park and Tump 52	SINC	1.06	1.06	0.90	0.93	0.99
The Ridgeway	SINC	0.99	0.90	0.81	0.86	0.91
Erith Marshes	SINC	1.23	1.07	1.06	1.09	1.12
Crossness Sewage Treatment Works Pond	SINC	1.19	1.25	1.13	1.09	1.17
St John the Baptist Churchyard, Erith	SINC	0.25	0.25	0.18	0.28	0.24
Franks Park, Belvedere	SINC	0.33	0.27	0.18	0.32	0.28
River Thames and tidal tributaries	SINC	1.76	2.06	2.35	1.78	1.82

Ecological Site	Designation	Maximum Impact				
		Max PC 2018	Max PC 2019	Max PC 2020	Max PC 2021	Max PC 2022
Hangman's Wood and Deneholes	SSSI	0.00	0.00	0.00	0.00	0.00
Grays Thurrock Chalk Pits	SSSI	0.00	0.00	0.00	0.00	0.00
Ruxley Gravel Pits	SSSI	0.00	0.00	0.00	0.00	0.00
Thorndon Park	SSSI	0.01	0.01	0.01	0.01	0.01
Curtismill Green	SSSI	0.00	0.00	0.00	0.00	0.00
Crofton Wood	SSSI	0.00	0.00	0.00	0.00	0.00
Farningham Wood	SSSI	0.00	0.00	0.00	0.00	0.00
Swanscombe Peninsula	SSSI	0.00	0.00	0.00	0.00	0.00
Hainault Forest	SSSI	0.00	0.00	0.00	0.00	0.00
Darenth Wood	SSSI	0.00	0.00	0.00	0.00	0.00
Lower River Beam and Ford Works Ditches	SINC	-0.10	-0.14	-0.12	-0.13	-0.12
Wennington, Aveley and Rainham Marshes	SINC	0.12	0.14	0.18	0.10	0.11
Belvedere Dykes	SINC	0.01	0.04	0.08	0.03	0.05
Southmere Park & Yarnton Way/Viridion Way	SINC	0.17	0.16	0.16	0.20	0.16
Dagenham Breach and the lower Beam River in Dagenham	SINC	-0.07	-0.07	-0.08	-0.05	-0.05
Crossways Lake Nature Reserve and Thameside Walk Scrub	SINC	-0.17	-0.19	-0.17	-0.13	-0.16
Thamesview Golf Course	SINC	-0.06	0.08	0.03	-0.03	0.01
Crossway Park and Tump 52	SINC	0.06	0.18	0.07	0.05	0.09
The Ridgeway	SINC	0.05	0.17	0.06	0.04	0.09
Erith Marshes	SINC	0.20	0.20	0.19	0.27	0.21
Crossness Sewage Treatment Works Pond	SINC	-0.30	-0.13	-0.15	-0.22	-0.19
St John the Baptist Churchyard, Erith	SINC	-0.02	-0.01	0.01	0.00	0.00
Franks Park, Belvedere	SINC	0.00	0.01	0.00	0.00	0.01
River Thames and tidal tributaries	SINC	0.09	0.11	0.17	0.07	0.07

Table A-4 - Modelled concentrations and process contribution to Daily Mean Nitrogen Oxides (µg/m³)

Ecological Site	Designation	Baseline				
		Max PC 2018	Max PC 2019	Max PC 2020	Max PC 2021	Max PC 2022
Hangman's Wood and Deneholes	SSSI	1.14	0.88	0.84	1.09	1.25
Grays Thurrock Chalk Pits	SSSI	1.41	1.46	1.34	1.39	1.96
Ruxley Gravel Pits	SSSI	1.11	1.11	0.94	1.72	1.47
Thorndon Park	SSSI	1.70	1.50	1.79	1.96	1.90
Curtismill Green	SSSI	0.92	1.07	0.98	0.60	1.14
Crofton Wood	SSSI	0.98	0.87	0.74	1.09	0.84
Farningham Wood	SSSI	1.60	2.18	2.60	1.44	1.48
Swanscombe Peninsula	SSSI	1.98	2.03	1.71	1.71	2.27
Hainault Forest	SSSI	1.06	1.13	1.09	0.86	0.97
Darenth Wood	SSSI	1.37	1.11	1.17	1.45	1.12
Lower River Beam and Ford Works Ditches	SINC	26.24	26.52	25.35	26.67	27.62
Wennington, Aveley and Rainham Marshes	SINC	8.27	9.86	10.61	8.02	9.16
Belvedere Dykes	SINC	25.16	27.73	41.39	27.08	20.96
Southmere Park & YarntonWay/Viridion Way	SINC	11.78	9.75	11.31	11.79	10.19
Dagenham Breach and the lower Beam River in Dagenham	SINC	21.49	19.51	23.08	20.82	26.12
Crossways Lake Nature Reserve and Thameside Walk Scrub	SINC	8.12	9.02	7.58	7.33	9.83
Thamesview Golf Course	SINC	14.12	13.71	11.62	12.74	14.75
Crossway Park and Tump 52	SINC	10.98	9.47	9.43	10.58	9.31
The Ridgeway	SINC	10.67	7.98	8.93	9.36	9.05
Erith Marshes	SINC	26.94	14.99	24.15	18.35	15.80
Crossness Sewage Treatment Works Pond	SINC	17.19	13.48	15.20	12.97	14.13
St John the Baptist Churchyard, Erith	SINC	3.84	5.48	5.62	4.27	4.47
Franks Park, Belvedere	SINC	7.64	6.62	4.62	7.01	5.63
River Thames and tidal tributaries	SINC	12.69	12.95	15.20	12.26	13.73

Ecological Site	Designation	With Carbon Capture				
		Max PC 2018	Max PC 2019	Max PC 2020	Max PC 2021	Max PC 2022
Hangman's Wood and Deneholes	SSSI	1.15	0.84	0.81	1.24	1.26
Grays Thurrock Chalk Pits	SSSI	1.44	1.36	1.30	1.56	1.86
Ruxley Gravel Pits	SSSI	1.11	1.15	1.00	1.72	1.46
Thorndon Park	SSSI	1.74	1.46	1.76	1.95	1.94
Curtismill Green	SSSI	0.90	1.03	1.08	0.77	1.11
Crofton Wood	SSSI	1.00	0.79	0.75	1.09	0.91
Farningham Wood	SSSI	1.72	2.01	2.84	1.58	1.57
Swanscombe Peninsula	SSSI	1.86	1.95	1.66	1.68	2.12
Hainault Forest	SSSI	0.82	1.07	1.04	0.82	0.79
Darenth Wood	SSSI	1.40	1.10	1.17	1.60	1.14
Lower River Beam and Ford Works Ditches	SINC	23.53	22.19	23.00	24.48	26.62
Wennington, Aveley and Rainham Marshes	SINC	8.68	8.68	11.11	8.21	9.56
Belvedere Dykes	SINC	10.28	12.23	13.23	11.19	10.27
Southmere Park & Yarnton Way/Viridion Way	SINC	12.53	12.41	12.26	14.95	10.41
Dagenham Breach and the lower Beam River in Dagenham	SINC	16.79	19.92	20.60	17.94	23.91
Crossways Lake Nature Reserve and Thameside Walk Scrub	SINC	6.63	6.70	6.80	5.59	6.64
Thamesview Golf Course	SINC	11.29	11.26	11.02	12.00	11.83
Crossway Park and Tump 52	SINC	10.05	9.47	9.28	9.67	9.41
The Ridgeway	SINC	8.70	8.27	8.75	9.80	7.90
Erith Marshes	SINC	18.09	16.52	17.59	22.51	15.16
Crossness Sewage Treatment Works Pond	SINC	11.98	12.44	12.47	13.91	13.24
St John the Baptist Churchyard, Erith	SINC	4.82	3.93	5.99	4.50	5.01
Franks Park, Belvedere	SINC	7.34	5.81	5.09	6.18	5.50
River Thames and tidal tributaries	SINC	11.60	11.63	13.53	11.13	11.99

Ecological Site	Designation	Maximum Impact				
		Max PC 2018	Max PC 2019	Max PC 2020	Max PC 2021	Max PC 2022
Hangman's Wood and Deneholes	SSSI	0.01	-0.05	-0.03	0.15	0.01
Grays Thurrock Chalk Pits	SSSI	0.05	-0.09	-0.04	0.17	-0.08
Ruxley Gravel Pits	SSSI	-0.01	0.03	0.08	0.00	0.00
Thorndon Park	SSSI	0.10	0.05	0.09	0.09	0.16
Curtismill Green	SSSI	-0.02	-0.03	0.10	0.16	-0.03
Crofton Wood	SSSI	0.02	0.03	0.05	0.00	0.08
Farningham Wood	SSSI	0.12	-0.13	0.24	0.14	0.09
Swanscombe Peninsula	SSSI	0.05	0.10	0.03	0.05	0.00
Hainault Forest	SSSI	0.02	-0.01	-0.04	0.07	0.00
Darenth Wood	SSSI	0.04	0.06	0.07	0.14	0.04
Lower River Beam and Ford Works Ditches	SINC	-0.17	0.33	0.01	1.53	0.69
Wennington, Aveley and Rainham Marshes	SINC	0.94	0.86	1.36	1.41	0.99
Belvedere Dykes	SINC	1.01	1.23	0.77	0.43	1.30
Southmere Park & Yarnton Way/Viridion Way	SINC	2.51	3.13	2.35	4.18	2.26
Dagenham Breach and the lower Beam River in Dagenham	SINC	-0.44	0.41	-0.04	-0.62	-0.51
Crossways Lake Nature Reserve and Thameside Walk Scrub	SINC	-1.16	-1.71	-0.54	-1.04	-1.59
Thamesview Golf Course	SINC	-0.89	0.64	0.43	1.10	1.21
Crossway Park and Tump 52	SINC	0.79	0.82	0.74	0.89	0.85
The Ridgeway	SINC	-0.20	0.49	-0.18	0.78	-0.28
Erith Marshes	SINC	3.11	4.58	2.95	7.50	5.45
Crossness Sewage Treatment Works Pond	SINC	-3.60	-0.61	-1.16	0.96	-0.51
St John the Baptist Churchyard, Erith	SINC	0.98	-1.55	0.37	0.22	0.54
Franks Park, Belvedere	SINC	0.14	1.12	0.54	-0.44	0.75
River Thames and tidal tributaries	SINC	0.14	-0.41	1.59	0.31	0.55

Table A-5 - Modelled concentrations and process contribution to Annual Mean Sulphur Dioxide (µg/m³)

Ecological Site	Designation	Baseline				
		Max PC 2018	Max PC 2019	Max PC 2020	Max PC 2021	Max PC 2022
Hangman's Wood and Deneholes	SSSI	0.02	0.02	0.02	0.03	0.03
Grays Thurrock Chalk Pits	SSSI	0.03	0.03	0.03	0.03	0.04
Ruxley Gravel Pits	SSSI	0.02	0.01	0.02	0.03	0.02
Thorndon Park	SSSI	0.07	0.08	0.07	0.09	0.08
Curtismill Green	SSSI	0.02	0.02	0.02	0.02	0.02
Crofton Wood	SSSI	0.01	0.01	0.01	0.01	0.02
Farningham Wood	SSSI	0.03	0.03	0.02	0.03	0.03
Swanscombe Peninsula	SSSI	0.04	0.05	0.04	0.04	0.05
Hainault Forest	SSSI	0.02	0.02	0.02	0.02	0.02
Darenth Wood	SSSI	0.01	0.02	0.02	0.02	0.02
Lower River Beam and Ford Works Ditches	SINC	0.94	1.12	1.27	0.97	0.96
Wennington, Aveley and Rainham Marshes	SINC	0.32	0.35	0.43	0.29	0.31
Belvedere Dykes	SINC	0.41	0.47	0.44	0.39	0.37
Southmere Park &YarntonWay/Viridion Way	SINC	0.27	0.18	0.23	0.24	0.23
Dagenham Breach and the lower Beam River in Dagenham	SINC	0.65	0.74	0.73	0.69	0.71
Crossways Lake Nature Reserve and Thameside Walk Scrub	SINC	0.25	0.25	0.22	0.19	0.24
Thamesview Golf Course	SINC	0.41	0.42	0.36	0.33	0.38
Crossway Park and Tump 52	SINC	0.31	0.29	0.25	0.26	0.28
The Ridgeway	SINC	0.27	0.21	0.22	0.23	0.24
Erith Marshes	SINC	0.39	0.25	0.33	0.35	0.31
Crossness Sewage Treatment Works Pond	SINC	0.46	0.42	0.39	0.40	0.41
St John the Baptist Churchyard, Erith	SINC	0.08	0.07	0.05	0.08	0.07
Franks Park, Belvedere	SINC	0.10	0.08	0.05	0.10	0.08
River Thames and tidal tributaries	SINC	0.52	0.63	0.71	0.53	0.55

Ecological Site	Designation	With Carbon Capture				
		Max PC 2018	Max PC 2019	Max PC 2020	Max PC 2021	Max PC 2022
Hangman's Wood and Deneholes	SSSI	0.02	0.02	0.02	0.03	0.03
Grays Thurrock Chalk Pits	SSSI	0.03	0.03	0.03	0.03	0.04
Ruxley Gravel Pits	SSSI	0.02	0.01	0.02	0.02	0.02
Thorndon Park	SSSI	0.07	0.08	0.07	0.09	0.08
Curtismill Green	SSSI	0.02	0.01	0.02	0.02	0.02
Crofton Wood	SSSI	0.01	0.01	0.01	0.01	0.02
Farningham Wood	SSSI	0.03	0.03	0.02	0.03	0.03
Swanscombe Peninsula	SSSI	0.03	0.04	0.04	0.04	0.04
Hainault Forest	SSSI	0.02	0.02	0.02	0.01	0.02
Darenth Wood	SSSI	0.01	0.02	0.02	0.02	0.02
Lower River Beam and Ford Works Ditches	SINC	0.67	0.79	0.86	0.70	0.68
Wennington, Aveley and Rainham Marshes	SINC	0.35	0.39	0.47	0.32	0.34
Belvedere Dykes	SINC	0.22	0.23	0.23	0.22	0.22
Southmere Park & Yarnton Way/Viridion Way	SINC	0.28	0.22	0.22	0.23	0.24
Dagenham Breach and the lower Beam River in Dagenham	SINC	0.35	0.40	0.38	0.37	0.41
Crossways Lake Nature Reserve and Thameside Walk Scrub	SINC	0.17	0.16	0.15	0.13	0.16
Thamesview Golf Course	SINC	0.32	0.34	0.29	0.28	0.31
Crossway Park and Tump 52	SINC	0.30	0.30	0.25	0.25	0.27
The Ridgeway	SINC	0.28	0.25	0.23	0.23	0.25
Erith Marshes	SINC	0.35	0.30	0.30	0.31	0.31
Crossness Sewage Treatment Works Pond	SINC	0.33	0.36	0.31	0.30	0.32
St John the Baptist Churchyard, Erith	SINC	0.07	0.07	0.05	0.08	0.07
Franks Park, Belvedere	SINC	0.09	0.08	0.05	0.09	0.08
River Thames and tidal tributaries	SINC	0.48	0.57	0.64	0.50	0.50

Ecological Site	Designation	Maximum Impact				
		Max PC 2018	Max PC 2019	Max PC 2020	Max PC 2021	Max PC 2022
Hangman's Wood and Deneholes	SSSI	0.00	0.00	0.00	0.00	0.00
Grays Thurrock Chalk Pits	SSSI	0.00	0.00	0.00	0.00	0.00
Ruxley Gravel Pits	SSSI	0.00	0.00	0.00	0.00	0.00
Thorndon Park	SSSI	0.00	0.00	0.00	0.00	0.00
Curtismill Green	SSSI	0.00	0.00	0.00	0.00	0.00
Crofton Wood	SSSI	0.00	0.00	0.00	0.00	0.00
Farningham Wood	SSSI	0.00	0.00	0.00	0.00	0.00
Swanscombe Peninsula	SSSI	0.00	0.00	0.00	0.00	0.00
Hainault Forest	SSSI	0.00	0.00	0.00	0.00	0.00
Darenth Wood	SSSI	0.00	0.00	0.00	0.00	0.00
Lower River Beam and Ford Works Ditches	SINC	-0.06	-0.07	-0.07	-0.07	-0.06
Wennington, Aveley and Rainham Marshes	SINC	0.03	0.05	0.06	0.03	0.03
Belvedere Dykes	SINC	0.00	0.01	0.02	0.01	0.01
Southmere Park & Yarnton Way/Viridion Way	SINC	0.05	0.04	0.05	0.06	0.05
Dagenham Breach and the lower Beam River in Dagenham	SINC	-0.04	-0.03	-0.03	-0.02	-0.02
Crossways Lake Nature Reserve and Thameside Walk Scrub	SINC	-0.06	-0.07	-0.06	-0.05	-0.06
Thamesview Golf Course	SINC	-0.03	0.01	0.00	-0.02	-0.01
Crossway Park and Tump 52	SINC	0.01	0.05	0.01	0.00	0.02
The Ridgeway	SINC	0.01	0.04	0.01	0.00	0.02
Erith Marshes	SINC	0.07	0.05	0.07	0.09	0.07
Crossness Sewage Treatment Works Pond	SINC	-0.11	-0.05	-0.06	-0.08	-0.07
St John the Baptist Churchyard, Erith	SINC	-0.01	0.00	0.00	0.00	0.00
Franks Park, Belvedere	SINC	0.00	0.00	0.00	0.00	0.00
River Thames and tidal tributaries	SINC	0.03	0.04	0.05	0.02	0.02

Table A-6 - Modelled concentrations and process contribution to Annual Mean Ammonia ($\mu\text{g}/\text{m}^3$)

Ecological Site	Designation	Baseline				
		Max PC 2018	Max PC 2019	Max PC 2020	Max PC 2021	Max PC 2022
Hangman's Wood and Deneholes	SSSI	0.01	0.01	0.01	0.01	0.01
Grays Thurrock Chalk Pits	SSSI	0.01	0.01	0.01	0.01	0.01
Ruxley Gravel Pits	SSSI	0.01	0.00	0.01	0.01	0.01
Thorndon Park	SSSI	0.02	0.03	0.03	0.03	0.03
Curtismill Green	SSSI	0.01	0.01	0.01	0.01	0.01
Crofton Wood	SSSI	0.01	0.00	0.00	0.00	0.01
Farningham Wood	SSSI	0.01	0.01	0.01	0.01	0.01
Swanscombe Peninsula	SSSI	0.01	0.02	0.01	0.01	0.02
Hainault Forest	SSSI	0.01	0.01	0.01	0.01	0.01
Darenth Wood	SSSI	0.00	0.01	0.01	0.01	0.01
Lower River Beam and Ford Works Ditches	SINC	0.34	0.39	0.45	0.34	0.34
Wennington, Aveley and Rainham Marshes	SINC	0.11	0.12	0.15	0.10	0.11
Belvedere Dykes	SINC	0.15	0.16	0.16	0.14	0.13
Southmere Park & Yarnton Way/Viridion Way	SINC	0.10	0.06	0.08	0.09	0.08
Dagenham Breach and the lower Beam River in Dagenham	SINC	0.23	0.25	0.25	0.24	0.25
Crossways Lake Nature Reserve and Thameside Walk Scrub	SINC	0.09	0.09	0.08	0.07	0.08
Thamesview Golf Course	SINC	0.14	0.14	0.13	0.12	0.13
Crossway Park and Tump 52	SINC	0.11	0.10	0.09	0.09	0.10
The Ridgeway	SINC	0.10	0.07	0.08	0.08	0.08
Erith Marshes	SINC	0.14	0.09	0.12	0.12	0.11
Crossness Sewage Treatment Works Pond	SINC	0.16	0.14	0.14	0.14	0.14
St John the Baptist Churchyard, Erith	SINC	0.03	0.03	0.02	0.03	0.02
Franks Park, Belvedere	SINC	0.03	0.03	0.02	0.03	0.03
River Thames and tidal tributaries	SINC	0.19	0.22	0.25	0.19	0.20

Ecological Site	Designation	With Carbon Capture				
		Max PC 2018	Max PC 2019	Max PC 2020	Max PC 2021	Max PC 2022
Hangman's Wood and Deneholes	SSSI	0.01	0.01	0.00	0.01	0.01
Grays Thurrock Chalk Pits	SSSI	0.01	0.01	0.01	0.01	0.01
Ruxley Gravel Pits	SSSI	0.00	0.00	0.00	0.01	0.00
Thorndon Park	SSSI	0.02	0.02	0.02	0.02	0.02
Curtismill Green	SSSI	0.00	0.00	0.00	0.00	0.00
Crofton Wood	SSSI	0.00	0.00	0.00	0.00	0.00
Farningham Wood	SSSI	0.01	0.01	0.01	0.01	0.01
Swanscombe Peninsula	SSSI	0.01	0.01	0.01	0.01	0.01
Hainault Forest	SSSI	0.00	0.00	0.00	0.00	0.00
Darenth Wood	SSSI	0.00	0.00	0.00	0.00	0.00
Lower River Beam and Ford Works Ditches	SINC	0.17	0.20	0.21	0.17	0.17
Wennington, Aveley and Rainham Marshes	SINC	0.08	0.09	0.11	0.08	0.08
Belvedere Dykes	SINC	0.05	0.05	0.05	0.05	0.05
Southmere Park & Yarnton Way/Viridion Way	SINC	0.07	0.05	0.05	0.06	0.06
Dagenham Breach and the lower Beam River in Dagenham	SINC	0.08	0.10	0.09	0.09	0.10
Crossways Lake Nature Reserve and Thameside Walk Scrub	SINC	0.04	0.04	0.04	0.03	0.04
Thamesview Golf Course	SINC	0.08	0.08	0.07	0.07	0.07
Crossway Park and Tump 52	SINC	0.07	0.07	0.06	0.06	0.07
The Ridgeway	SINC	0.07	0.06	0.05	0.06	0.06
Erith Marshes	SINC	0.08	0.07	0.07	0.08	0.07
Crossness Sewage Treatment Works Pond	SINC	0.08	0.08	0.07	0.07	0.08
St John the Baptist Churchyard, Erith	SINC	0.02	0.02	0.01	0.02	0.02
Franks Park, Belvedere	SINC	0.02	0.02	0.01	0.02	0.02
River Thames and tidal tributaries	SINC	0.11	0.14	0.15	0.12	0.12



Ecological Site	Designation	Maximum Impact				
		Max PC 2018	Max PC 2019	Max PC 2020	Max PC 2021	Max PC 2022
Hangman's Wood and Deneholes	SSSI	0.00	0.00	0.00	0.00	0.00
Grays Thurrock Chalk Pits	SSSI	0.00	0.00	0.00	0.00	-0.01
Ruxley Gravel Pits	SSSI	0.00	0.00	0.00	0.00	0.00
Thorndon Park	SSSI	-0.01	-0.01	-0.01	-0.01	-0.01
Curtismill Green	SSSI	0.00	0.00	0.00	0.00	0.00
Crofton Wood	SSSI	0.00	0.00	0.00	0.00	0.00
Farningham Wood	SSSI	0.00	0.00	0.00	0.00	0.00
Swanscombe Peninsula	SSSI	0.00	0.00	0.00	0.00	0.00
Hainault Forest	SSSI	0.00	0.00	0.00	0.00	0.00
Darenth Wood	SSSI	0.00	0.00	0.00	0.00	0.00
Lower River Beam and Ford Works Ditches	SINC	-0.05	-0.06	-0.06	-0.05	-0.06
Wennington, Aveley and Rainham Marshes	SINC	-0.01	-0.01	-0.01	-0.01	-0.02
Belvedere Dykes	SINC	-0.01	-0.01	-0.01	-0.01	-0.01
Southmere Park & Yarnton Way/Viridion Way	SINC	0.00	0.00	0.00	0.00	0.00
Dagenham Breach and the lower Beam River in Dagenham	SINC	-0.02	-0.02	-0.02	-0.01	-0.02
Crossways Lake Nature Reserve and Thameside Walk Scrub	SINC	-0.04	-0.04	-0.03	-0.03	-0.03
Thamesview Golf Course	SINC	-0.05	-0.03	-0.03	-0.04	-0.04
Crossway Park and Tump 52	SINC	-0.02	-0.01	-0.02	-0.02	-0.02
The Ridgeway	SINC	-0.02	-0.01	-0.02	-0.02	-0.02
Erith Marshes	SINC	0.00	0.00	0.00	0.00	0.00
Crossness Sewage Treatment Works Pond	SINC	-0.08	-0.06	-0.06	-0.06	-0.06
St John the Baptist Churchyard, Erith	SINC	-0.01	-0.01	-0.01	-0.01	-0.01
Franks Park, Belvedere	SINC	-0.01	-0.01	-0.01	-0.01	-0.01
River Thames and tidal tributaries	SINC	-0.03	-0.03	-0.03	-0.03	-0.03

Table A-7 - Modelled deposition and process contribution to Nitrogen Deposition (kgN/ha/yr)

Ecological Site	Designation	Vegetation Type	Baseline				
			Max PC 2018	Max PC 2019	Max PC 2020	Max PC 2021	Max PC 2022
Hangman's Wood and Deneholes	SSSI	Forest	0.08	0.08	0.07	0.09	0.11
Hangman's Wood and Deneholes	SSSI	Moorland	0.05	0.05	0.05	0.06	0.07
Grays Thurrock Chalk Pits	SSSI	Forest	0.10	0.12	0.10	0.12	0.15
Grays Thurrock Chalk Pits	SSSI	Moorland	0.07	0.07	0.06	0.07	0.09
Ruxley Gravel Pits	SSSI	Moorland	0.05	0.02	0.04	0.05	0.04
Thorndon Park	SSSI	Forest	0.24	0.28	0.25	0.30	0.26
Thorndon Park	SSSI	Moorland	0.15	0.18	0.16	0.19	0.17
Curtismill Green	SSSI	Moorland	0.04	0.03	0.04	0.04	0.05
Crofton Wood	SSSI	Forest	0.05	0.04	0.04	0.05	0.06
Farningham Wood	SSSI	Forest	0.10	0.10	0.08	0.10	0.09
Farningham Wood	SSSI	Moorland	0.06	0.06	0.05	0.06	0.06
Swanscombe Peninsula	SSSI	Moorland	0.08	0.11	0.09	0.09	0.10
Hainault Forest	SSSI	Forest	0.07	0.06	0.08	0.06	0.06
Darenth Wood	SSSI	Forest	0.05	0.06	0.06	0.07	0.06
Darenth Wood	SSSI	Moorland	0.03	0.04	0.04	0.04	0.04
Lower River Beam and Ford Works Ditches	SINC	Moorland	2.08	2.43	2.79	2.07	2.10
Wennington, Aveley and Rainham Marshes	SINC	Moorland	0.71	0.77	0.96	0.65	0.71
Belvedere Dykes	SINC	Moorland	0.91	1.02	0.97	0.86	0.80
Southmere Park &YarntonWay/Viridion Way	SINC	Moorland	0.59	0.40	0.50	0.53	0.50
Dagenham Breach and the lower Beam River in Dagenham	SINC	Moorland	1.39	1.54	1.53	1.44	1.50
Crossways Lake Nature Reserve and Thameside Walk Scrub	SINC	Moorland	0.53	0.54	0.48	0.42	0.51
Thamesview Golf Course	SINC	Moorland	0.87	0.87	0.77	0.73	0.82
Crossway Park and Tump 52	SINC	Moorland	0.66	0.62	0.54	0.57	0.61
The Ridgeway	SINC	Moorland	0.59	0.45	0.48	0.52	0.51
Erith Marshes	SINC	Moorland	0.84	0.54	0.72	0.76	0.69
Crossness Sewage Treatment Works Pond	SINC	Moorland	0.99	0.89	0.84	0.87	0.90
St John the Baptist Churchyard, Erith	SINC	Moorland	0.17	0.16	0.11	0.18	0.15
Franks Park, Belvedere	SINC	Moorland	0.21	0.17	0.12	0.21	0.17
River Thames and tidal tributaries	SINC	Moorland	1.16	1.39	1.58	1.16	1.22

Ecological Site	Designation	Vegetation Type	With Carbon Capture				
			Max PC 2018	Max PC 2019	Max PC 2020	Max PC 2021	Max PC 2022
Hangman's Wood and Deneholes	SSSI	Forest	0.06	0.06	0.05	0.07	0.08
Hangman's Wood and Deneholes	SSSI	Moorland	0.04	0.04	0.03	0.04	0.05
Grays Thurrock Chalk Pits	SSSI	Forest	0.07	0.08	0.07	0.08	0.10
Grays Thurrock Chalk Pits	SSSI	Moorland	0.05	0.05	0.04	0.05	0.06
Ruxley Gravel Pits	SSSI	Moorland	0.03	0.02	0.03	0.04	0.03
Thorndon Park	SSSI	Forest	0.17	0.21	0.19	0.22	0.19
Thorndon Park	SSSI	Moorland	0.11	0.13	0.12	0.14	0.12
Curtismill Green	SSSI	Moorland	0.03	0.02	0.03	0.03	0.03
Crofton Wood	SSSI	Forest	0.04	0.03	0.03	0.04	0.04
Farningham Wood	SSSI	Forest	0.07	0.07	0.06	0.08	0.07
Farningham Wood	SSSI	Moorland	0.04	0.04	0.04	0.05	0.04
Swanscombe Peninsula	SSSI	Moorland	0.05	0.07	0.06	0.06	0.07
Hainault Forest	SSSI	Forest	0.05	0.04	0.05	0.04	0.04
Darenth Wood	SSSI	Forest	0.03	0.04	0.04	0.05	0.05
Darenth Wood	SSSI	Moorland	0.02	0.03	0.03	0.03	0.03
Lower River Beam and Ford Works Ditches	SINC	Moorland	1.11	1.30	1.41	1.13	1.12
Wennington, Aveley and Rainham Marshes	SINC	Moorland	0.56	0.62	0.75	0.51	0.56
Belvedere Dykes	SINC	Moorland	0.35	0.37	0.37	0.34	0.35
Southmere Park & Yarnton Way/Viridion Way	SINC	Moorland	0.44	0.35	0.36	0.39	0.39
Dagenham Breach and the lower Beam River in Dagenham	SINC	Moorland	0.57	0.65	0.62	0.59	0.66
Crossways Lake Nature Reserve and Thameside Walk Scrub	SINC	Moorland	0.27	0.26	0.24	0.21	0.26
Thamesview Golf Course	SINC	Moorland	0.51	0.52	0.46	0.45	0.49
Crossway Park and Tump 52	SINC	Moorland	0.47	0.47	0.40	0.41	0.44
The Ridgeway	SINC	Moorland	0.44	0.40	0.36	0.38	0.40
Erith Marshes	SINC	Moorland	0.56	0.47	0.48	0.52	0.50
Crossness Sewage Treatment Works Pond	SINC	Moorland	0.53	0.56	0.50	0.48	0.52
St John the Baptist Churchyard, Erith	SINC	Moorland	0.11	0.11	0.08	0.13	0.10
Franks Park, Belvedere	SINC	Moorland	0.15	0.12	0.08	0.15	0.13
River Thames and tidal tributaries	SINC	Moorland	0.77	0.92	1.04	0.80	0.81



Ecological Site	Designation	Vegetation Type	Maximum Impact				
			Max PC 2018	Max PC 2019	Max PC 2020	Max PC 2021	Max PC 2022
Hangman's Wood and Deneholes	SSSI	Forest	-0.02	-0.02	-0.02	-0.02	-0.03
Hangman's Wood and Deneholes	SSSI	Moorland	-0.01	-0.02	-0.01	-0.02	-0.02
Grays Thurrock Chalk Pits	SSSI	Forest	-0.03	-0.03	-0.03	-0.03	-0.04
Grays Thurrock Chalk Pits	SSSI	Moorland	-0.02	-0.02	-0.02	-0.02	-0.03
Ruxley Gravel Pits	SSSI	Moorland	-0.01	-0.01	-0.01	-0.02	-0.01
Thorndon Park	SSSI	Forest	-0.05	-0.06	-0.06	-0.06	-0.05
Thorndon Park	SSSI	Moorland	-0.03	-0.04	-0.04	-0.04	-0.04
Curtismill Green	SSSI	Moorland	-0.01	-0.01	-0.01	-0.01	-0.01
Crofton Wood	SSSI	Forest	-0.01	0.00	-0.01	-0.01	-0.01
Farningham Wood	SSSI	Forest	-0.02	-0.02	-0.02	-0.02	-0.02
Farningham Wood	SSSI	Moorland	-0.02	-0.02	-0.01	-0.02	-0.02
Swanscombe Peninsula	SSSI	Moorland	-0.01	-0.01	-0.01	-0.01	-0.01
Hainault Forest	SSSI	Forest	-0.02	-0.02	-0.02	-0.02	-0.02
Darenth Wood	SSSI	Forest	-0.01	-0.01	-0.01	-0.01	-0.01
Darenth Wood	SSSI	Moorland	-0.01	-0.01	-0.01	-0.01	-0.01
Lower River Beam and Ford Works Ditches	SINC	Moorland	-0.30	-0.32	-0.32	-0.28	-0.32
Wennington, Aveley and Rainham Marshes	SINC	Moorland	-0.07	-0.06	-0.06	-0.07	-0.07
Belvedere Dykes	SINC	Moorland	-0.05	-0.03	-0.02	-0.05	-0.03
Southmere Park & Yarnton Way/Viridion Way	SINC	Moorland	0.00	0.01	0.01	0.02	0.01
Dagenham Breach and the lower Beam River in Dagenham	SINC	Moorland	-0.13	-0.10	-0.11	-0.08	-0.09
Crossways Lake Nature Reserve and Thameside Walk Scrub	SINC	Moorland	-0.20	-0.21	-0.19	-0.15	-0.19
Thamesview Golf Course	SINC	Moorland	-0.24	-0.16	-0.16	-0.20	-0.20
Crossway Park and Tump 52	SINC	Moorland	-0.12	-0.06	-0.09	-0.11	-0.09
The Ridgeway	SINC	Moorland	-0.12	-0.05	-0.10	-0.11	-0.09
Erith Marshes	SINC	Moorland	0.00	0.02	0.01	0.04	0.02
Crossness Sewage Treatment Works Pond	SINC	Moorland	-0.42	-0.31	-0.30	-0.35	-0.34
St John the Baptist Churchyard, Erith	SINC	Moorland	-0.06	-0.05	-0.03	-0.05	-0.04
Franks Park, Belvedere	SINC	Moorland	-0.06	-0.03	-0.03	-0.06	-0.04
River Thames and tidal tributaries	SINC	Moorland	-0.16	-0.16	-0.13	-0.16	-0.17

Table A-8 - Modelled deposition and process contribution to Acid Deposition (keq/ha/yr)

Ecological Site	Designation	Vegetation Type	Baseline				
			Max PC 2018	Max PC 2019	Max PC 2020	Max PC 2021	Max PC 2022
Thorndon Park	SSSI	Forest	0.093	0.112	0.100	0.118	0.104
Curtismill Green	SSSI	Moorland	0.012	0.010	0.013	0.012	0.013
Crofton Wood	SSSI	Forest	0.020	0.017	0.018	0.019	0.023
Farningham Wood	SSSI	Forest	0.039	0.039	0.033	0.041	0.038
Hainault Forest	SSSI	Forest	0.028	0.026	0.030	0.022	0.026
Darenth Wood	SSSI	Forest	0.019	0.024	0.022	0.027	0.025

Ecological Site	Designation	Vegetation Type	With Carbon Capture				
			Max PC 2018	Max PC 2019	Max PC 2020	Max PC 2021	Max PC 2022
Thorndon Park	SSSI	Forest	0.088	0.105	0.094	0.111	0.098
Curtismill Green	SSSI	Moorland	0.011	0.009	0.011	0.010	0.012
Crofton Wood	SSSI	Forest	0.018	0.015	0.016	0.018	0.021
Farningham Wood	SSSI	Forest	0.036	0.036	0.031	0.038	0.035
Hainault Forest	SSSI	Forest	0.024	0.022	0.025	0.019	0.022
Darenth Wood	SSSI	Forest	0.018	0.022	0.021	0.026	0.024

Ecological Site	Designation	Vegetation Type	Maximum Impact				
			Max PC 2018	Max PC 2019	Max PC 2020	Max PC 2021	Max PC 2022
Thorndon Park	SSSI	Forest	-0.002	-0.003	-0.003	-0.003	-0.002
Curtismill Green	SSSI	Moorland	-0.001	-0.001	-0.001	-0.001	-0.001
Crofton Wood	SSSI	Forest	-0.001	0.000	0.000	-0.001	0.000
Farningham Wood	SSSI	Forest	-0.002	-0.002	-0.002	-0.002	-0.002
Hainault Forest	SSSI	Forest	-0.003	-0.003	-0.003	-0.002	-0.003
Darenth Wood	SSSI	Forest	-0.001	-0.001	-0.001	-0.001	-0.001

Appendix B

ASSESSMENT AGAINST CURRENT BASELINE

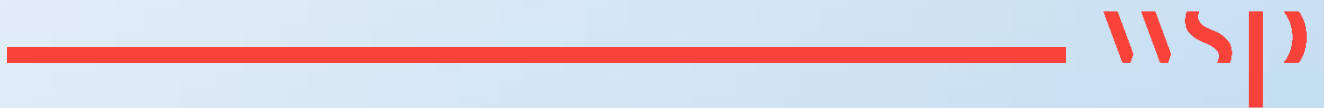




Table B-1 - Maximum contributions and PC for annual mean NO_x over sites designated for nature conservation (µg/m³). Values in bold exceed the critical level

Site	Designation	Critical Level	Baseline (max)	With Carbon Capture (max)	Max Beneficial PC	Max Adverse PC	Adverse PC as % of CL	PEC at Max Adverse Impact
Hangman's Wood and Deneholes	SSSI	30	0.075	0.114	0.000	0.039	0.13%	24.70
Grays Thurrock Chalk Pits	SSSI	30	0.099	0.147	0.000	0.049	0.16%	27.49
Ruxley Gravel Pits	SSSI	30	0.058	0.090	0.000	0.032	0.11%	26.19
Thorndon Park	SSSI	30	0.205	0.309	0.000	0.104	0.35%	19.84
Curtismill Green	SSSI	30	0.049	0.074	0.000	0.025	0.08%	22.16
Crofton Wood	SSSI	30	0.040	0.059	0.000	0.019	0.06%	19.91
Farningham Wood	SSSI	30	0.070	0.107	0.000	0.037	0.12%	24.83
Swanscombe Peninsula	SSSI	30	0.111	0.162	0.000	0.053	0.18%	36.28
Hainault Forest	SSSI	30	0.052	0.072	0.000	0.020	0.07%	21.97
Darenth Wood	SSSI	30	0.047	0.072	0.000	0.025	0.08%	27.02
Lower River Beam and Ford Works Ditches	SINC	30	2.951	2.995	0.000	0.604	2.01%	34.79
Wennington, Aveley and Rainham Marshes	SINC	30	1.209	1.730	0.000	0.525	1.75%	33.29
Belvedere Dykes	SINC	30	0.831	0.842	-0.089	0.284	0.95%	36.00
Southmere Park & Yarnton Way/Viridion Way	SINC	30	0.592	0.981	0.000	0.390	1.30%	30.50
Dagenham Breach and the lower Beam River in Dagenham	SINC	30	0.964	1.506	0.000	0.561	1.87%	40.55
Crossways Lake Nature Reserve and Thameside Walk Scrub	SINC	30	0.453	0.602	0.000	0.162	0.54%	27.62
Thamesview Golf Course	SINC	30	0.800	1.185	0.000	0.466	1.55%	31.92
Crossway Park and Tump 52	SINC	30	0.651	1.058	0.000	0.453	1.51%	28.71
The Ridgeway	SINC	30	0.598	0.990	0.000	0.411	1.37%	28.64
Erith Marshes	SINC	30	1.033	1.233	-0.641	0.480	1.60%	31.05
Crossness Sewage Treatment Works Pond	SINC	30	0.960	1.254	0.000	0.377	1.26%	30.77
St John the Baptist Churchyard, Erith	SINC	30	0.183	0.284	0.000	0.102	0.34%	27.03
Franks Park, Belvedere	SINC	30	0.220	0.334	0.000	0.118	0.39%	27.08

Table B-2 - Maximum contributions and PC for daily mean NO_x over sites designated for nature conservation (µg/m³)

Site	Designation	Critical Level	Baseline (max)	With Carbon Capture (max)	Max Beneficial PC	Max Adverse PC	Adverse PC as % of CL	PEC at Max Adverse Impact
Hangman's Wood and Deneholes	SSSI	200	0.832	1.262	0.000	0.526	0.26%	50.44
Grays Thurrock Chalk Pits	SSSI	200	1.142	1.863	0.000	0.721	0.36%	56.54
Ruxley Gravel Pits	SSSI	200	1.176	1.717	0.000	0.541	0.27%	53.92
Thorndon Park	SSSI	200	1.364	1.952	0.000	0.812	0.41%	41.01
Curtismill Green	SSSI	200	0.736	1.106	0.000	0.415	0.21%	45.29
Crofton Wood	SSSI	200	0.744	1.093	0.000	0.378	0.19%	40.79
Farningham Wood	SSSI	200	1.595	2.837	0.000	1.242	0.62%	52.28
Swanscombe Peninsula	SSSI	200	1.327	2.117	0.000	0.806	0.40%	74.36
Hainault Forest	SSSI	200	0.779	1.070	0.000	0.338	0.17%	44.87
Darenth Wood	SSSI	200	0.950	1.595	0.000	0.645	0.32%	55.50
Lower River Beam and Ford Works Ditches	SINC	200	26.267	26.622	-0.757	5.187	2.59%	90.22
Wennington, Aveley and Rainham Marshes	SINC	200	8.295	11.106	0.000	3.365	1.68%	74.23
Belvedere Dykes	SINC	200	27.463	13.234	-14.490	3.882	1.94%	83.55
Southmere Park & Yarrton Way/Viridion Way	SINC	200	8.353	14.950	0.000	6.688	3.34%	73.99
Dagenham Breach and the lower Beam River in Dagenham	SINC	200	18.441	23.908	-1.886	6.096	3.05%	101.99
Crossways Lake Nature Reserve and Thameside Walk Scrub	SINC	200	5.505	6.796	0.000	2.350	1.17%	60.84
Thamesview Golf Course	SINC	200	9.644	11.997	-0.547	4.452	2.23%	73.48
Crossway Park and Tump 52	SINC	200	7.352	10.047	0.000	3.924	1.96%	65.35
The Ridgeway	SINC	200	7.007	9.797	0.000	3.238	1.62%	65.10
Erith Marshes	SINC	200	26.892	22.508	-21.711	9.182	4.59%	82.15
Crossness Sewage Treatment Works Pond	SINC	200	12.601	13.911	-0.618	4.937	2.47%	72.95
St John the Baptist Churchyard, Erith	SINC	200	3.971	5.989	-0.046	2.281	1.14%	59.49
Franks Park, Belvedere	SINC	200	5.282	7.338	0.000	2.900	1.45%	60.84
River Thames and tidal tributaries	SINC	200	11.463	13.525	0.000	3.337	1.7%	66.76



Table B-3 - Maximum contributions and PC for annual mean SO₂ over sites designated for nature conservation (µg/m³)

Site	Designation	Critical Level	Baseline (max)	With Scheme (max)	Max Beneficial Impact	Max Adverse Impact	Adverse Impact as % of CL	PEC at Max Adverse Impact
Hangman's Wood and Deneholes	SSSI	10	0.017	0.031	0.000	0.014	0.14%	2.63
Grays Thurrock Chalk Pits	SSSI	10	0.022	0.040	0.000	0.018	0.18%	3.57
Ruxley Gravel Pits	SSSI	10	0.013	0.025	0.000	0.012	0.12%	1.69
Thorndon Park	SSSI	10	0.046	0.086	0.000	0.039	0.39%	2.07
Curtismill Green	SSSI	10	0.011	0.020	0.000	0.009	0.09%	1.49
Crofton Wood	SSSI	10	0.009	0.016	0.000	0.007	0.07%	1.37
Farningham Wood	SSSI	10	0.016	0.030	0.000	0.014	0.14%	1.45
Swanscombe Peninsula	SSSI	10	0.025	0.045	0.000	0.020	0.20%	3.80
Hainault Forest	SSSI	10	0.011	0.019	0.000	0.008	0.08%	1.85
Darenth Wood	SSSI	10	0.011	0.020	0.000	0.009	0.09%	2.04
Lower River Beam and Ford Works Ditches	SINC	10	0.654	0.860	0.000	0.271	2.71%	3.54
Wennington, Aveley and Rainham Marshes	SINC	10	0.268	0.470	0.000	0.201	2.01%	4.28
Belvedere Dykes	SINC	10	0.188	0.233	-0.015	0.105	1.05%	2.68
Southmere Park & Yarnton Way/Viridion Way	SINC	10	0.133	0.275	0.000	0.142	1.42%	2.80
Dagenham Breach and the lower Beam River in Dagenham	SINC	10	0.213	0.410	0.000	0.201	2.01%	4.68
Crossways Lake Nature Reserve and Thameside Walk Scrub	SINC	10	0.104	0.167	0.000	0.067	0.67%	2.49
Thamesview Golf Course	SINC	10	0.180	0.336	0.000	0.171	1.71%	3.79
Crossway Park and Tump 52	SINC	10	0.146	0.299	0.000	0.158	1.58%	2.56
The Ridgeway	SINC	10	0.135	0.277	0.000	0.142	1.42%	2.54
Erith Marshes	SINC	10	0.231	0.349	-0.126	0.171	1.71%	2.87
Crossness Sewage Treatment Works Pond	SINC	10	0.216	0.358	0.000	0.154	1.54%	2.74
St John the Baptist Churchyard, Erith	SINC	10	0.041	0.079	0.000	0.038	0.38%	2.44
Franks Park, Belvedere	SINC	10	0.049	0.094	0.000	0.045	0.45%	2.45
River Thames and tidal tributaries	SINC	10	0.407	0.643	0.000	0.236	2.36%	4.45



Table B-4 - Maximum contributions and PC for annual mean NH₃ over sites designated for nature conservation (µg/m³). Values in bold exceed the critical level

Site	Designation	Critical Level	Baseline (max)	With Scheme (max)	Max Beneficial Impact	Max Adverse Impact	Adverse Impact as % of CL	PEC at Max Adverse Impact
Hangman's Wood and Deneholes	SSSI	3	0.006	0.007	0.000	0.001	0.04%	1.08
Grays Thurrock Chalk Pits	SSSI	3	0.008	0.009	0.000	0.001	0.04%	1.09
Ruxley Gravel Pits	SSSI	3	0.005	0.006	0.000	0.001	0.03%	1.04
Thorndon Park	SSSI	1	0.017	0.020	0.000	0.003	0.30%	1.11
Curtismill Green	SSSI	3	0.004	0.005	0.000	0.001	0.02%	1.23
Crofton Wood	SSSI	1	0.003	0.004	0.000	0.001	0.06%	1.02
Farningham Wood	SSSI	1	0.006	0.007	0.000	0.001	0.11%	1.03
Swanscombe Peninsula	SSSI	3	0.009	0.010	0.000	0.001	0.05%	1.07
Hainault Forest	SSSI	1	0.004	0.005	0.000	0.000	0.04%	1.10
Darenth Wood	SSSI	1	0.004	0.005	0.000	0.001	0.07%	1.04
Lower River Beam and Ford Works Ditches	SINC	1	0.246	0.212	-0.034	0.021	2.09%	1.20
Wennington, Aveley and Rainham Marshes	SINC	1	0.101	0.111	0.000	0.012	1.21%	1.03
Belvedere Dykes	SINC	1	0.069	0.054	-0.016	0.013	1.31%	1.09
Southmere Park & Yarnton Way/Viridion Way	SINC	1	0.049	0.065	0.000	0.020	2.00%	1.15
Dagenham Breach and the lower Beam River in Dagenham	SINC	1	0.080	0.097	-0.002	0.020	2.02%	1.19
Crossways Lake Nature Reserve and Thameside Walk Scrub	SINC	1	0.038	0.039	-0.001	0.003	0.29%	1.12
Thamesview Golf Course	SINC	1	0.067	0.078	-0.011	0.018	1.77%	1.16
Crossway Park and Tump 52	SINC	1	0.054	0.069	0.000	0.019	1.94%	1.15
The Ridgeway	SINC	1	0.050	0.065	0.000	0.018	1.79%	1.15
Erith Marshes	SINC	1	0.086	0.083	-0.063	0.025	2.49%	1.16
Crossness Sewage Treatment Works Pond	SINC	1	0.080	0.082	-0.002	0.009	0.95%	1.09
St John the Baptist Churchyard, Erith	SINC	1	0.015	0.019	0.000	0.003	0.35%	1.06
Franks Park, Belvedere	SINC	1	0.018	0.022	0.000	0.005	0.49%	1.07
River Thames and tidal tributaries	SINC	1	0.153	0.153	0.000	0.014	1.44%	1.14



Table B-5 - Maximum contributions and PC for nitrogen deposition over sites designated for nature conservation (kgN/ha/yr).
Values in bold exceed the critical load

Site	Designation	Deposition Type	Critical Load	Baseline (max)	With Carbon Capture (max)	Max Beneficial PC	Max Adverse PC	Adverse PC as % of CL	PEC at Max Adverse Impact
Hangman's Wood and Deneholes	SSSI	Forest	5	0.064	0.080	0.000	0.016	0.33%	23.99
Hangman's Wood and Deneholes	SSSI	Moorland	5	0.040	0.050	0.000	0.010	0.19%	12.57
Grays Thurrock Chalk Pits	SSSI	Forest	5	0.084	0.104	0.000	0.020	0.40%	24.06
Grays Thurrock Chalk Pits	SSSI	Moorland	5	0.053	0.064	0.000	0.012	0.23%	12.61
Ruxley Gravel Pits	SSSI	Moorland	5	0.031	0.039	0.000	0.008	0.16%	12.85
Thorndon Park	SSSI	Forest	15	0.174	0.219	0.000	0.045	0.30%	24.80
Thorndon Park	SSSI	Moorland	5	0.109	0.136	0.000	0.027	0.53%	13.01
Curtismill Green	SSSI	Moorland	10	0.026	0.032	0.000	0.006	0.06%	13.42
Crofton Wood	SSSI	Forest	10	0.034	0.042	0.000	0.008	0.08%	24.83
Farningham Wood	SSSI	Forest	15	0.059	0.076	0.000	0.017	0.11%	24.22
Farningham Wood	SSSI	Moorland	5	0.037	0.047	0.000	0.010	0.20%	12.98
Swanscombe Peninsula	SSSI	Moorland	5	0.059	0.071	0.000	0.013	0.26%	12.56
Hainault Forest	SSSI	Forest	5	0.044	0.051	0.000	0.007	0.14%	25.11
Darenth Wood	SSSI	Forest	15	0.040	0.050	0.000	0.011	0.07%	23.76
Darenth Wood	SSSI	Moorland	5	0.025	0.031	0.000	0.006	0.13%	12.65
Lower River Beam and Ford Works Ditches	SINC	Moorland	30	1.575	1.407	-0.168	0.171	0.57%	13.79
Wennington, Aveley and Rainham Marshes	SINC	Moorland	20	0.645	0.752	0.000	0.115	0.57%	12.99
Belvedere Dykes	SINC	Moorland	30	0.443	0.369	-0.086	0.090	0.30%	12.77
Southmere Park & Yarnton Way/Viridion Way	SINC	Moorland	30	0.316	0.438	0.000	0.144	0.48%	13.07
Dagenham Breach and the lower Beam River in Dagenham	SINC	Moorland	30	0.514	0.659	-0.004	0.164	0.55%	13.13
Crossways Lake Nature Reserve and Thameside Walk Scrub	SINC	Moorland	20	0.242	0.265	0.000	0.032	0.16%	12.90
Thamesview Golf Course	SINC	Moorland	30	0.427	0.524	-0.055	0.141	0.47%	13.15

Site	Designation	Deposition Type	Critical Load	Baseline (max)	With Carbon Capture (max)	Max Beneficial PC	Max Adverse PC	Adverse PC as % of CL	PEC at Max Adverse Impact
Crossway Park and Tump 52	SINC	Moorland	20	0.347	0.469	0.000	0.148	0.74%	13.10
The Ridgeway	SINC	Moorland	20	0.319	0.440	0.000	0.136	0.68%	13.07
Erith Marshes	SINC	Moorland	20	0.551	0.558	-0.389	0.177	0.88%	13.19
Crossness Sewage Treatment Works Pond	SINC	Moorland	30	0.512	0.555	0.000	0.089	0.30%	13.07
St John the Baptist Churchyard, Erith	SINC	Moorland	20	0.098	0.126	0.000	0.029	0.14%	12.33
Franks Park, Belvedere	SINC	Moorland	20	0.117	0.150	0.000	0.037	0.18%	12.49
River Thames and tidal tributaries	SINC	Moorland	30	0.980	1.035	0.000	0.124	0.41%	13.34

Table B-6 - Maximum contributions and PC for acid deposition over sites designated for nature conservation (keq/ha/yr). Values in bold exceed the critical load

Site	Designation	Deposition Type	Critical Load	Baseline (max)	With Scheme (max)	Max Beneficial Impact	Max Adverse Impact	Adverse Impact as % of CL	PEC at Max Adverse Impact
Thorndon Park	SSSI	Forest	2.065	0.059	0.111	0.000	0.052	2.53%	1.981
Curtismill Green	SSSI	Moorland	5.071	0.007	0.012	0.000	0.005	0.11%	1.032
Crofton Wood	SSSI	Forest	1.223	0.012	0.021	0.000	0.009	0.77%	1.861
Farningham Wood	SSSI	Forest	1.507	0.020	0.038	0.000	0.018	1.22%	1.848
Hainault Forest	SSSI	Forest	2.907	0.015	0.025	0.000	0.011	0.37%	1.935
Darenth Wood	SSSI	Forest	1.340	0.014	0.026	0.000	0.012	0.89%	1.816



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