

AENC-ARC-ENV-REP-0139

Norwich to Tilbury

Volume 6: Environmental Statement

Document: 6.7.A2 Environmental Statement Appendix 7.2 - Air
Quality Baseline Data - Clean Version

Final Issue B

July 2026

Planning Inspectorate Reference: EN020027

Infrastructure Planning (Applications: Prescribed Forms and Procedure)
Regulations 2009 Regulation 5(2)(a)

nationalgrid

Revision History

Version	Date	Submitted at
A	29 August 2025	DCO Application
B	21 July 2026	Deadline 7 to include latest cross references

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7. Air Quality Baseline Data

7.1 Introduction

7.1.1 This appendix supports and should be read in conjunction with Chapter 7: Air Quality (document reference 6.7) (Revision B) of the Environment Statement (ES) (Volume 6 of the Development Consent Order (DCO) application) for Norwich to Tilbury (the 'Project'). This appendix presents the air quality baseline data in relation to the Project. Existing or baseline ambient air quality refers to the concentration of relevant substances that are already present in the environment. These are present from various sources, such as industrial processes, commercial and domestic activities, traffic, and natural sources.

7.1.2 The Project has also been sub-divided into eight geographical sections for reader accessibility, based largely on Local Planning Authority boundaries. These are shown on Figure 1.1: Site Location Plan and Project Sections (document reference 6.1.F1) and comprise:

- Section A – South Norfolk Council
- Section B – Mid-Suffolk District Council
- Section C – Babergh District Council, Colchester City Council and Tendring District Council
- Section D – Colchester City Council
- Section E – Braintree District Council
- Section F – Chelmsford City Council and Brentwood District Council
- Section G – Basildon Borough Council and Brentwood Borough Council (and part of Chelmsford City Council)
- Section H – Thurrock Council.

7.1.3 Receptors are reported with reference to the Project section in which they are located. The methodology for selecting the receptors was agreed with the Local Planning Authorities during the scoping process.

7.2 Sources of Air Pollution

Industrial Processes

7.2.1 There are 14 Part A processes with emissions to air listed on the Environment Agency website (Environment Agency, 2024) within 2 km of the Project, as shown in Table A7.2.1 and Figure 7.1: Air Quality Study Area and Constraints (document reference 6.7.F1).

Table A7.2.1 Part A processes within 2 km of the Order Limits

Site ID	Permit Number	Process	Project Section(s)	Local Planning Authority
EPR/FP3890VK	Material Change Limited	Disposal Of > 50 T/D Non-Hazardous Waste (> 100 T/D If Only Ad) Involving Biological Treatment - 5.4 A(1) a) (i)	Section B	Mid Suffolk
EPR/SP3802SZ	Ampil 2 Asset Limited	Medium Combustion Plant (MCP) and Specified Generator	Section B	Mid Suffolk
EPR/CP3626SL	Suffolk Fresh Limited	MCP	Section B	Mid Suffolk
EPR/ZP3829SC	Grastim UK Ltd	MCP	Section B	Mid Suffolk
EPR/BL1240IC	Climax Molybdenum UK Limited	Non-Ferrous Metals; Producing from Raw Materials by Metallurgical Activities	Section B	Mid Suffolk
EPR/CP3906LP	Indaver Rivenhall Limited	Incineration of Non-Hazardous Waste	Section E	Braintree
EPR/LP3839LV	National Gas Transmission plc	Combustion; Any Fuel =>50 MW - 1.1 A(1) a)	Section F	Chelmsford
EPR/CP3424SR	Ford Technologies Limited	MCP	Section G	Basildon
EPR/WE5770AB	Conrad (Billericay) Limited	MCP	Sections G and H	Brentwood
EPR/WE8222AA	Lime Kilns Energy Centre Ltd	MCP	Sections G and H	Thurrock
EPR/WE0182AB	Conrad (Lower Dunton) Limited	MCP	Sections G and H	Thurrock
EPR/AB3600TK	SIMS Environmental Ltd	Disposal Or Recovery of Hazardous Waste with a Capacity Exceeding 10 Tonnes Per Day	Section H	Thurrock
EPR/HP3547QK	European Metal Recycling Limited	Recovery or a Mix of Recovery and Disposal sf > 75 T/D Non-Hazardous Waste	Section H	Thurrock
EPR/YP3022SU	Tarmac Trading Limited	MCP	Section H	Thurrock

7.3 Monitoring Results

Automatic Monitoring

- 7.3.1
- The details of the monitoring locations are shown in Table A7.2.2. The results for recent years are shown in Table A7.2.3 to Table A7.2.5. Data for the baseline year of 2023 has been taken from the latest 2024 Air Quality Annual Status Reports (ASRs) for the relevant Local Planning Authorities.
- 7.3.2
- Monitoring locations are shown on Figure 7.1: Air Quality Study Area and Constraints (document reference 6.7.F1).

Table A7.2.2 Details of automatic monitoring sites within 2 km of the Order Limits

Site Name	Site ID	Project Section(s)	Location		Site Type	Pollutants Monitored (2023)
			X	Y		
Chelmsford 2024 ASR (Chelmsford City Council, 2024)						
Chignal St James	CM1	Section F	566463	210830	Rural	Nitric Oxide (NO), Nitrogen Oxide (NOx), Nitrogen Dioxide (NO2), Particulate Matter (PM2.5), Ozone (O3)

Table A7.2.3 Annual mean NO₂ concentrations at the automatic monitoring site

Site ID	NO ₂ Concentration (Micrograms per cubic meter - µg/m ³)					NO ₂ 1-hour Mean >200 µg/m ³				
	2019	2020	2021	2022	2023	2019	2020	2021	2022	2023
CM1	11.9	9.3	8.9	12.9	11.1	0	0 (57.73)	0	0	0
Air Quality standard	40 µg/m ³					200 µm ³ not to be exceeded more than 18 times/year				

Notes:

If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

n/a – data not recorded at this site.

Table A7.2.4 Annual mean PM₁₀ concentrations at the automatic monitoring site

Site ID	PM ₁₀ Concentration (µg/m ³)					PM ₁₀ 24-hour Mean >50 µg/m ³				
	2019	2020	2021	2022	2023	2019	2020	2021	2022	2023
CM1*	15.9	12.4	10.9	16.0	N/A	3	0	0	0	N/A
Air Quality standard	40 µg/m ³					50 µg/m ³ not to be exceeded more than 35 times/year				

Notes:

*PM10 monitoring at CM1 was decommissioned in 2022.

Table A7.2.5 Annual mean PM_{2.5} concentrations at the automatic monitoring site

Site ID	PM _{2.5} Concentration (µg/m ³)				
	2019	2019	2020	2021	2023
CM1*	n/a	n/a	n/a	n/a	10.5

Notes:

*PM_{2.5} monitoring was commissioned at CM1 in 2023.

The current limit value for PM_{2.5} is 20 µg/m³, however the Environmental Targets (Fine Particular Matter) (England) Regulations 2023 (Department of Environment, Food and Rural Affairs, 2023), state that the annual mean level of PM_{2.5} in ambient air must be equal to or less than 10 µg/m³ ('the target level') by 31st December 2040. The Environmental Improvement Plan (2023) sets an interim target of 12 µg/m³, to be achieved by 31 January 2028. Due to the timescales of the Project, where construction would commence in 2027, this assessment has considered the target of 12 µg/m³.

Diffusion Tube Monitoring

7.3.3 The details of the diffusion tube locations are shown in Table A7.2.6. The results for recent years are shown in Table A7.2.7. Monitoring locations are shown on Figure 7.1: Air Quality Study Area and Constraints (document reference 6.7.F1).

Table A7.2.6 Details of diffusion tube monitoring locations within 2 km of the Order Limits

Local Planning Authority	Site ID	Description	Project Section (s)	Coordinates (Based on OS Grid Reference, m)		Type of Site
				X	Y	
Basildon 2024 ASR (Basildon Council, 2024)						
Basildon	RW4	Radford Way Billericay Lamp Post 1	Section G	567569	195025	Roadside
Basildon	NOR8	Norsey Road Billericay Lamp Post 2	Section G	567571	194865	Kerbside
Basildon	CS9	Chapel Street Billericay Sign Post 2A	Section G	567496	194653	Kerbside
Basildon	SS10	Sun Street Billericay No Waiting Sign	Section G	567451	194259	Kerbside
Basildon	SSI11	Sun Street Billericay Garland	Section G	567355	194229	Kerbside
Braintree 2024 ASR (Braintree District Council, 2024)						
Braintree	BR11	High St Kelvedon	Section E	586386	219106	Roadside
Brentwood 2024 ASR (Brentwood Borough Council, 2024)						

Local Planning Authority	Site ID	Description	Project Section (s)	Coordinates (Based on OS Grid Reference, m)		Type of Site
				X	Y	
Brentwood	BRW28	Ingatestone, Junior School, The Furlongs - playground pergola1	Section F and G	564446	199509	Urban Background
Brentwood	BRW29	Trimble Close - lamp-post	Section F and G	564617	199849	Roadside
Brentwood	BRW30	8 Trimble	Section F and G	564654	199898	Roadside
Brentwood	BRW31	New Road, Ingatestone – telegraph pole	Section F and G	565186	200071	Roadside
Chelmsford 2024 ASR (Chelmsford City Council, 2024)						
Chelmsford	CB13	60 Roxwell Road	Section F	569077	207528	Roadside
Chelmsford	CB62, CB63, CB64	Chignal 3	Section F	566463	210830	Rural
Chelmsford	CB113	Broomfield Road	Section F	570669	210486	Roadside
Colchester 2024 ASR (Colchester City Council, 2024)						
Colchester	CBC90	London Rd 170 Marks Tey	Section D	591312	223431	Roadside
Colchester	CBC135	11 Bridge Farm, Coggeshall Road	Section D	591366	223679	Roadside
Colchester	CBC136	85 Coggeshall Road	Section D	590444	223502	Roadside
Colchester	CBC137	93B Coggeshall Road	Section D	590325	223495	Roadside
Colchester	CBC144	Mill Rd 237	Section D	599896	228282	Roadside
South Norfolk 2024 ASR (South Norfolk and Broadland District Councils, 2024)						
South Norfolk	DT4	4-87 DENMARK ST,DISS	Section A	611943	279567	Suburban
South Norfolk	DT5	5-131 VICTORIA RD,DISS	Section A	611943	279567	Suburban
South Norfolk	DT30	30 - Morrisons/Parsons Diss	Section A	611785	279593	Roadside
Tendring 2024 ASR (Tendring District Council, 2024)						

Local Planning Authority	Site ID	Description	Project Section (s)	Coordinates (Based on OS Grid Reference, m)		Type of Site
				X	Y	
Tendring	DT20	A120 – Hempstall Farm	Section C	612619	227395	Roadside
Tendring	DT50	Harwich Road, Ardleigh	Section C	605355	229466	Roadside
Thurrock 2024 ASR (Thurrock Council, 2024)						
Thurrock	B	Bulphan (RB)	Section H	563855	184772	Rural
Thurrock	PKSL	Park Road	Section H	567781	182400	Roadside
Thurrock	SL	Stanford Library	Section H	568501	182459	Urban Background
Thurrock	WES	William Edwards School (R)	Section H	561958	180967	Roadside
Thurrock	NAS3	Chestnut Avenue Grays (UB)	Section H	561830	179878	Urban Background
Thurrock	NC	Nutberry Close (façade) (I)	Section H	561077	179912	Industrial
Thurrock	SCR LTC	Stifford Clays Road (LTC) (UB)	Section H	562383	181157	Urban Background
Thurrock	BSA LTC	Baker Street (A) (North) (I)	Section H	563486	181070	Industrial
Thurrock	BSB LTC	Baker Street (B) (South)	Section H	563574	180770	Industrial
Thurrock	HR LTC	Heath Road	Section H	563785	180157	Industrial
Thurrock	SR LTC	Station Road	Section H	567351	177555	Industrial
Thurrock	TTS LTC	Treetops School	Section H	563828	179597	Urban Background

Table A7.2.7 Annual mean NO₂ concentrations at diffusion tube monitoring sites

Local Planning Authority	Site ID	Project Section(s)	NO ₂ Annual Mean Concentrations (µg/m ³)				
			2019	2020*	2021*	2022	2023
Basildon	RW4	Section G	-	-	-	-	25.2
Basildon	NOR8	Section G	-	-	23.7	26.6	26.0
Basildon	CS9	Section G	-	-	-	-	22.4
Basildon	SS10	Section G	-	-	27.6	29.5	29.2
Basildon	SSL11	Section G	-	-	21.6	22.3	20.9
Braintree	BR11	Section F and G	22.1	17.2	18.0	19.9	16.5
Brentwood	BRW28	Section F and G	28.4	22.4	23.1	20.4	17.9
Brentwood	BRW29	Section F and G	24.5	19.6	18.6	18.0	15.3
Brentwood	BRW30	Section F	26.9	21.0	20.6	20.2	17.2
Brentwood	BRW31	Section F	25.9	19.5	20.8	19.2	14.5
Chelmsford	CB13	Section D	17.7	14.5	14.7	13.7	-
Chelmsford	CB62, CB63, CB64	Section D	11.6	9.2	9.0	9.0	7.3
Chelmsford	CB113	Section D	-	-	25.1	23.6	21.8
Colchester	CBC90	Section A	26.7	17.5	17.5	16.3	17.5
Colchester	CBC135	Section A	32.5	25.6	23.8	19.6	18.2
Colchester	CBC136	Section C	30.6	22.2	24.4	23.2	20.3
Colchester	CBC137	Section C	37.9	28.5	33.3	22.4	21.9
Colchester	CBC144	Section H	-	-	-	-	13.3
South Norfolk	DT4	Section G	21.5	18.7	22.1	22.4	21.3
South Norfolk	DT5	Section G	26.9	19.5	21.9	21.5	19.0
South Norfolk	DT30	Section G	-	15.8	19.4	17.6	15.8
Tendring	DT20	Section G	20.3	15.8	15.5	15.9	15.3
Tendring	DT50	Section G	-	-	15.9	16.0	13.4
Thurrock	B	Section E	14.6	11.9	9.5	12.3	13.4

Local Planning Authority	Site ID	Project Section(s)	NO ₂ Annual Mean Concentrations (µg/m ³)				
			2019	2020*	2021*	2022	2023
Thurrock	PKSL	Section F and G	26.0	20.7	18.1	19.7	17.8
Thurrock	SL	Section F and G	25.5	19.5	17.8	18.7	19.4
Thurrock	WES	Section F and G	26.6	20.3	16.8	18.6	17.8
Thurrock	NAS3	Section F and G	24.8	18.8	15.8	18.4	21.2
Thurrock	NC	Section F	34.5	28.7	22.8	25.5	19.8
Thurrock	SCR LTC	Section F	30.1	22.3	17.6	20.3	18.9
Thurrock	BSA LTC	Section F	25.9	18.9	17.0	18.3	19.0
Thurrock	BSB LTC	Section D	28.3	23.5	20.1	20.9	20.3
Thurrock	HR LTC	Section D	29.0	22.1	17.7	18.6	18.0
Thurrock	SR LTC	Section D	17.1	15.4	13.1	12.2	14.8
Thurrock	TTS LTC	Section D	21.5	19.2	16.0	17.5	16.2

Notes:

‘-’ denotes no monitoring data is available.

* 2020-2021 years were impacted by Covid-19, and they are not representative of air quality concentrations at normal traffic conditions

Abbreviations

Abbreviation	Full Reference
ASR	Annual Status Report
DCO	Development Consent Order
ES	Environmental Statement
MCP	Medium Combustion Plant
NO	Nitric Oxide
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxide
O ₃	Ozone
PM _{2.5}	Particulate Matter (2.5 micrometers or less in diameter)
PM ₁₀	Particulate Matter (10 micrometers or less in diameter)
µg/m ³	Micrograms per cubic meter

Glossary

Term	Definition
Air quality standard	The concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on the assessment of the effects of each pollutant on human health.
Annual mean	The average (mean) of the concentrations measured for each pollutant for one year.
Baseline conditions	The existing (pre-Project) environmental conditions against which any future changes can be measured or predicted.
Diffusion tube	A passive pollution monitoring device that monitors concentrations of NO ₂ only.
Industrial	An area where industrial sources make an important contribution to the total pollution burden.
Kerbside	A site sampling within one metre of the kerb of a busy road.
Part A processes	A category of industrial activity regulated under the Environmental Permitting Regulations (England and Wales), covering operations with the highest potential for environmental impact. Part A processes are typically large-scale and may affect air, water, and land. They require a permit from the Environment Agency and must comply with Best Available Techniques (BAT) to minimise pollution.
Roadside	A site sampling typically within one to five metres of the kerb of a busy road.
Rural	An open countryside location, in an area of low population density distanced as far as possible from roads, populated and industrial areas.
Study Area	A Study Area of 2 km from the Order Limits has been utilised to assess the baseline conditions for Air Quality.
Urban Background	An urban location distanced from sources and therefore broadly representative of city-wide background conditions, e.g. urban residential areas.

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