

Appendix 11.1: Summary of on-site Emissions to Air

Table 11.1.1 Summary of all Identified Potential Emissions to Air (information supplied by Technip)

Emission Point ID	Emission Source	Description	Parameters	Monitoring frequency (continuous, daily, weekly etc)	Included in Dispersion Modelling
A1	HP Boiler Z-5100 - 1	Continuous channelled emission of combustion flue gas from HP Steam Boiler Stack. HP Steam Boiler is fired on combination of 70-100% fuel gas (mixture natural gas and process off-gas) and 0-30% liquid fuel (process off-liquid). Operating with liquid fuel anticipated to be approx. 1000 hours per year.	CO NO _x VOC SO ₂ PM	At least every 3 months (initially once every 3 months but may be extended to once every 12 months if emission levels are proven sufficiently stable)	Y
A2	HP Boiler Z-5100 - 2	Continuous channelled emission of combustion flue gas from HP Steam Boiler Stack. HP Steam Boiler is fired on combination of 70-100% fuel gas (mixture natural gas and process off-gas) and 0-30% liquid fuel (process off-liquid). Operating with liquid fuel anticipated to be approx 1000 hours per year.	CO NO _x VOC SO ₂ PM	At least every 3 months (initially once every 3 months but may be extended to once every 12 months if emission levels are proven sufficiently stable)	Y
A3	Flare Z-7460	Intermittent channelled emission of combustion flue gas from enclosed ground flare Z-7560. Emergency flaring possible once every 1-25+ years. Start-up and shutdown flaring every 6 months.	NO _x CO SO ₂ VOC	Continuous	Y

Emission Point ID	Emission Source	Description	Parameters	Monitoring frequency (continuous, daily, weekly etc)	Included in Dispersion Modelling
A4	Road Tanker Loading Z-7710	Intermittent channelled emission from road tanker venting during product loading via vapour recovery of VOC.	VOC	At least every 1 month (during loading) (initially once every 1 months but may be extended to once every 12 months if emission levels are proven sufficiently stable)	N – emissions are minor and therefore not considered significant
A5	Ship Loading / Unloading	Intermittent diffuse non-fugitive emission from venting during ship loading/unloading activities.	VOC	5 years (supplemented by annual quantification using thermodynamic methods)	N – emissions not considered significant based on screening against LAQM.TG(22)
A6	Hydrogen Generation Z-4300	Continuous channelled emission of concentrated O2 byproduct from water electrolysis out atmospheric vent. Stream may contain traces of H2, N2 and H2O.	Visible plume	None	N – emissions are minor and therefore not considered significant
A7	Cooling Tower package Z-4700	Continuous diffuse non-fugitive emission of visible water vapour plume from open wet cooling tower due to evaporation and drift.	Visible plume	None	N – emissions are minor and therefore not considered significant

Emission Point ID	Emission Source	Description	Parameters	Monitoring frequency (continuous, daily, weekly etc)	Included in Dispersion Modelling
A8	Waste Water Treatment Plant Z-6950	Intermittent diffuse non-fugitive emission from WWTP.	VOC	5 years (supplemented by annual quantification using thermodynamic methods)	N - emissions are minor and therefore not considered significant
A9	BFW deaerator package Z-5020	Continuous channelled emission of visible water vapour plume from BFW deaerator vent. Steam used to remove dissolved gases (N2, O2, Ar, CO2) from boiler feed water and vented from unit.	Visible plume	None	N - emissions are minor and therefore not considered significant
A10	Air Dryer Package Z-3520	Intermittent diffuse non-fugitive emission of wet air from regeneration vent of Dryer package for compressed air.	None	None	N - emissions are minor and therefore not considered significant
A11	Liquid N ₂ Package Z-3750	Intermittent diffuse non-fugitive emission of nitrogen gas from vent of Nitrogen Liquid Vaporizer package. Package Vaporizes liquid nitrogen (from tankers) to provide usable nitrogen on site. Intermittent venting of nitrogen from cryogenic storage to maintain vessel operating pressure with ambient heat input and emergency venting of nitrogen (non anticipated for normal operation).	None	None	N - emissions are minor and therefore not considered significant

Emission Point ID	Emission Source	Description	Parameters	Monitoring frequency (continuous, daily, weekly etc)	Included in Dispersion Modelling
A12	AOC Water Collection Basin Z-6900	Intermittent diffuse non-fugitive emission from AOC Basin.	VOC	5 years (supplemented by annual quantification using thermodynamic methods)	N - emissions are minor and therefore not considered significant
A13	Oligomerisation Regen KO Drum V-2150	intermittent diffuse non-fugitive emissions from catalyst regeneration containing air, nitrogen and steam. Will be switched from atmosphere to flare for steps containing N2 and VOC	CO ₂	None	N - emissions are minor and therefore not considered significant
A14	Demineralised Water Package Z-5000	Continuous channelled emission from degasser. Degasser is provided to remove dissolved gases (e.g. O ₂ , N ₂) from water.	None	None	N - emissions are minor and therefore not considered significant
A15	Fire Water Pump Diesel Driver P-4601C	Intermittent channelled emission of combustion flue gas from Diesel engine to provide power to spare firewater pump(s). Tested 30 minutes every week and operated 4 hours every >10 years.	CO NO _x VOC SO ₂ PM	Per MCPD	Y
A16	Fire Water Pump Diesel Driver P-4601D	Intermittent channelled emission of combustion flue gas from Diesel engine to provide power to spare firewater pump(s). Tested 30 minutes every week and operated 4 hours every >10 years.	CO NO _x VOC SO ₂	Per MCPD	Y

Emission Point ID	Emission Source	Description	Parameters	Monitoring frequency (continuous, daily, weekly etc)	Included in Dispersion Modelling
			PM		
A17	Emergency Diesel Generator	Intermittent channelled emission of combustion flue gas from Diesel Generator to provide emergency electrical load. Tested 30 minutes every week and operated 24 hours every >10 years.	CO NO _x VOC SO ₂ PM	Per MCPD	Y
A18	Emergency Diesel Generator	Intermittent channelled emission of combustion flue gas from Diesel Generator to provide emergency electrical load. Tested 30 minutes every week and operated 24 hours every >10 years.	CO NO _x VOC SO ₂ PM	Per MCPD	Y
A19	Emergency Diesel Generator	Intermittent channelled emission of combustion flue gas from Diesel Generator to provide emergency electrical load. Tested 30 minutes every week and operated 24 hours every >10 years.	CO NO _x VOC SO ₂ PM	Per MCPD	Y

Table 11.1.2 Details of On-site Fugitive Emissions to Air (information supplied by Technip)

Name	Substance Emitted	Source	Monitoring Frequency (continuous/periodic/emergency)	Monitoring (continuous, daily, weekly ect)
Pumps	VOC	Pump seals	LDAR Programme	BS EN 15446 BS EN 17628
Valves	VOC	Valve packing	LDAR Programme	BS EN 15446 BS EN 17628
Flanges	VOC	Piping and equipment flanges	LDAR Programme	BS EN 15446 BS EN 17628
Compressors	VOC	Compressor seals	LDAR Programme	BS EN 15446 BS EN 17628
Steam vent from HE-1822	VOC	Suspect condensate flash drum condenser vent. VOC emissions may occur with internal heat exchanger leak in steam service. Vent is continuously monitored for hydrocarbons and flow will be directed to flare should VOCs be detected.	Continuous	TBC
T-600 OA-D	VOC	4 x Ethanol Storage Tanks with internal floating roof seal	LDAR Programme	BS EN 15446 BS EN 17628

Name	Substance Emitted	Source	Monitoring Frequency (continuous/periodic/emergency)	Monitoring (continuous, daily, weekly ect)
T-640 0 A-D	VOC	4 x SPK Storage Tanks with internal floating roof seal	LDAR Programme	BS EN 15446 BS EN 17628
T-643 1A/B	VOC	3 x SPD Storage Tanks with internal floating roof seal	LDAR Programme	BS EN 15446 BS EN 17628
T-616 0	VOC	1 x Intermediate Storage Tank with internal floating roof seal	LDAR Programme	BS EN 15446 BS EN 17628

Table 11.1.3: Emission Parameters for Major On-site Emission Sources used in Dispersion Modelling (information supplied by Technip) – Gas Boiler and Flare

Parameter	Units	A1-1	A1-2	A1-3	A2	A3-1	A3-2	A3-3	A3-4
		Boiler Stack (Normal Operation)	Boiler Stack (Normal Operation with liquid firing)	Boiler Stack (Start-up Operation - MP Boiler not online & flaring during start-up)	Boiler Stack (Start-up Operation - MP Boiler not online & flaring during start-up)	Flare (Emergency Operation – Utility Failure)	Flare (Start-up Operation)	Flare (Emergency Operation - Depressuring)	Flare (Shutdown Operation)
Emission locations (OS Grid)	x,y	Refer Plot Plan	Refer Plot Plan	Refer Plot Plan	Refer Plot Plan	Refer Plot Plan	Refer Plot Plan	Refer Plot Plan	Refer Plot Plan
Exhaust Temperature	Deg C	130	130	130	130	Approx 900 deg C	Approx 900 deg C	Approx 900 deg C	Approx 900 deg C
Stack diameter	m	1.0	1.0	1.0	1.0	Vendor Input: Enclosed ground Flare: Approx 30 burners in a 15 metre diameter radiation box. Burners are Ground level (2-4 meters). Max flame height can be up to 18 meters. For Air Dispersion can treat as a 20 metre high stack (12.5 metre diameter).			
Stack Height (Estimate)	m	23	23	23	23				
Exit velocity	m/s	15	15	15	15	Estimated gas velocity from stack 30-40 m/s	Estimated gas velocity from stack 1.5 m/s	Estimated gas velocity from stack 20-30 m/s	Estimated gas velocity from stack 1-5 m/s

Parameter	Units	A1-1	A1-2	A1-3	A2	A3-1	A3-2	A3-3	A3-4
		Boiler Stack (Normal Operation)	Boiler Stack (Normal Operation with liquid firing)	Boiler Stack (Start-up Operation - MP Boiler not online & flaring during start-up)	Boiler Stack (Start-up Operation - MP Boiler not online & flaring during start-up)	Flare (Emergency Operation – Utility Failure)	Flare (Start-up Operation)	Flare (Emergency Operation - Depressuring)	Flare (Shutdown Operation)
Volume flow (actual)	Am ³ /s	12	12	12	12	1704	128	1474	313
Volume flow (Normal)	nm ³ /s	7	7	7	7	684	77	593	126
Operating Hours	hr	7664	1000	Intermittent – max 48 hrs every 6 months	Intermittent – max 48 hrs every 6 months	Emergency Utility Failure Case: 87 t/h for 5 minutes (6,028,262 Am ³ /h). Then flow halves (3,000,000 Am ³ /h (up to 30 minutes). For event frequency assume once every 1 - 25 years.	Normal Start-up Case. Assume 30-48 hours of flaring every 6 months	Emergency Depressuring Case: initiated by operator in case of error. Peak flaring for 8 minutes then reduces to 50% after for up to 30 minutes). For event frequency assume once every 1 – 25 years.	Normal Shutdown. Assume 5 hrs every 6 months

Table 11.1.4: Emission Parameters for Major On-site Emission Sources used in Dispersion Modelling (information supplied by Technip) – emergency generators

Parameter	Units	A15	A16	A17	A18	A19
		Firewater Pump Engines	Firewater Pump Engines	Emergency Diesel Gen 1 (Process Substation)	Emergency Diesel Gen 2 (Utility Substation)	Emergency Diesel Gen 3 (Admin Area Substation)
Emission locations (OS Grid)	x,y	Refer Plot Plan	Refer Plot Plan	Refer Plot Plan	Refer Plot Plan	Refer Plot Plan
Exhaust Temperature	Deg C	370	370	370	370	370
Stack diameter	m	0.5	0.5	0.6	0.6	0.6
Stack Height (Estimate)	m	4	4	4	4	4
Exit velocity	m/s	15	15	15	15	15
Volume flow (actual)	Am3/s	1.4	1.5	3.9	3.9	3.9

Parameter	Units	A15	A16	A17	A18	A19
		Firewater Pump Engines	Firewater Pump Engines	Emergency Diesel Gen 1 (Process Substation)	Emergency Diesel Gen 2 (Utility Substation)	Emergency Diesel Gen 3 (Admin Area Substation)
Volume flow (Normal)	nm3/s	0.5	0.5	1.5	1.5	1.5
Operating Hours	hr	Test 30 mins every 2 weeks	Test 30 mins every 2 weeks	Test 30 mins once per week.	Test 30 mins once per week.	Test 30 mins once per week.

Table 11.1.5 Emission Inventory for Major On-site Emission Sources used in Dispersion Modelling (information supplied by Technip) – gas boilers and flare

Parameter	Units	A1-1	A1-2	A1-3	A2	A3-1	A3-2	A3-3	A3-4
		Boiler Stack (Normal Operation)	Boiler Stack (Normal Operation with liquid firing)	Boiler Stack (Start-up Operation - MP Boiler not online & flaring during start-up)	Boiler Stack (Start-up Operation - MP Boiler not online & flaring during start-up)	Flare (Emergency Operation – Utility Failure)	Flare (Start-up Operation)	Flare (Emergency Operation - Depressuring)	Flare (Shutdown Operation)
Continuous / Intermittent (Time)	-	Estimate 7664 hours per year	Estimate 1000 hours per year	intermittent – max 48 hrs every 6 months	intermittent – max 48 hrs every 6 months	Intermittent	intermittent – max 48 hrs every 6 months	Intermittent	Intermittent – max 48 hours every 6 months
NO _x	mg/Nm ³	125	150	125	125	50.88	54.7	44.5	50.9
CO	mg/Nm ³	100	100	100	100	284.1	190.2	249	284
SO ₂	mg/Nm ³	1.0	100	1.0	1	1	1	1	1
Dust (PM)	mg/Nm ³	5	8	5	5	-	-	-	-
Unburnt Hydrocarbon	mg/Nm ³	7.4	7.4	7.4	7.4	636.1	511	668	764
VOC	mg/Nm ³	0.8	0.8	0.8	0.8	70.67	56.8	74.2	84.9

		A1-1	A1-2	A1-3	A2	A3-1	A3-2	A3-3	A3-4
Parameter	Units	Boiler Stack (Normal Operation)	Boiler Stack (Normal Operation with liquid firing)	Boiler Stack (Start-up Operation - MP Boiler not online & flaring during start-up)	Boiler Stack (Start-up Operation - MP Boiler not online & flaring during start-up)	Flare (Emergency Operation – Utility Failure)	Flare (Start-up Operation)	Flare (Emergency Operation - Depressuring)	Flare (Shutdown Operation)
H ₂ O	% volume	17.96	17.65	17.96	17.96	8.04	6.33	7.58	8.04
CO ₂	% volume	8.05	9.23	8.05	8.05	4.37	2.2	4.39	4.37
O ₂	% volume	3.1	2.33	3.1	3.1	13.09	16.47	13.16	13.09
N ₂	% volume	70.89	70.78	70.89	70.89	74.5	75	74.88	74.5
Actual Flow (exhaust)	m ³ /h	42808	43732	42811	42411	6135383	459856	5305607	1128199
Normalised Flow	Nm ³ /h	24053	24766	36242	24085	2462044	278978	2917195	452410
Temperatu re	deg C	130	130	130	130	900	900	900	900
All emission limit values in the large/medium combustion plan directive are defined at a temperature of 273K, a pressure of 101.3 kPa and after correction for the water vapour content of the waste gases and at standardised O ₂ content of 6% for medium combustion plants using solid fuels, 3% for medium combustion plants, other than engines and gas turbines, using liquid and gaseous fuels and 15% for engines and Gas turbines									
NO _x and Dust values taken from the MCPD (Boiler)									

Table 11.1.6 Emission Inventory for Major On-site Emission Sources used in Dispersion Modelling (information supplied by Technip) – emergency generators

Parameter	Units	A15	A16	A15	A17	A18
		Firewater Pump Engines	Firewater Pump Engines	Emergency Diesel Gen 1 (Process Substation)	Emergency Diesel Gen 2 (Utility Substation)	Emergency Diesel Gen 3 (Admin Area Substation)
Continuou s / Intermitte nt (Time)	-	Intermittent (30 minutes every 2 week predicted)	Intermittent (30 minutes every 2 week predicted)	Intermittent (30 minutes every 1 week predicted)	Intermittent (30 minutes every 1 week predicted)	Intermittent (30 minutes every 1 week predicted)
NO _x	mg/N m ³	4065	4065	4065	4065	4065
CO	mg/N m ³	1074	1074	1074	1074	1074
SO ₂	mg/N m ³	274	274	274	274	274
Dust (PM)	mg/N m ³	50	50	50	50	50
Unburnt Hydrocarb on	mg/N m ³	12	12	12	12	12
VOC	mg/N m ³	137	137	137	137	137

Parameter	Units	A15	A16	A15	A17	A18
		Firewater Pump Engines	Firewater Pump Engines	Emergency Diesel Gen 1 (Process Substation)	Emergency Diesel Gen 2 (Utility Substation)	Emergency Diesel Gen 3 (Admin Area Substation)

NO_x and Dust values taken from the MCP (Boiler)

Table 11.1.7 Summary of Model Input Data for Dispersion Modelling – Gas Boiler and Flare

Parameter		A1-1	A1-2	A1-3	A2	A3-1	A3-2	A3-3	A3-4
Stack height above ground level (m)		23	23	23	23	20	20	20	20
Stack diameter (m)		1	1	1	1	12.5	12.5	12.5	12.5
Exit Temperature (°C)		130	130	130	130	900	900	900	900
Actual Flow Rate (Am³/s)		11.9	12.1	11.9	11.9	833.3	125.1	1473.8	313.4
Reference Flow Rate (Nm³/s)		6.7	6.9	6.7	6.7	683.9	77.5	592.9	125.7
Exist velocity (m/s)		15	15	15	15	6.8	1.0	12	2.6
Operational Hours per annum		7664	1000	96	96	Emergency once every 1-25 yrs	96	Emergency once every 1-25 yrs	96
Emission Concentration (mg/Nm3)	NO _x	125	150	125	125	51	55	45	51
	CO	100	100	100	100	284	190	249	284
	SO ₂	1.0	100	1.0	1.0	1	1	1	1

Parameter		A1-1	A1-2	A1-3	A2	A3-1	A3-2	A3-3	A3-4
	Dust (PM)	5.0	8.0	5.0	5.0	0	0	0	0
	Unburnt Hydrocarbons (Benzene)	7.4	7.4	7.4	7.4	636	511	668	764
	VOCs (1-3, Butadiene)	0.8	0.8	0.8	0.8	71	57	74	85
Short-term Emissions (g/s)	NO _x	0.835	1.032	0.835	0.835	34.8	4.2	26.4	6.4
	CO	0.668	0.688	0.668	0.668	194.3	14.7	147.6	35.7
	SO ₂	0.007	0.688	0.007	0.007	0.7	0.1	0.6	0.1
	Dust (PM)	0.033	0.055	0.033	0.033	0	0	0	0
	Unburnt Hydrocarbons (Benzene)	0.049	0.051	0.049	0.049	435	39.6	396.1	96.0
	VOCs (1-3, Butadiene)	0.006	0.006	0.006	0.006	48.3	4.4	44.0	10.7
Long-term Emissions (g/s)	NO _x	0.731	0.118	0.009	0.009	-	0.046	-	0.070
	CO	0.585	0.079	0.007	0.007	-	0.162	-	0.391
	SO ₂	0.006	0.079	0.00008	0.00008	-	0.001	-	0.001

Parameter		A1-1	A1-2	A1-3	A2	A3-1	A3-2	A3-3	A3-4
	Dust (PM)	0.029	0.006	0.0004	0.0004	-	-	-	-
	Unburnt Hydrocarbons (Benzene)	0.043	0.006	0.0005	0.0005	-	0.434	-	1.052
	VOCs (1-3, Butadiene)	0.005	0.001	0.00006	0.00006	-	0.048	-	0.117

Table 11.1.8 Summary of Model Input Data for Dispersion Modelling – Emergency Generators

Parameter	A15	A16	A17	A18	A19
Stack height above ground level (m)	4	4	4	4	4
Stack diameter (m)	0.5	0.5	0.6	0.6	0.6
Exit Temperature (°C)	370	370	370	370	370
Actual Flow Rate (Am ³ /s)	1.4	1.4	3.9	3.9	3.9
Reference Flow Rate (Nm ³ /s)	0.5	0.5	1.5	1.5	1.5
Exist velocity (m/s)	7.0	7.0	13.9	13.9	13.9

Parameter		A15	A16	A17	A18	A19
Operational Hours per annum		13	13	26	26	26
Emission Concentration (mg/Nm3)	NO _x	4065	4065	4065	4065	4065
	CO	1074	1074	1074	1074	1074
	SO ₂	274	274	274	274	274
	Dust (PM)	50	50	50	50	50
	Unburnt Hydrocarbons (Benzene)	12	12	12	12	12
	VOCs (1-3, Butadiene)	137	137	137	137	137
Short-term Emissions (g/s)	NO _x	2.068	2.068	5.907	5.907	5.907
	CO	0.546	0.546	1.561	1.561	1.561
	SO ₂	0.139	0.139	0.398	0.398	0.398
	Dust (PM)	0.025	0.025	0.073	0.073	0.073
	Unburnt Hydrocarbons (Benzene)	0.006	0.006	0.018	0.018	0.018

Parameter		A15	A16	A17	A18	A19
Long-term Emissions (g/s)	VOCs (1-3, Butadiene)	0.070	0.070	0.199	0.199	0.199
	NO _x	0.003	0.003	0.018	0.018	0.018
	CO	0.0008	0.0008	0.005	0.005	0.005
	SO ₂	0.0002	0.0002	0.001	0.001	0.001
	Dust (PM)	0.00004	0.00004	0.0002	0.0002	0.0002
	Unburnt Hydrocarbons (Benzene)	0.000009	0.000009	0.00005	0.00005	0.00005
	VOCs (1-3, Butadiene)	0.0001	0.0001	0.0006	0.0006	0.0006

Appendix 11.2: Legislative Framework, Policy and Guidance

International Air Quality Policy

EU Directive 2008

The EU Directive 2008/50/EC on ambient air quality and cleaner air for Europe (the CAFE directive) sets out the ambient air quality standards for a number of pollutants and the dates by which these objectives should be met. The Air Quality Standards (Wales) Regulations 2010 and EU Exit 2019 Regulations implements the requirements of the Directive into Welsh legislation. The Directive contains a series of limit values for the protection of human health and critical levels for the protection of vegetation. These limit values are legally binding, and the UK may incur infringement action if it does not meet the required objective limits within the agreed time limits. The UK is currently exceeding the objective limits for NO₂ and PM₁₀ within London and a number of other air quality zones within the UK.

Directive 2008/50/EC makes it clear that the ambient air quality standards shall not be enforced where there is no regular public access and fixed habitation:

'2. Compliance with the limit values directed at the protection of human health shall not be assessed at the following locations:

- any locations situated within areas where members of the public do not have access and there is no fixed installation;*
- in accordance with Article 2(1), on factory premises or at industrial installations to which all relevant provisions concerning health and safety at work apply;*
- on the carriageway of roads; and on the central reservations of roads except where there is normally pedestrian access to the central reservation.'*

National Air Quality Policy

The UK Air Quality Strategy

The Government's policy on air quality within the UK is set out in the Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland (AQS) published in July 2007, pursuant to the requirements of Part IV of the Environment Act 1995. The AQS sets out a framework for reducing hazards to health from air pollution and ensuring that international commitments are met in the UK. The AQS is designed to be an evolving process that is monitored and regularly reviewed.

The AQS sets standards and objectives for ten main air pollutants to protect health, vegetation and ecosystems. These are benzene (C₆H₆), 1,3-butadiene (C₄H₆), carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), oxides of nitrogen (NO_x), particulate matter (PM₁₀, PM_{2.5}), sulphur dioxide (SO₂), ozone (O₃) and polycyclic aromatic hydrocarbons (PAHs).

The air quality standards are long-term benchmarks for ambient pollutant concentrations which represent negligible or zero risk to health, based on medical and scientific evidence reviewed by the Expert Panel on Air Quality Standards (EPAQS) and the World Health Organisation (WHO). These are general concentration limits, above which sensitive members of the public (e.g. children, the elderly and the unwell) might experience adverse health effects.

The air quality objectives are medium-term policy-based targets set by the Government which take into account economic efficiency, practicability, technical feasibility and timescale. Some objectives

are equal to the EPAQS recommended standards or WHO guideline limits, whereas others involve a margin of tolerance, i.e. a limited number of permitted exceedances of the standard over a given period.

For some pollutants, there is both a long-term (annual mean) standard and a short-term standard. In the case of NO₂, the short-term standard is for a 1-hour averaging period, whereas for PM₁₀ it is for a 24-hour averaging period. These periods reflect the varying impacts on health of differing exposures to pollutants (e.g. temporary exposure on the pavement adjacent to a busy road, compared with the exposure of residential properties adjacent to a road).

Of the pollutants included in the AQS, NO₂ and PM₁₀ would be particularly relevant to this project as these are the primary pollutants associated with road traffic. The current statutory standards and objectives for NO₂ and PM₁₀ in relation to human health are set out in **Table 11.2.1**.

The Local Air Quality Management in Wales Policy Guidance (PG(W)(17)) sets out guidance on the role and responsibilities of Welsh authorities and PM_{2.5}. The guidance states that 'Local Authorities in Wales should focus on monitoring and reporting NO₂ and PM₁₀. Monitoring and reporting of fine particulate matter (PM_{2.5}) is encouraged but not mandatory.' The objective limit for PM_{2.5} is also set out in **Table 11.2.1**.

In relation to PM_{2.5} the 2019 Clean Air Strategy includes a commitment to set 'new, ambitious, long-term targets to reduce people's exposure to PM_{2.5}' which the proposed Environment Bill 2019-2021 commits the Secretary of State to setting. New legal targets are set out in the recently published Environmental Improvement Plan (EIP) 2023, however these have yet to be set in legislation. For the purposes of this assessment the EU Directive Stage 2 limit value for PM_{2.5} (as provided in **Table 11.2.1**) is considered to be appropriate to apply and consideration given to future potential changes. However, the new targets set out in the EIP are also provided in **Table 11.2.1** and given consideration within the assessment.

Table 11.2.1: Relevant Objectives set out in the Air Quality Strategy

Pollutant	Concentrations	Measured As	Date to be Achieved by
Nitrogen Dioxide (NO ₂)	200 µgm ⁻³ not to be exceeded more than 18 times per year	1-hour mean	31 December 2005
	40 µgm ⁻³	Annual mean	31 December 2005
Sulphur Dioxide (SO ₂)	266 µgm ⁻³ not to be exceeded more than 35 times per year	15-minute mean	31 December 2005
	350 µgm ⁻³ not to be exceeded more than 24 times per year	1-hour mean	31 December 2004
	125 µgm ⁻³ not to be exceeded more than 3 times per year	24-hour mean	31 December 2004
Carbon Monoxide (CO)	10 mg/m ⁻³	8-hour	31 December 2003
Benzene (C ₆ H ₆)	5 µgm ⁻³	Annual mean	31 December 2010
1,3-Butadiene (C ₄ H ₆)	3.25 µgm ⁻³	Annual Mean	31 December 2003
Particulate Matter (PM ₁₀)	50 µgm ⁻³ not to be exceeded more than 35 times per year	24-hour mean	31 December 2004
	40 µgm ⁻³	Annual mean	31 December 2004
Particulate Matter (PM _{2.5})	25 µg/m ³	Annual Mean	31 December 2010
EU Directive PM _{2.5}	Stage 2 – 20 µg/m ³	Annual Mean	-
EIP PM _{2.5}	10 µg/m ³	Annual Mean	31 December 2040
	12 µg/m ³	Annual Mean	31 January 2028

The statutory standards and objectives apply to external air where there is relevant exposure to the public over the associated averaging periods within each objective. Guidance is provided within Local Air Quality Management Technical Guidance 2016 (LAQM.TG(22)) issued by DEFRA for Local Authorities on where the objectives apply, as detailed in **Table 11.2.2**. The objectives do not apply in workplace locations, to internal air or where people are unlikely to be regularly exposed (i.e. centre of roadways).

Table 11.2.2: Locations Where Air Quality Objectives Apply

Averaging Period	Objectives should apply at:	Objectives should generally not apply at:
Annual Mean	All locations where members of the public might be regularly exposed. Building facades of residential properties, schools, hospitals, care home etc.	Building facades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence.

Averaging Period	Objectives should apply at:	Objectives should generally not apply at:
		Gardens of residential properties. Kerbside sites (as opposed to locations at the building facade), or any other location where public exposure is expected to be short term.
24 Hour Mean	All locations where the annual mean objective would apply together with hotels. Gardens of residential properties.	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
1 Hour Mean	All locations where the annual mean and 24-hour mean objectives apply. Kerbside Sites (e.g. pavements of busy shopping streets). Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where the public might reasonably be expected to spend 1-hour or more. Any outdoor locations where the public might reasonably be expected to spend 1-hour or longer.	Kerbside sites where the public would not be expected to have regular access.

Medium Combustion Plant (MCP) Directive

Pollutant emissions from combustion plant with a rated input between 1 and 50 megawatts (MW_{th}) are regulated through the Medium Combustion Plant Directive (MCPD)¹. The MCPD was transposed into UK law in January 2018 through an amendment to the Environmental Permitting Regulations. All MCP are required to meet the relevant emission limits set out within the Directive.

Industrial Emissions Directive

The Industrial Emissions Directive (2010/75/EU)² came into force on the 6th January 2011, replacing the seven existing Directives, including the Waste Incineration Directive (WID) and Large Combustion Plant Directive (LCPD), implemented through the Environmental Permitting Regulations (EPR). The

1 The European Parliament and the Council of the European Union (2015) Directive 2015/2193/EU of the European Parliament and of the Council, available: <http://eur-lex.europa.eu/legal-content/En/TXT/?uri=CELEX%3A32015L2193>

2 Directive 2010/75/EU of the European Parliament & of the Council of 24th November 2010 on Industrial Emissions (Integrated Pollution Prevention and Control) <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:334:0017:0119:en:PDF>

IED has been transposed into UK law via the Environmental Permitting (England and Wales) (Amendment) Regulations 2013 (SI 2013 No, 390)³, which came into force on 27th February 2013.

Combustion activities listed in Section 1.1, Part (A) 1 of Schedule 1 of the Environmental Permitting Regulations will normally require an environmental permit issued by Natural Resources Wales.

This section includes:

- *Combustion appliances with an aggregated rated thermal input of greater than 50MW, or*
- *Appliances with a rated thermal input of greater than 3MW which burn fuel manufactured from, or comprising, waste (unless they are carried on as part of a Part B activity, in which they will normally fall to the Local Authority for regulation)*

The Well-being of Future Generations (Wales) Act 2015

The Well-being of Future Generations Act (WFG Act) makes provision requiring public bodies to do things in pursuit of the economic, social, environmental and cultural well-being of Wales. The Act ensures that local authorities deliver sustainable development by considering long term effects as well as encouraging a more joined up approach.

Tackling Roadside Nitrogen Dioxide Concentrations in Wales

This document is the Welsh Government supplemental Plan to the 'UK plan for tackling roadside nitrogen dioxide concentrations 2017'. The Plan describes the impacts of air pollution in Wales, describing the locations of excess pollution, and sets out the roles and responsibilities of the various bodies within Wales. Actions to reduce NO₂ concentrations to within legal limits are also described.

Clean Air Plan for Wales: Healthy Air, Healthy Wales 2020

The aim of the Clean Air Plan for Wales is to improve air quality and reduce the impacts of air pollution on human health, biodiversity, the natural environment and the economy. The Plan sets out a 10-year pathway to achieving cleaner air and is based upon four main themes:

- People – protecting the health and well-being of current and future generations;
- Environment – taking action to support the natural environment, ecosystems and biodiversity;
- Prosperity – working with industry to reduce emission, supporting a cleaner and more prosperous Wales; and
- Place – creating sustainable places through better planning, infrastructure and transport.

The Protection of Ecological Features

The Conservation of Habitats and Species Regulations was introduced to protect ecological sites in response to the European Directive 92/43/EEC regarding the designation of SAC and Directive 2009/147/EC relating to the designation of Special Protection Areas (SPA). The Regulations require the relevant competent authority to consider whether a development will have a significant effect on a European designated site (i.e. SPA or SAC). If a risk of significant effects is identified then an 'appropriate assessment' is required to determine the level of effect and whether this will result in a significant adverse effect on the identified qualifying features.

Further designation of land considered to be of 'special interest' in terms of flora, fauna, geological or physiographical features is afforded under the Wildlife and Countryside Act, where an area of interest is designated as a SSSI. The protection afforded to these areas is detailed within the

3 Environmental Permitting (England and Wales) (Amendment) Regulations 2013 – Statutory Instrument 2013 No.390

Countryside and Rights of Way (CROW) Act, which states that where a development is 'likely to damage' a SSSI then the appropriate conservation body must be consulted.

Critical levels (CLs) and critical loads (CLOs) are used for assessing the risk of air pollution impacts on ecosystems. CLs are defined by the United Nations Economic Commission for Europe (UNECE) as 'concentrations of pollutants in the atmosphere above which direct adverse effects on receptors, such as human beings, plants, ecosystems or materials, may occur according to present knowledge'. The critical levels relevant to this assessment are set out in **Table 11.2.3**.

Table 11.2.3: Relevant Objectives set out in the Air Quality Strategy

Pollutant	Concentrations	Measured As
Oxides of Nitrogen (NO _x)	30 µg/m ³	Annual mean
Ammonia (NH ₃)	3 µg/m ³ (1 µg/m ³ where bryophytes and lichens are present)	Annual mean
SO ₂	10-20 µg/m ³	Annual mean

CLOs relate to the potential effects of pollutant deposition (over periods of decades) and are defined by UNECE as 'a quantitative estimate of exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge'.

Empirical CLOs for nutrient nitrogen are set under the Convention on Long-Range Transboundary Air Pollution. They are based on empirical evidence such as observations from experiments and gradient studies. CLOs are assigned to habitat classes defined within the European Nature Information System (EUNIS) which enables consistency of habitat terminology and understanding. CLOs are given as ranges and reflect the variation in ecosystem response across Europe.

CLOs for use in impacts assessments, which were revised in June 2010, are provided on the Air Pollution Information System (APIS). The CLOs for the designated sites being considered within this assessment are set out in **Table 11.2.4** below. The worst-case (i.e. lowest) CLOs have been selected for each Site based on the most sensitive qualifying feature within each site.

Table 11.2.4: Relevant Critical Loads for each Designated Site

Habitat	Qualifying Features	Nutrient Nitrogen (kg N/ha/yr)	Nitrogen Acid Deposition (keq/ha/yr)	Sulphur Acid Deposition (keq/ha/yr)
Little Warren SINC	Coastal sand-dunes	5-15	0.892	4.08
Lower River AFAN SINC	Saltmarsh	10-20	4.0 ³	4 ³
Harbourside SINC	Calcareous Grassland used ¹	5-15	1.071	4

Watercourse SINC ⁴	Calcareous Grassland used ²	5-15	1.071	4
Tai-Bach AW	Broadleaf Woodland	10-15	0.357	2.58
Bryn Goytre AW	Broadleaf Woodland	10-15	0.357	0.67
Crymlyn Bog SAC	Calcareous fens, mires and bogs	5-15	0.321	0.393
Kenfig SAC	Alder Woodland, coastal dune heathland	5-15	0.892	4.08
Cefn Cribwr	Purple Moor-grass meadows, wet heathland	5-15	0.856	4

¹ habitat identified in Chapter 5 as Open Mosaic Habitat including stonecrop species, kidney vetch, yellow-wort. Calcareous grassland habitat used to represent this area

² habitat identified as a mix of coastal, urban and industrial in Chapter 5. Calcareous grassland used to represent this area

³ no comparable acid deposition critical load is provided for this habitat, a soil based critical load of 4 is given on the APIS website

⁴ incorporates all watercourses in the area - represented by the River AfAn within the assessment being the closest watercourse to the Site.

Planning Policy

National Planning Policy

Updated in February 2021, Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government. This is supplemented by a series of Technical Advice Notes.

At the heart of the PPW is a presumption in favour of sustainable development to ensure that social, economic and environmental issues are balanced and integrated by the decision-maker when determining planning applications (paragraph 1.2). Paragraph 1.2 states the 'the primary objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales...'

Paragraph 1.18 describes the importance of a plan-led approach in securing sustainable development and acknowledges the statutory presumption in favour of sustainable development.

Paragraph 1.20 states that 'those proposing development have a responsibility to provide sufficient information to enable the decision maker to make an informed judgement on whether the proposed development is sustainable.'

Decision makers are to be guided by the Key Planning Principles set out in Figure 4 of Chapter 2 page 17. The section on Maximising Environmental Protection and Limiting Environmental Impact is relevant here.

Specific guidance on air quality is provided in Chapter 6 in paragraph 6.7: Air Quality and Soundscape. In proposing new development 'planning authorities and developers must address any implication arising as a result of its association with, or location within air quality management areas, noise action planning priority areas or areas where there are sensitive receptors; not create areas of poor air quality or inappropriate soundscape and seek to incorporate measures which reduce overall exposure to air and noise pollution and create appropriate soundscapes.'

The policy stresses that good design, for example setting back buildings from roads to avoid canyon effects should be incorporated at an early consideration in the design and planning stage. Examples of further mitigation measures are provided and include:

- Traffic management and road safety;
- Ensuring progress towards a shift to low or zero emissions means of transport, such as electrical charging points;
- Supporting low or zero emission public transport;
- Providing active travel infrastructure; and
- Incorporating green infrastructure, where it can improve air quality by removing air pollution and aiding its disposal.

Planning Policy Wales (PPW) Technical Note 18: Transport National Planning Policy

The PPW Technical Advice Note (TAN) was adopted in March 2007 and is intended to be read in conjunction with PPW. It states that '*transport emissions contribute significantly to climate change and poor air quality*'..... It continues '*when preparing development plans and when considering planning applications, planning authorities should take into account statutory air quality objectives, together with the results of air quality reviews and assessments and any Air Quality Management Area Action Plans that may have been prepared.*'

Local Planning Policy

Neath Port Talbot Local Development Plan 2011 - 2026

The NPTCBC Local Development Plan (LDP) was adopted January 2016 and sets out policies to guide development in the future. In dealing with air quality the plan sets out the following:

Policy SP 16: Environmental Protection

Air, water and ground quality and the environment generally will be protected and where feasible improved through the following measures:

1. *ensuring that proposals have no significant adverse effects on water, ground or air quality and so not significantly increase pollution levels;*
2. *giving preference to the development of brownfield sites over greenfield sites where appropriate and deliverable;*
3. *ensuring that developments do not increase the number of people exposed to significant levels of pollution.*

Policy EN8 Pollution and Land Stability

Proposals which would be likely to have an unacceptable adverse effect on health, biodiversity and/or local amenity or would expose people to unacceptable risk due to the following will not be permitted:

- *air pollution*

Proposals which would create new problems or exacerbate existing problems details above will not be acceptable unless mitigation measures are included to reduce the risk of harm to public health, biodiversity and/or local amenity to an acceptable level.

Policy EN 9 Developments in the Central Port Talbot Area

Developments in the central Port Talbot area that could result in breaches of air quality objectives during their construction phase will be required to be undertaken in accordance with a Construction Management Plan submitted as part of the planning process and agreed with the Council.

3.5.2 Neath Port Talbot Pollution Supplementary Planning Guidance (SPG)

The NPTCBC Pollution SPG was adopted in October 2016 and sets out information about pollution issues in Neath Port Talbot and provides details on relevant matters that should be taken into consideration when assessing proposed developments within the borough. In relation to air quality the SPG sets out details on how to assess air quality impacts associated with development plans and to meet the relevant planning policies set out within the Local Development Plan.

Air Quality Guidance

DEFRA Technical Guidance, LAQM.TG(22)

LAQM.TG(22) sets out detailed guidance on how air quality should be assessed and monitored by local authorities. The document provides useful guidance on how air quality from specific sources should be screened and the approaches that should be used to undertake detailed assessment where potentially significant emissions are identified, including details on model verification and consideration of monitoring data for use in assessments.

IAQM Land-Use Planning and Development Control: Planning for Air Quality

The Institute of Air Quality Management (IAQM) and Environmental Protection UK (EPUK) have published joint guidance on the assessment of air quality impacts for planning purposes. This includes information on when an air quality assessment is required, what should be included in an assessment and criteria for assessing the significance of any impacts.

IAQM A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites

The Institute of Air Quality Management (IAQM) has published guidance on the assessment of the air quality impacts of development on designated nature conservation sites. The guidance discusses the policy and legal background underpinning the proposed methodology, including the impact of the Wealdon Judgement and the Netherlands Air Quality Judgement. The document outlines the way in which air quality consultants and ecologists should work together, highlighting the responsibilities for each when carrying out Habitats Regulations Assessment.

Appendix 11.3: Data used in Dispersion Modelling Exercise

Determining Modelling Scenarios for Point Source Emissions

A total of eight significant point sources have been identified on the Site which need to be considered within the modelling scenario. Full details of these are provided in **Appendix 11.1**.

To assess long-term emissions during operation all the identified emission sources (with the exception of the emergency flare (A3-1 and A3-3)) have been included within the modelling scenario. This is considered to represent an extremely cautious approach to predicted impacts as it is unlikely that all the emissions sources would be operating simultaneously, for example the emergency generators (sources A17 to A19) would be tested once a week, while the Fire Water Pumps (A15 and A16) would be tested bi weekly. but successively, therefore only one would operate at a single time.

The fired boiler (emission source A1 and A2) would operate continuously during the year but would operate at different times under different operating scenarios; operating for 7664 hours under normal operation (A1-1), 1000 hours with liquid firing (A1-2) and 96 hours for start-up (A1-3 and A2).

All other emission sources (A3, A15, A16, A17, A18 and A19) are intermittent.

To predict the impact of the development against long-term (annual average) objective limits and critical levels (CL) the emissions data has been adjusted to ensure that the equivalent total mass emissions released for the intermittent periods are accounted for within the model. i.e. sources A17 to A19 would operate for 30 minutes once per week for testing. This equates to 26 hours per year. The emissions have therefore been adjusted by a factor of 0.30 (26/8760), in accordance with guidance produced by the Environment Agency (EA)⁴ⁱ, which, although withdrawn, provides useful guidance on modelling of point source emissions and is regularly used to determine the approach to modelling such emissions. The guidance states:

“You should describe how the concentrations of releases vary over time to ensure that representative operational situations have been assessed. Also describe the plant load at which the emissions are applicable, e.g. batch or continuous, average load or peak load. It may be necessary to evaluate more than one operating scenario to ensure that the risks resulting from the worst-case situation have been assessed.

The emissions released from these different operational situations should be related to those that result in long term effects (e.g. continuous releases over a long-time period, or regular batch releases, that do not result in great variation in concentration) and those that result in short-term effects caused by intermittent or periodic peak emissions at relatively high concentrations released over a short period of time. “former H1 Annex f, p8.

“Different process options may lead to variations on the pattern of releases. For example, a process operated intermittently may give lower annual concentrations but an increased frequency of short-term peaks compared to one run continuously. Furthermore, although the long-term average concentration may have been rendered acceptable by generally good dispersion there may, on occasions, be unacceptable short-term peaks.” former H1 Annex f, p15.

4 Environment Agency, H1 Environmental Risk Assessment Annex (f) Air Emissions, 2009

This approach has been applied to all the emissions sources considered within the long-term scenario (SC1).

For assessing short-term concentrations (hourly, 8-hourly and 24-hourly), worst-case emission limits have been assumed for the purposes of the modelling assessment and the plant is assumed to be operating at full load, 100% of the time. This is clearly an extreme worst-case but allows for the fact that the plant may be operating during worst-case meteorological conditions.

Modelling of short-term emissions has also considered which point sources would be operating at the same time. A review of the operational processes indicates that the emergency generators (sources A15 to A19) would be tested successively, therefore under any normal operating scenario only one of these emissions sources would be operating at any time. Assuming all sources operate at the same time would represent an overly cautious predicting of short-term impacts.

Furthermore, although the flare would operate intermittently under the start up and shut down scenario (Source A3-2 and A3-4), this would not occur at the same time as the emergency generators are being tested. However, during a start-up scenario source A1-3 and A2 would operate along-side the start-up flare (A3-2) making up the short-term scenario SC2a. While during a shut-down situation only sources A1-1 and A3-4 would operate (scenario SC2b). During testing of the emergency generators (A15 to A19) the only other emission source that would operate would be A1. Scenario SC2c therefore considers A1-2 (under liquid firing as this results in the highest emissions) alongside A19 (the emergency generator located closest to the town of Port Talbot and therefore closest to identified sensitive receptors).

The emergency flare scenario (Source A3-1) is only anticipated to operate once every 1 to 25 years and would not operate under these conditions if already operating in start-up/shut-down mode. This source has therefore been excluded from the modelling scenario, but has been assessed individually (SC3). Furthermore, in an emergency shut-down situation the flare would operate in emergency shut-down mode (A3-3), therefore emissions under this scenario have also been assessed individually (SC4).

On this basis the assessment of operational impacts against the long-term objectives and CLOs the following emission sources have been included within the model with relevant emissions adjusted for operating times (Scenario 1):

- 25 MW fired boiler scenario (source A1-1, A1-2 and A1-3)
- 25 MW fired boiler – second boiler (source A2)
- Flare start up/shut down scenarios (source A3-2 and A3-4)
- Emergency fire pumps (A15 and A16)
- Emergency generators (A17 to A19)

For the assessment of short-term emissions the following sources have been included in each scenario but the emissions have not been adjusted for operating hours:

Scenario 2a – Start-up emissions

- 25 MW gas fired boiler scenario (A1-3)
- 25 MW gas fired boiler – second boiler (A2)
- Flare start up (A3-2)

Scenario 2b – shut-down emissions

- 25 MW gas fired boiler scenario (source A1-1)
- Flare shut down scenarios (A3-4)

Scenario 2c – testing emissions

- 25 MW gas fired boiler scenario (A1-2)
- Emergency generators (A19)

Scenario 3 – Emergency situation

- Flare emergency scenario (A3-1)

Scenario 3 – Emergency shut-down

- Flare emergency scenario (A3-4)

Full emissions data for each emission sources are provided in **Appendix 11.1**.

Buildings Used on Modelling

Table 11.3.1: Buildings Used in Modelling

Building	Length (m)	Width (m)	Diameter (m)	Height (m)
Admin	38	18	-	15
Workshop/Warehouse	48	18	-	10
Sub1000	26.5	20.5	-	10
Sub2000	51	30	-	11
Sub3000	26	18.7	-	10
Z5100	30	16	-	23
Z3750	26	33	-	12
T5010	-	-	16.5	14.5
T5450	-	-	17.2	17.4
T4520	-	-	18	20
T4600	-	-	24	20
Z3520	12	6	-	5
Z4700	33	10	-	12
T6400A/B/C/D	-	-	18.5	20
T6000A/B/C/D	-	-	22	20
Z6950	35	28	-	4

Building	Length (m)	Width (m)	Diameter (m)	Height (m)
Z7450	8	18	-	7
Flare Building	30	30	-	20

Sensitivity Test Undertaken using Rhoose (Cardiff) Meteorological Data

NRW have raised the point that the Mumbles Head meteorological site is projected into the sea and therefore whether this is representative of meteorological conditions at the Site.

The next nearest meteorological site available is Rhoose, located 38km to the south-east at Cardiff. This site is located more inland but close to the coast so could be considered more representative, however as it is 38 km from Port Talbot and further within the Bristol Channel, conditions in this location are unlikely to be representative of conditions at Port Talbot. Furthermore, the Site being assessed lies within 1km of the coast and almost immediately west of Mumbles Head and therefore is expected to experience similar wind patterns (i.e. wind direction) to Mumbles Head compared to the site in Cardiff.

A sensitivity analysis has been carried out using Cardiff meteorological data. The results of the sensitivity test are set out in **Table 11.3.2**.

The data shows very little difference in predicted annual mean and short-term NO₂ concentrations between the two meteorological data sets. At some locations there is a very small increase when using the Rhoose meteorological data compared to Mumbles Head, and at other locations a very small decrease. The change in concentrations between the two scenarios is not considered to be significant and impacts would remain negligible.

Table 11.3.2: NO₂ Concentrations Predicted from Point Source Emissions (µg/m₃) Comparing Mumbles Head and Rhoose (Cardiff) Meteorological Data

Receptor	Annual Mean Emissions (SC1)			Short-term Emissions (SC2a)		
	Max. PC NO ₂ (using Mumbles Head Met Data)	Max. PC NO ₂ (using Rhoose Met Data)	Difference between Mumbles Head and Rhoose	Max. PC NO ₂ (using Mumbles Head Met Data)	Max. PC NO ₂ (using Rhoose Met Data)	Difference between Mumbles Head and Rhoose
R1	0.14	0.23	0.08	9.8	9.9	0.1
R2	0.13	0.23	0.10	9.3	9.3	0.0
R3	0.09	0.11	0.02	4.8	4.8	0.0
R4	0.07	0.08	0.01	3.5	3.4	-0.1
R5	0.07	0.08	0.01	3.3	3.3	0.0
R6	0.06	0.06	0.00	2.9	2.9	0.0
R7	0.06	0.08	0.03	3.0	3.2	0.2
R8	0.06	0.10	0.04	3.0	3.2	0.2

Receptor	Annual Mean Emissions (SC1)			Short-term Emissions (SC2a)		
	Max. PC NO ₂ (using Mumbles Head Met Data)	Max. PC NO ₂ (using Rhoose Met Data)	Difference between Mumbles Head and Rhoose	Max. PC NO ₂ (using Mumbles Head Met Data)	Max. PC NO ₂ (using Rhoose Met Data)	Difference between Mumbles Head and Rhoose
R9	0.06	0.11	0.05	3.1	3.3	0.1
R10	0.04	0.06	0.03	2.0	2.2	0.2
R11	0.03	0.04	0.02	1.5	1.7	0.2
R12	0.05	0.08	0.03	2.7	2.9	0.2
R13	0.04	0.07	0.03	2.4	2.6	0.2
R14	0.05	0.08	0.03	2.5	2.6	0.1
R15	0.05	0.07	0.02	2.1	2.5	0.4
R16	0.05	0.06	0.01	1.8	2.0	0.2
R17	0.09	0.09	0.00	2.3	2.9	0.3
R18	0.15	0.14	-0.01	3.0	3.2	0.2
R19	0.18	0.11	-0.06	2.6	2.7	0.1
R20	0.31	0.21	-0.10	3.8	4.0	0.2
R21	0.36	0.24	-0.12	3.9	3.7	-0.2
R22	0.17	0.13	-0.04	2.2	2.1	-0.1
R23	0.22	0.21	-0.01	2.9	2.7	-0.2
R24	0.14	0.18	0.03	2.5	2.3	-0.2
R25	0.09	0.17	0.08	2.2	2.0	-0.2
R26	0.07	0.12	0.05	1.6	1.6	0.0
R27	0.09	0.15	0.06	2.0	2.0	0.0
R28	0.06	0.11	0.05	1.4	1.4	0.0
R29	0.04	0.07	0.03	0.9	0.9	0.0
R30	0.08	0.12	0.04	1.5	1.6	0.1
R31	0.10	0.06	-0.03	1.5	1.6	0.1
R32	0.03	0.02	0.00	0.9	1.0	0.1

Max. PC NO_x – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)

Max. PC NO₂ - calculated based on a conversion factors of 0.70 applied to NO_x based on current guidance

Sensitivity Test Undertaken assuming an increase in site level of 8m

NRW have requested evidence to back up the statement set out in Section 11.47 of the ES chapter which states *'This development platform has not been included within the assessment modelling; however, it is considered that the outputs of modelling represent a worst-case prediction of potential impacts'*.

A sensitivity assessment has been carried out modelling an increase in site level of 8m. The results of the analysis are provided in **Table 11.3.3**.

The data shows little difference between the two sets of results showing that an increase in the level of the site by 8m would not result in a significant difference in predicted impacts compared to those assessed within this ES chapter.

Table 11.3.3: Annual Mean (Long-term) NO₂ Concentrations Predicted from Point Source Emissions (µg/m₃) Comparing an increased site level of 8m

Receptor	Annual Mean Emissions (SC1)			Short-term Emissions (SC2a)		
	Max. PC NO ₂ (using existing site level)	Max. PC NO ₂ (using 8m increase in site level)	Difference between Existing and 8m site level	Max. PC NO ₂ (using existing site level)	Max. PC NO ₂ (using 8m increase in site level)	Difference between Existing and 8m site level
R1	0.14	0.13	-0.02	9.8	8.8	-0.9
R2	0.13	0.11	-0.01	9.3	8.6	-0.7
R3	0.09	0.08	-0.01	4.8	4.6	-0.2
R4	0.07	0.06	-0.01	3.5	3.3	-0.2
R5	0.07	0.06	-0.01	3.3	3.2	-0.1
R6	0.06	0.06	0.0	2.9	2.7	-0.1
R7	0.06	0.05	-0.01	3.0	2.9	-0.1
R8	0.06	0.05	-0.01	3.0	2.9	-0.1
R9	0.06	0.05	-0.01	3.1	3.0	-0.1
R10	0.04	0.03	-0.01	2.0	1.9	-0.1
R11	0.03	0.02	-0.01	1.5	1.5	-0.1
R12	0.05	0.04	-0.01	2.7	2.6	-0.1
R13	0.04	0.04	0.0	2.4	2.3	-0.1
R14	0.05	0.05	0.0	2.5	2.3	-0.1
R15	0.05	0.05	0.0	2.1	2.0	-0.1
R16	0.05	0.04	-0.01	1.8	1.8	0.0
R17	0.09	0.08	-0.01	2.3	2.1	-0.2
R18	0.15	0.14	-0.01	3.0	2.7	-0.3

Receptor	Annual Mean Emissions (SC1)			Short-term Emissions (SC2a)		
	Max. PC NO ₂ (using existing site level)	Max. PC NO ₂ (using 8m increase in site level)	Difference between Existing and 8m site level	Max. PC NO ₂ (using existing site level)	Max. PC NO ₂ (using 8m increase in site level)	Difference between Existing and 8m site level
R19	0.18	0.17	-0.01	2.6	2.9	0.3
R20	0.31	0.29	-0.02	3.8	3.9	0.1
R21	0.36	0.33	-0.03	3.9	4.0	0.1
R22	0.17	0.17	0.0	2.2	2.2	-0.1
R23	0.22	0.21	-0.1	2.9	2.6	-0.3
R24	0.14	0.14	0.0	2.5	2.2	-0.3
R25	0.09	0.09	0.0	2.2	1.9	-0.3
R26	0.07	0.08	0.01	1.6	1.5	-0.1
R27	0.09	0.09	0.0	2.0	1.8	-0.2
R28	0.06	0.06	0.0	1.4	1.2	-0.2
R29	0.04	0.04	0.0	0.9	0.8	-0.1
R30	0.08	0.07	-0.01	1.5	1.4	-0.2
R31	0.10	0.09	-0.01	1.5	2.1	0.6
R32	0.03	0.02	-0.01	0.9	1.3	0.3

Max. PC NO_x – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)

Max. PC NO₂ - calculated based on a conversion factors of 0.70 applied to NO_x based on current guidance

Appendix 11.4: Receptors used in Dispersion Modelling

Table 11.4.1: Human Receptors used in Dispersion Modelling as shown in Figure 11.1

Receptor Number	Receptor Location	OS Grid Reference	Receptor Height (m)
R1	Port Talbot Sea Cadets	276020, 189023	1.5
R2	YMCA Watersports	275926, 188983	1.5
R3	AFAN Boad Club	225544, 188865	1.5
R4	Aberavon Green Stars RFC	275326, 188909	1.5
R5	27 Mariners Point	275285, 188866	1.5
R6	46 Mariners Point	275129, 188802	1.5
R7	40 Darwin Road	275290, 189103	1.5

Receptor Number	Receptor Location	OS Grid Reference	Receptor Height (m)
R8	23 Darwin Road	275380, 189221	1.5
R9	1 Darwin Road	275488, 189325	1.5
R10	Tywyn Primary School	274953, 189426	1.5
R11	Neath Port Hospital	275485, 190334	1.5
R12	40 Harveys Crescent	275575, 189550	1.5
R13	21 Glenavan Street	275716, 189716	1.5
R14	3 Green Park Street	276035, 189784	1.5
R15	123 Water Street	276177, 189962	1.5
R16	St Marys Church	276307, 190124	1.5
R17	25 Station Road	276736, 189750	1.5
R18	53 Talbot Road	276951, 189411	1.5
R19	Central Infants School	277289, 189282	1.5
R20	26 West End	277070, 189010	1.5
R21	1 West End	277146, 188902	1.5
R22	Eastern Primary School	277604, 188855	1.5
R23	29 St Albans Terrace	277429, 188696	1.5
R24	Special Needs Activity Club	277575, 188553	1.5
R25	13 Pentre Wern	277714, 188201	1.5
R26	Margam RC Church	277885, 188299	1.5
R27	37 Tal-y-Wern	277827, 187950	1.5
R28	19 Rhodfa Glan-y-Mar	277066, 187869	1.5
0.3R29	Brambil School	278587, 187478	1.5
R30.10	8 Knox Street	278131, 187306	1.5
R310.1	Maes Y Bryn Residential Home	277540, 189664	1.5
R32-0.1	Velindre Community School	277094, 190823	1.5
C1-0.3	36 Byass Street	278232, 187107	4.5
C2-0.3	Min-y-Dan	278277, 187083	4.5

Table 11.4.2: Ecological Receptors used in Dispersion Modelling as shown in Figure 11.1

Receptor Number	Receptor Location	Receptor Height (m)
LE1 – Little Warren SINC	275099, 188796	0
LE2 – Lower River AFAN SINC	275395, 188810	0
LE3 – Harbourside SINC	276559, 189421	0
LE4 – Tai-Bach AW	277871, 188473	0
LE5 – Bryn Goytre AW	277823, 189755	0
R29 – Margam Park ¹	276932, 187478	0
E1 - Kenfig SAC	277572, 183291	0
E2 - Kenfig SAC	277921, 183428	0
E3 - Kenfig SAC	278644, 183288	0
E4- Kenfig SAC	279117, 183410	0
E5- Kenfig SAC	280197, 182693	0
E6 - Crymlyn Bog SAC	271757, 194132	0
E7 - Crymlyn Bog SAC	271008, 193807	0
E8 Crymlyn Bog SAC	270164, 193613	0
E9 Crymlyn Bog SAC	269386, 193389	0
E10 Crymlyn Bog SAC	268529, 193240	0
E11 Cefn Cribwr SAC	284119, 181971	0
Roadside Transect (Kenfig SAC)		
KF1 Rdside	280530, 182489	0
KF1 10m	280519, 182486	0
KF1 20m	280510, 182483	0
KF1 30m	280500, 182479	0
KF1 50m	280482, 182472	0
KF1 70m	280463, 182465	0
KF1 90m	280444, 182458	0
KF1 110m	280424, 182453	0
KF2 Rdside	280608, 182514	0
KF2 10m	280617, 182517	0
KF2 20m	280627, 182521	0
KF2 30m	280635, 182526	0
KF2 50m	280653, 182535	0

Receptor Number	Receptor Location	Receptor Height (m)
KF2 70m	280671, 182545	0
KF2 90m	280688, 182555	0
KF2 110m	280705, 182565	0

¹ Receptor R29 has been included to represent impacts at the Margam Country Park. A number of ancient trees have been identified within the country park. R29 represents the closest receptor included within the modelling assessment to Margam Park and therefore has been used to represent potential effects within the park. However, Margam Park lies a further 1.5 km to the south-west from the emission sources compared to receptor R29, therefore impacts predicted at R29 represent a worst-case prediction of potential effects within the country park.

Appendix 11.5: Traffic Data

Table 11.5.1: Traffic Data used in Air Quality Assessment

Road Name	2022 Base		2022 Base + Construction		2022 base + committed development		2022 Base + Committed + operational development	
	AADT	%HDV	AADT	%HDV	AADT	%HDV	AADT	%HDV
Harbour Way	9152	7	9618	9	-	-	-	-
M4	74172	8	-	-	74868	8	74942	8

Table 11.5.2: Traffic Data Screened out for Assessment

Road Name	Construction Trips ¹				Operational Trips					
	AADT	HGV	Above screening criteria	Relevant receptors	AADT	HGV	Above screening criteria for human receptors	Relevant receptors (human)	Above screening criteria for ecological receptors	Relevant Receptors (ecological)
M4 – south of Port Talbot	346	168	No	No	74	20	no	no	No	Yes – trips have been considered as part of detailed modelling
Margham Rd – south	408	203	Just above 200 HGV	No	82	21	no	no	No	No

Road Name	Construction Trips ¹				Operational Trips					
	AADT	HGV	Above screening criteria	Relevant receptors	AADT	HGV	Above screening criteria for human receptors	Relevant receptors (human)	Above screening criteria for ecological receptors	Relevant Receptors (ecological)
of Harbour Way			screening criteria							
Margham Rd – north of Harbour Way	58	37	Just above the 25 HGV screening criteria	Receptors are over 50 m from roadside and baseline levels are <75% of objectives therefore impacts would not cause a breach of objectives and would be negligible, screened out.	6	0	no	yes	no	no
Harbour Way – south of Site	466	240	Exceeds 200 HGV for outside an AQMA, however nearby residential fall within the AQMA, HGV significantly exceeds	Yes, residential receptors within the AQMA – detailed modelling of receptors undertaken	88	21	no	Yes	No	No

Road Name	Construction Trips ¹				Operational Trips					
	AADT	HGV	Above screening criteria	Relevant receptors	AADT	HGV	Above screening criteria for human receptors	Relevant receptors (human)	Above screening criteria for ecological receptors	Relevant Receptors (ecological)
			25 HGV criteria for within an AQMA							
Harbour Way – north of Site	388	0	No	Yes	110	9	no	Yes	No	no
A4241	229	0	No	No	77	9	no	yes	No	no
A48 Heilbronn Way	202	0	No	Yes	69	9	no	yes	No	no
A48 Pentyla-Baglan Rd	167	0	No	Yes	59	9	no	yes	No	no

¹ construction effects not considered in relation to ecological receptors as effects will be short-term and CL and CLOs relate to long-term exposure only.

IAQM screening criteria for assessment of impacts on human receptors:

A change in LGV of more than 100 per day within or adjacent to an AQMA, a change of more than 500 per day elsewhere

A change in HGV of more than 25 per day within or adjacent to an AQMA, a change of more than 100 per day elsewhere

Road Name	Construction Trips ¹				Operational Trips					
	AADT	HGV	Above screening criteria	Relevant receptors	AADT	HGV	Above screening criteria for human receptors	Relevant receptors (human)	Above screening criteria for ecological receptors	Relevant Receptors (ecological)

IAQM screening criteria for assessment of impacts on ecological receptors:

A change of more than 1000 vehicles per day or more than 200 HGV per day on a road within 200 m of a designated site both alone or in - combination

However, NPTCBC advisors have raised concerns over the effectiveness of this criteria for screening out significant effects t herefore impacts have been assessed in detail even where this criteria are met

Appendix 11.6: Construction Traffic Impacts

11.6.1: Annual Mean NO₂ Concentrations Predicted Due to Construction Traffic Emissions

Receptor	2022 Base	2022 Base + Construction Traffic	Change due to Proposed Development as a % of AQAL	Magnitude of Impact
C1	15.4	15.5	<1	Negligible
C2	15.2	15.3	<1	Negligible

Table 11.6.2: Annual Mean PM₁₀ Concentrations Predicted Due to Construction Traffic Emissions

Receptor	2022 Base	2022 Base + Construction Traffic	Change due to Proposed Development as a % of AQAL	Magnitude of Impact
C1	14.1	14.1	<0.1	Negligible
C2	14.0	14.0	<0.1	Negligible

Table 11.6.3: Annual Mean PM_{2.5} Concentrations Predicted Due to Construction Traffic Emissions

Receptor	2022 Base	2022 Base + Construction Traffic	Change due to Proposed Development as a % of AQAL	Magnitude of Impact
C1	8.8	8.8	<0.1	Negligible
C2	8.8	8.8	<0.1	Negligible

Appendix 11.7: Point Source Impacts on Human Receptors

Table 11.7.1: Annual Mean (Long-term) NO₂ Concentrations Predicted from Point Source Emissions (µg/m₃) (SC1)

Receptor	Max. PC NO _x	Max. PC NO ₂	NO ₂ PEC	PC as % of AQAL	Significance based on EPUK/IAQM criteria
R1	0.2	0.1	15.2	0.4	Negligible
R2	0.2	0.1	15.1	0.3	Negligible
R3	0.1	0.1	15.1	0.2	Negligible
R4	0.1	0.1	15.1	0.2	Negligible
R5	0.1	0.1	15.1	0.2	Negligible
R6	0.1	0.1	15.1	0.2	Negligible
R7	0.1	0.1	15.1	0.1	Negligible
R8	0.1	0.1	15.1	0.1	Negligible
R9	0.1	0.1	15.1	0.1	Negligible
R10	0.1	0.0	15.0	0.1	Negligible
R11	0.0	0.0	15.0	0.1	Negligible
R12	0.1	0.0	15.1	0.1	Negligible
R13	0.1	0.0	15.1	0.1	Negligible
R14	0.1	0.0	15.1	0.1	Negligible
R15	0.1	0.1	15.1	0.1	Negligible
R16	0.1	0.0	15.1	0.1	Negligible
R17	0.1	0.1	15.1	0.2	Negligible
R18	0.2	0.2	15.2	0.4	Negligible
R19	0.3	0.2	15.2	0.4	Negligible
R20	0.4	0.3	15.4	0.8	Negligible
R21	0.5	0.4	15.4	0.9	Negligible
R22	0.2	0.2	15.2	0.4	Negligible
R23	0.3	0.2	15.3	0.5	Negligible
R24	0.2	0.1	15.2	0.4	Negligible
R25	0.1	0.1	15.1	0.2	Negligible
R26	0.1	0.1	15.1	0.2	Negligible
R27	0.1	0.1	15.1	0.2	Negligible

Receptor	Max. PC NO _x	Max. PC NO ₂	NO ₂ PEC	PC as % of AQAL	Significance based on EPUK/IAQM criteria
R28	0.1	0.1	15.1	0.1	Negligible
R29	0.1	0.0	15.0	0.2	Negligible
R30	0.1	0.1	15.1	0.2	Negligible
R31	0.1	0.1	15.1	0.1	Negligible
R32	0.0	0.0	15.0	0.0	Negligible

Max. PC NO_x – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)

Max. PC NO₂ - calculated based on a conversion factors of 1 applied to NO_x – this is worst-case used for screening. Current guidance recommends a conversion of 0.7 between NO_x: NO₂
 PEC – includes PC plus background

Background NO₂ assumed as 2019 concentrations of 15µg/m³ recorded at the PT2 Industrial site to ensure a worst-case

Table 11.7.2: Annual Mean (Long-term) PM₁₀ Concentrations Predicted from Point Source Emissions (µg/m³) (SC1)

Receptor	Max. PC PM ₁₀	PM ₁₀ PEC	PC as % of AQAL	Significance based on EPUK/IAQM criteria
R1	<0.1	21.1	<0.1	Negligible
R2	<0.1	21.1	<0.1	Negligible
R3	<0.1	21.1	<0.1	Negligible
R4	<0.1	21.1	<0.1	Negligible
R5	<0.1	21.1	<0.1	Negligible
R6	<0.1	21.1	<0.1	Negligible
R7	<0.1	21.0	<0.1	Negligible
R8	<0.1	21.0	<0.1	Negligible
R9	<0.1	21.0	<0.1	Negligible
R10	<0.1	21.0	<0.1	Negligible
R11	<0.1	21.0	<0.1	Negligible
R12	<0.1	21.0	<0.1	Negligible
R13	<0.1	21.0	<0.1	Negligible
R14	<0.1	21.1	<0.1	Negligible
R15	<0.1	21.1	<0.1	Negligible

Receptor	Max. PC PM ₁₀	PM ₁₀ PEC	PC as % of AQAL	Significance based on EPUK/IAQM criteria
R16	<0.1	21.0	<0.1	Negligible
R17	<0.1	21.1	<0.1	Negligible
R18	<0.1	21.2	<0.1	Negligible
R19	<0.1	21.2	<0.1	Negligible
R20	<0.1	21.3	<0.1	Negligible
R21	<0.1	21.4	<0.1	Negligible
R22	<0.1	21.2	<0.1	Negligible
R23	<0.1	21.2	<0.1	Negligible
R24	<0.1	21.2	<0.1	Negligible
R25	<0.1	21.1	<0.1	Negligible
R26	<0.1	21.1	<0.1	Negligible
R27	<0.1	21.1	<0.1	Negligible
R28	<0.1	21.1	<0.1	Negligible
R29	<0.1	21.0	<0.1	Negligible
R30	<0.1	21.1	<0.1	Negligible
R31	<0.1	21.1	<0.1	Negligible
R32	<0.1	21.0	<0.1	Negligible

Max. PC PM₁₀ – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)

PEC – includes PC plus background

Background PM₁₀ assumed as 2019 concentrations of 21µg/m³ recorded at the PT2 Industrial site to ensure a worst-case

Table 11.7.3: Annual Mean (Long-term) PM_{2.5} Concentrations Predicted from Point Source Emissions (µg/m³) (SC1)

Receptor	Max. PC PM _{2.5}	PM _{2.5} PEC	PC as % of AQAL	Significance based on EPUK/IAQM criteria
R1	<0.1	11.0	<0.1	Negligible
R2	<0.1	11.0	<0.1	Negligible
R3	<0.1	11.0	<0.1	Negligible
R4	<0.1	11.0	<0.1	Negligible
R5	<0.1	11.0	<0.1	Negligible
R6	<0.1	11.0	<0.1	Negligible
R7	<0.1	11.0	<0.1	Negligible
R8	<0.1	11.0	<0.1	Negligible
R9	<0.1	11.0	<0.1	Negligible
R10	<0.1	11.0	<0.1	Negligible
R11	<0.1	11.0	<0.1	Negligible
R12	<0.1	11.0	<0.1	Negligible
R13	<0.1	11.0	<0.1	Negligible
R14	<0.1	11.0	<0.1	Negligible
R15	<0.1	11.0	<0.1	Negligible
R16	<0.1	11.0	<0.1	Negligible
R17	<0.1	11.0	<0.1	Negligible
R18	<0.1	11.0	<0.1	Negligible
R19	<0.1	11.0	<0.1	Negligible
R20	<0.1	11.0	<0.1	Negligible
R21	<0.1	11.0	<0.1	Negligible
R22	<0.1	11.0	<0.1	Negligible
R23	<0.1	11.0	<0.1	Negligible
R24	<0.1	11.0	<0.1	Negligible
R25	<0.1	11.0	<0.1	Negligible
R26	<0.1	11.0	<0.1	Negligible
R27	<0.1	11.0	<0.1	Negligible
R28	<0.1	11.0	<0.1	Negligible
R29	<0.1	11.0	<0.1	Negligible
R30	<0.1	11.0	<0.1	Negligible

Receptor	Max. PC PM _{2.5}	PM _{2.5} PEC	PC as % of AQAL	Significance based on EPUK/IAQM criteria
R31	<0.1	11.0	<0.1	Negligible
R32	<0.1	11.0	<0.1	Negligible
Max. PC PM _{2.5} – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)				
PEC – includes PC plus background				
Background PM _{2.5} assumed as 2019 concentrations of 11µg/m ³ recorded at the PT2 Industrial site to ensure a worst-case				

Table 11.7.4: Annual Mean (Long-term) 1,3-Butadiene (VOC) Concentrations Predicted from Point Source Emissions (µg/m³) (SC1)

Receptor	Max. PC VOC	VOC PEC	PC as % of AQAL	Significance based on EPUK/IAQM criteria
R1	<0.1	0.1	<0.1	Negligible
R2	<0.1	0.1	<0.1	Negligible
R3	<0.1	0.1	<0.1	Negligible
R4	<0.1	0.1	<0.1	Negligible
R5	<0.1	0.1	<0.1	Negligible
R6	<0.1	0.1	<0.1	Negligible
R7	<0.1	0.1	<0.1	Negligible
R8	<0.1	0.1	<0.1	Negligible
R9	<0.1	0.1	<0.1	Negligible
R10	<0.1	0.1	<0.1	Negligible
R11	<0.1	0.1	<0.1	Negligible
R12	<0.1	0.1	<0.1	Negligible
R13	<0.1	0.1	<0.1	Negligible
R14	<0.1	0.1	<0.1	Negligible
R15	<0.1	0.1	<0.1	Negligible
R16	<0.1	0.1	<0.1	Negligible
R17	<0.1	0.1	<0.1	Negligible
R18	<0.1	0.1	<0.1	Negligible
R19	<0.1	0.1	<0.1	Negligible
R20	<0.1	0.1	<0.1	Negligible
R21	<0.1	0.1	<0.1	Negligible

Receptor	Max. PC VOC	VOC PEC	PC as % of AQAL	Significance based on EPUK/IAQM criteria
R22	<0.1	0.1	<0.1	Negligible
R23	<0.1	0.1	<0.1	Negligible
R24	<0.1	0.1	<0.1	Negligible
R25	<0.1	0.1	<0.1	Negligible
R26	<0.1	0.1	<0.1	Negligible
R27	<0.1	0.1	<0.1	Negligible
R28	<0.1	0.1	<0.1	Negligible
R29	<0.1	0.1	<0.1	Negligible
R30	<0.1	0.1	<0.1	Negligible
R31	<0.1	0.1	<0.1	Negligible
R32	<0.1	0.1	<0.1	Negligible
Max. PC VOC – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)				
PEC – includes PC plus background				
Background VOC taken from Defra maps				

Table 11.7.5: Annual Mean (Long-term) Benzene Concentrations Predicted from Point Source Emissions ($\mu\text{g}/\text{m}^3$) (SC1)

Receptor	Max. PC Benzene	Benzene PEC	PC as % of AQAL	Significance based on EPUK/IAQM criteria
R1	0.2	0.4	5.0	Negligible
R2	0.2	0.4	3.9	Negligible
R3	0.1	0.3	3.4	Negligible
R4	0.1	0.3	2.3	Negligible
R5	0.1	0.3	2.2	Negligible
R6	0.1	0.3	1.9	Negligible
R7	0.1	0.3	1.6	Negligible
R8	0.1	0.3	1.4	Negligible
R9	0.1	0.3	1.2	Negligible
R10	<0.1	0.2	0.8	Negligible
R11	<0.1	0.2	0.5	Negligible
R12	<0.1	0.2	1.0	Negligible

Receptor	Max. PC Benzene	Benzene PEC	PC as % of AQAL	Significance based on EPUK/IAQM criteria
R13	<0.1	0.2	1.0	Negligible
R14	0.1	0.3	1.3	Negligible
R15	0.1	0.3	1.3	Negligible
R16	0.1	0.3	1.1	Negligible
R17	0.1	0.3	2.0	Negligible
R18	0.2	0.4	3.9	Negligible
R19	0.2	0.4	3.4	Negligible
R20	0.3	0.5	5.8	Minor Adverse
R21	0.3	0.4	5.1	Minor Adverse
R22	0.1	0.3	2.3	Negligible
R23	0.1	0.3	2.3	Negligible
R24	0.1	0.3	1.3	Negligible
R25	<0.1	0.2	0.7	Negligible
R26	<0.1	0.2	0.6	Negligible
R27	<0.1	0.2	0.6	Negligible
R28	<0.1	0.2	0.5	Negligible
R29	<0.1	0.2	0.3	Negligible
R30	<0.1	0.2	0.5	Negligible
R31	0.1	0.3	2.0	Negligible
R32	<0.1	0.2	0.6	Negligible

Max. PC Benzene – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)

PEC – includes PC plus background

Background Benzene taken from Defra maps

Table 11.7.6: 99.8th Percentile (short-term) NO₂ Concentrations Predicted from Point Source Emissions (µg/m³) (SC2a)

Receptor	Max. PC NO _x	Max. PC NO ₂	NO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R1	27.9	9.8	39.8	4.9	Negligible	NS
R2	26.5	9.3	39.3	4.6	Negligible	NS
R3	13.8	4.8	34.8	2.4	Negligible	NS
R4	10.0	3.5	33.5	1.7	Negligible	NS
R5	9.4	3.3	33.3	1.7	Negligible	NS
R6	8.1	2.9	32.9	1.4	Negligible	NS
R7	8.6	3.0	33.0	1.5	Negligible	NS
R8	8.6	3.0	33.0	1.5	Negligible	NS
R9	8.9	3.1	33.1	1.6	Negligible	NS
R10	5.7	2.0	32.0	1.0	Negligible	NS
R11	4.4	1.5	31.5	0.8	Negligible	NS
R12	7.8	2.7	32.7	1.4	Negligible	NS
R13	6.9	2.4	32.4	1.2	Negligible	NS
R14	7.0	2.5	32.5	1.2	Negligible	NS
R15	6.1	2.1	32.1	1.1	Negligible	NS
R16	5.1	1.8	31.8	0.9	Negligible	NS
R17	6.4	2.3	32.3	1.1	Negligible	NS
R18	8.6	3.0	33.0	1.5	Negligible	NS
R19	7.4	2.6	32.6	1.3	Negligible	NS
R20	10.9	3.8	33.8	1.9	Negligible	NS
R21	11.0	3.9	33.9	1.9	Negligible	NS
R22	6.4	2.2	32.2	1.1	Negligible	NS
R23	8.4	2.9	32.9	1.5	Negligible	NS
R24	7.0	2.5	32.5	1.2	Negligible	NS
R25	6.2	2.2	32.2	1.1	Negligible	NS
R26	4.6	1.6	31.6	0.8	Negligible	NS
R27	5.8	2.0	32.0	1.0	Negligible	NS
R28	4.0	1.4	31.4	0.7	Negligible	NS
R29	2.6	0.9	30.9	0.5	Negligible	NS

Receptor	Max. PC NO _x	Max. PC NO ₂	NO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R30	4.4	1.5	31.5	0.8	Negligible	NS
R31	4.4	1.5	31.5	0.8	Negligible	NS
R32	2.7	0.9	30.9	0.5	Negligible	NS

Max. PC NO_x – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)

Max. PC NO₂ - calculated based on a conversion factors of 0.35 applied to NO_x

PEC – includes PC plus 2 x annual mean background of 15µg/m³ (i.e. 30 µg/m³)

Background NO₂ assumed as 2019 concentrations of 15µg/m³ recorded at the PT2 Industrial site to ensure a worst-case

NS = not significant

S = Significant

Table 11.7.7: 8-Hour Rolling CO Concentrations Predicted from Point Source Emissions (mg/m³) (SC2a)

Receptor	Max. PC CO	CO PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R1	<0.1	0.298	<0.1	Negligible	NS
R2	<0.1	0.298	<0.1	Negligible	NS
R3	<0.1	0.298	<0.1	Negligible	NS
R4	<0.1	0.298	<0.1	Negligible	NS
R5	<0.1	0.298	<0.1	Negligible	NS
R6	<0.1	0.298	<0.1	Negligible	NS
R7	<0.1	0.298	<0.1	Negligible	NS
R8	<0.1	0.298	<0.1	Negligible	NS
R9	<0.1	0.298	<0.1	Negligible	NS
R10	<0.1	0.298	<0.1	Negligible	NS
R11	<0.1	0.298	<0.1	Negligible	NS
R12	<0.1	0.298	<0.1	Negligible	NS
R13	<0.1	0.298	<0.1	Negligible	NS
R14	<0.1	0.298	<0.1	Negligible	NS
R15	<0.1	0.298	<0.1	Negligible	NS
R16	<0.1	0.298	<0.1	Negligible	NS
R17	<0.1	0.298	<0.1	Negligible	NS
R18	<0.1	0.298	<0.1	Negligible	NS
R19	<0.1	0.298	<0.1	Negligible	NS
R20	<0.1	0.298	<0.1	Negligible	NS
R21	<0.1	0.298	<0.1	Negligible	NS
R22	<0.1	0.298	<0.1	Negligible	NS
R23	<0.1	0.298	<0.1	Negligible	NS
R24	<0.1	0.298	<0.1	Negligible	NS
R25	<0.1	0.298	<0.1	Negligible	NS
R26	<0.1	0.298	<0.1	Negligible	NS
R27	<0.1	0.298	<0.1	Negligible	NS
R28	<0.1	0.298	<0.1	Negligible	NS
R29	<0.1	0.298	<0.1	Negligible	NS

Receptor	Max. PC CO	CO PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R30	<0.1	0.298	<0.1	Negligible	NS
R31	<0.1	0.298	<0.1	Negligible	NS
R32	<0.1	0.298	<0.1	Negligible	NS

Max. PC CO – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)

PEC – includes PC plus 2 x annual mean background x 0.7 (0.298 mg/m³)

Background CO taken from Defra Maps

NS = not significant

S = Significant

Table 11.7.8: 15-minute 99.8th Percentile SO₂ Concentrations Predicted from Point Source Emissions (µg/m³) (SC2a)

Receptor	Max. PC SO ₂	SO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R1	0.6	5.6	<0.1	Negligible	NS
R2	0.6	5.5	<0.1	Negligible	NS
R3	0.3	5.2	<0.1	Negligible	NS
R4	0.2	5.1	<0.1	Negligible	NS
R5	0.2	5.1	<0.1	Negligible	NS
R6	0.2	5.1	<0.1	Negligible	NS
R7	0.2	5.1	<0.1	Negligible	NS
R8	0.2	5.1	<0.1	Negligible	NS
R9	0.2	5.1	<0.1	Negligible	NS
R10	0.2	5.0	<0.1	Negligible	NS
R11	0.1	5.0	<0.1	Negligible	NS
R12	0.1	5.1	<0.1	Negligible	NS
R13	0.2	5.1	<0.1	Negligible	NS
R14	0.1	5.1	<0.1	Negligible	NS
R15	0.1	5.0	<0.1	Negligible	NS
R16	0.1	5.0	<0.1	Negligible	NS
R17	0.1	5.1	<0.1	Negligible	NS
R18	0.1	5.1	<0.1	Negligible	NS

Receptor	Max. PC SO ₂	SO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R19	0.1	5.1	<0.1	Negligible	NS
R20	0.2	5.1	<0.1	Negligible	NS
R21	0.2	5.1	<0.1	Negligible	NS
R22	0.1	5.0	<0.1	Negligible	NS
R23	0.1	5.1	<0.1	Negligible	NS
R24	0.1	5.0	<0.1	Negligible	NS
R25	0.1	5.0	<0.1	Negligible	NS
R26	0.1	5.0	<0.1	Negligible	NS
R27	0.1	5.0	<0.1	Negligible	NS
R28	0.1	5.0	<0.1	Negligible	NS
R29	0.1	5.0	<0.1	Negligible	NS
R30	0.1	5.0	<0.1	Negligible	NS
R31	0.1	5.0	<0.1	Negligible	NS
R32	0.0	5.0	<0.1	Negligible	NS

Max. PC SO₂ – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)

PEC – includes PC plus 2 x annual mean background x 1.34 (4.93 µg/m³)

Background SO₂ taken from PT2 monitoring site

NS = not significant

S = Significant

Table 11.7.9: 1-hour 99.7th Percentile SO₂ Concentrations Predicted from Point Source Emissions (µg/m³) (SC2a)

Receptor	Max. PC SO ₂	SO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R1	0.6	4.3	0.2	Negligible	NS
R2	0.5	4.2	0.2	Negligible	NS
R3	0.3	3.9	0.1	Negligible	NS
R4	0.2	3.9	0.1	Negligible	NS
R5	0.2	3.9	<0.1	Negligible	NS
R6	0.1	3.8	<0.1	Negligible	NS
R7	0.2	3.8	<0.1	Negligible	NS
R8	0.2	3.8	<0.1	Negligible	NS
R9	0.2	3.8	<0.1	Negligible	NS
R10	0.1	3.8	<0.1	Negligible	NS
R11	0.1	3.7	<0.1	Negligible	NS
R12	0.1	3.8	<0.1	Negligible	NS
R13	0.1	3.8	<0.1	Negligible	NS
R14	0.1	3.8	<0.1	Negligible	NS
R15	0.1	3.8	<0.1	Negligible	NS
R16	0.1	3.8	<0.1	Negligible	NS
R17	0.1	3.8	<0.1	Negligible	NS
R18	0.1	3.8	<0.1	Negligible	NS
R19	0.1	3.8	<0.1	Negligible	NS
R20	0.2	3.8	<0.1	Negligible	NS
R21	0.2	3.8	<0.1	Negligible	NS
R22	0.1	3.8	<0.1	Negligible	NS
R23	0.1	3.8	<0.1	Negligible	NS
R24	0.1	3.8	<0.1	Negligible	NS
R25	0.1	3.8	<0.1	Negligible	NS
R26	0.1	3.7	<0.1	Negligible	NS
R27	0.1	3.8	<0.1	Negligible	NS
R28	0.1	3.7	<0.1	Negligible	NS
R29	0.0	3.7	<0.1	Negligible	NS

Receptor	Max. PC SO ₂	SO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R30	0.1	3.7	<0.1	Negligible	NS
R31	0.1	3.8	<0.1	Negligible	NS
R32	0.0	3.7	<0.1	Negligible	NS

Max. PC SO₂ – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)

PEC – includes PC plus 2 x annual mean background (3.68 µg/m³)

Background SO₂ taken from PT2 monitoring site

NS = not significant

S = Significant

Table 11.7.10: 24-hour 99.2nd Percentile SO₂ Concentrations Predicted from Point Source Emissions (µg/m³) (Sc2a)

Receptor	Max. PC SO ₂	SO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R1	0.3	2.4	0.2	Negligible	NS
R2	0.2	2.4	0.2	Negligible	NS
R3	0.1	2.3	0.1	Negligible	NS
R4	0.1	2.3	0.1	Negligible	NS
R5	0.1	2.3	0.1	Negligible	NS
R6	0.1	2.3	0.1	Negligible	NS
R7	0.1	2.3	0.1	Negligible	NS
R8	0.1	2.3	0.1	Negligible	NS
R9	0.1	2.2	<0.1	Negligible	NS
R10	<0.1	2.2	<0.1	Negligible	NS
R11	<0.1	2.2	<0.1	Negligible	NS
R12	<0.1	2.2	<0.1	Negligible	NS
R13	<0.1	2.2	<0.1	Negligible	NS
R14	0.1	2.2	0.1	Negligible	NS
R15	<0.1	2.2	<0.1	Negligible	NS
R16	<0.1	2.2	<0.1	Negligible	NS
R17	0.1	2.2	<0.1	Negligible	NS
R18	0.1	2.3	0.1	Negligible	NS

Receptor	Max. PC SO ₂	SO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R19	0.1	2.2	0.1	Negligible	NS
R20	0.1	2.3	0.1	Negligible	NS
R21	0.1	2.3	0.1	Negligible	NS
R22	0.1	2.2	<0.1	Negligible	NS
R23	0.1	2.2	0.1	Negligible	NS
R24	0.1	2.2	<0.1	Negligible	NS
R25	<0.1	2.2	<0.1	Negligible	NS
R26	<0.1	2.2	<0.1	Negligible	NS
R27	<0.1	2.2	<0.1	Negligible	NS
R28	<0.1	2.2	<0.1	Negligible	NS
R29	<0.1	2.2	<0.1	Negligible	NS
R30	<0.1	2.2	<0.1	Negligible	NS
R31	<0.1	2.2	<0.1	Negligible	NS
R32	<0.1	2.2	<0.1	Negligible	NS

Max. PC SO₂ – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)

PEC – includes PC plus 2 x annual mean background * 0.59 (2.17 µg/m³)

Background SO₂ taken from PT2 monitoring site

NS = not significant

S = Significant

Table 11.7.11: 24-hour 90.4th Percentile PM₁₀ Concentrations Predicted from Point Source Emissions (µg/m³) (SC2a)

Receptor	Max. PC PM ₁₀	PM ₁₀ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R1	<0.1	24.8	0.1	Negligible	NS
R2	<0.1	24.8	0.1	Negligible	NS
R3	<0.1	24.8	0.1	Negligible	NS
R4	<0.1	24.8	0.1	Negligible	NS
R5	<0.1	24.8	0.1	Negligible	NS
R6	<0.1	24.8	0.1	Negligible	NS
R7	<0.1	24.8	<0.1	Negligible	NS
R8	<0.1	24.8	<0.1	Negligible	NS
R9	<0.1	24.8	<0.1	Negligible	NS
R10	<0.1	24.8	<0.1	Negligible	NS
R11	<0.1	24.8	<0.1	Negligible	NS
R12	<0.1	24.8	<0.1	Negligible	NS
R13	<0.1	24.8	<0.1	Negligible	NS
R14	<0.1	24.8	<0.1	Negligible	NS
R15	<0.1	24.8	<0.1	Negligible	NS
R16	<0.1	24.8	<0.1	Negligible	NS
R17	<0.1	24.8	<0.1	Negligible	NS
R18	<0.1	24.8	0.1	Negligible	NS
R19	<0.1	24.8	0.1	Negligible	NS
R20	<0.1	24.8	0.2	Negligible	NS
R21	<0.1	24.8	0.2	Negligible	NS
R22	<0.1	24.8	0.1	Negligible	NS
R23	<0.1	24.8	0.1	Negligible	NS
R24	<0.1	24.8	0.1	Negligible	NS
R25	<0.1	24.8	<0.1	Negligible	NS
R26	<0.1	24.8	0.1	Negligible	NS
R27	<0.1	24.8	<0.1	Negligible	NS
R28	<0.1	24.8	<0.1	Negligible	NS
R29	<0.1	24.8	<0.1	Negligible	NS

Receptor	Max. PC PM ₁₀	PM ₁₀ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R30	<0.1	24.8	<0.1	Negligible	NS
R31	<0.1	24.8	<0.1	Negligible	NS
R32	<0.1	24.8	<0.1	Negligible	NS

Max. PC PM₁₀ – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)

PEC – includes PC plus 2 x annual mean background * 0.59 (24.8 µg/m³)

Background SO₂ taken from PT2 monitoring site

NS = not significant

S = Significant

Table 11.7.12: Percentile Process Concentrations Predicted due to General Scenario (SC2a) at the Point of Maximum Concentration (µg/m³)

Pollutant	OS Grid Reference	PC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	PEC	PEC as % of AQAL	100 th Percentile 1- hr Concentration	comparison Against AEGL (For NO ₂)
99.8 th Percentile of 1-hr NO ₂	276175, 188701	64.7	32.4	Medium	94.7	47.4	103	<AEGL1
90.4 th Percentile of 24-hr PM ₁₀	276615, 188601	0.6	1.2	Negligible	-	NS	-	-
99.8 th Percentile of 15-min SO ₂	276235, 188721	4.4	1.6	Negligible	-	NS	-	-
99.7 th Percentile of 1-hr SO ₂	276235, 188721	4.3	1.2	Negligible	-	NS	-	-
99.2 nd Percentile of 24-hr SO ₂	276235, 188721	3.9	3.1	Negligible	-	NS	-	-

PC <10% of AQAL – negligible, 10-20% - small magnitude, 20-50% - medium magnitude, >50% - large magnitude

Table 11.7.13: 99.8th Percentile (short-term) NO₂ Concentrations Predicted from Point Source Emissions (µg/m³) (SC2b)

Receptor	Max. PC NO _x	Max. PC NO ₂	NO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R1	31.1	10.9	40.9	5.4	Negligible	NS
R2	26.0	9.1	39.1	4.6	Negligible	NS
R3	12.9	4.5	34.5	2.3	Negligible	NS
R4	8.9	3.1	33.1	1.6	Negligible	NS
R5	8.6	3.0	33.0	1.5	Negligible	NS
R6	7.4	2.6	32.6	1.3	Negligible	NS
R7	7.8	2.7	32.7	1.4	Negligible	NS
R8	7.9	2.8	32.8	1.4	Negligible	NS
R9	8.2	2.9	32.9	1.4	Negligible	NS
R10	4.6	1.6	31.6	0.8	Negligible	NS
R11	3.2	1.1	31.1	0.6	Negligible	NS
R12	7.0	2.4	32.4	1.2	Negligible	NS
R13	6.3	2.2	32.2	1.1	Negligible	NS
R14	6.5	2.3	32.3	1.1	Negligible	NS
R15	5.3	1.9	31.9	0.9	Negligible	NS
R16	4.4	1.5	31.5	0.8	Negligible	NS
R17	5.6	2.0	32.0	1.0	Negligible	NS
R18	6.9	2.4	32.4	1.2	Negligible	NS
R19	5.5	1.9	31.9	1.0	Negligible	NS
R20	8.6	3.0	33.0	1.5	Negligible	NS
R21	8.3	2.9	32.9	1.4	Negligible	NS
R22	4.7	1.7	31.7	0.8	Negligible	NS
R23	5.8	2.0	32.0	1.0	Negligible	NS
R24	4.8	1.7	31.7	0.8	Negligible	NS
R25	4.1	1.5	31.5	0.7	Negligible	NS
R26	3.4	1.2	31.2	0.6	Negligible	NS
R27	3.6	1.2	31.2	0.6	Negligible	NS
R28	2.9	1.0	31.0	0.5	Negligible	NS
R29	2.0	0.7	30.7	0.3	Negligible	NS

Receptor	Max. PC NO _x	Max. PC NO ₂	NO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R30	2.7	0.9	30.9	0.5	Negligible	NS
R31	3.5	1.2	31.2	0.6	Negligible	NS
R32	2.2	0.8	30.8	0.4	Negligible	NS

Max. PC NO_x – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)

Max. PC NO₂ - calculated based on a conversion factors of 0.35 applied to NO_x

PEC – includes PC plus 2 x annual mean background of 15µg/m³ (i.e. 30 µg/m³)

Background NO₂ assumed as 2019 concentrations of 15µg/m³ recorded at the PT2 Industrial site to ensure a worst-case

NS = not significant

S = Significant

Table 11.7.14: 8-Hour Rolling CO Concentrations Predicted from Point Source Emissions (mg/m³) (SC2b)

Receptor	Max. PC CO	CO PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R1	<0.1	0.298	0.1	Negligible	NS
R2	<0.1	0.298	<0.1	Negligible	NS
R3	<0.1	0.298	<0.1	Negligible	NS
R4	<0.1	0.298	<0.1	Negligible	NS
R5	<0.1	0.298	<0.1	Negligible	NS
R6	<0.1	0.298	<0.1	Negligible	NS
R7	<0.1	0.298	<0.1	Negligible	NS
R8	<0.1	0.298	<0.1	Negligible	NS
R9	<0.1	0.298	<0.1	Negligible	NS
R10	<0.1	0.298	<0.1	Negligible	NS
R11	<0.1	0.298	<0.1	Negligible	NS
R12	<0.1	0.298	<0.1	Negligible	NS
R13	<0.1	0.298	<0.1	Negligible	NS
R14	<0.1	0.298	<0.1	Negligible	NS
R15	<0.1	0.298	<0.1	Negligible	NS
R16	<0.1	0.298	<0.1	Negligible	NS

Receptor	Max. PC CO	CO PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R17	<0.1	0.298	<0.1	Negligible	NS
R18	<0.1	0.298	<0.1	Negligible	NS
R19	<0.1	0.298	<0.1	Negligible	NS
R20	<0.1	0.298	0.1	Negligible	NS
R21	<0.1	0.298	0.1	Negligible	NS
R22	<0.1	0.298	<0.1	Negligible	NS
R23	<0.1	0.298	<0.1	Negligible	NS
R24	<0.1	0.298	<0.1	Negligible	NS
R25	<0.1	0.298	<0.1	Negligible	NS
R26	<0.1	0.298	<0.1	Negligible	NS
R27	<0.1	0.298	<0.1	Negligible	NS
R28	<0.1	0.298	<0.1	Negligible	NS
R29	<0.1	0.298	<0.1	Negligible	NS
R30	<0.1	0.298	<0.1	Negligible	NS
R31	<0.1	0.298	<0.1	Negligible	NS
R32	<0.1	0.298	<0.1	Negligible	NS
Max. PC CO – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)					
PEC – includes PC plus 2 x annual mean background x 0.7 (0.298 mg/m ³)					
Background CO taken from Defra Maps					
NS = not significant					
S = Significant					

Table 11.7.15: 15-minute 99.8th Percentile SO₂ Concentrations Predicted from Point Source Emissions (µg/m³) (SC2b)

Receptor	Max. PC SO ₂	SO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R1	0.5	5.4	0.2	Negligible	NS
R2	0.4	5.3	0.2	Negligible	NS
R3	0.2	5.1	0.1	Negligible	NS
R4	0.1	5.1	0.1	Negligible	NS
R5	0.1	5.1	0.1	Negligible	NS

Receptor	Max. PC SO ₂	SO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R6	0.1	5.0	<0.1	Negligible	NS
R7	0.1	5.1	<0.1	Negligible	NS
R8	0.1	5.1	<0.1	Negligible	NS
R9	0.1	5.1	<0.1	Negligible	NS
R10	0.1	5.0	<0.1	Negligible	NS
R11	0.1	5.0	<0.1	Negligible	NS
R12	0.1	5.0	<0.1	Negligible	NS
R13	0.1	5.0	<0.1	Negligible	NS
R14	0.1	5.0	<0.1	Negligible	NS
R15	0.1	5.0	<0.1	Negligible	NS
R16	0.1	5.0	<0.1	Negligible	NS
R17	0.1	5.0	<0.1	Negligible	NS
R18	0.1	5.0	<0.1	Negligible	NS
R19	0.1	5.0	<0.1	Negligible	NS
R20	0.1	5.1	<0.1	Negligible	NS
R21	0.1	5.1	<0.1	Negligible	NS
R22	0.1	5.0	<0.1	Negligible	NS
R23	0.1	5.0	<0.1	Negligible	NS
R24	0.1	5.0	<0.1	Negligible	NS
R25	0.1	5.0	<0.1	Negligible	NS
R26	0.1	5.0	<0.1	Negligible	NS
R27	0.1	5.0	<0.1	Negligible	NS
R28	<0.1	5.0	<0.1	Negligible	NS
R29	<0.1	5.0	<0.1	Negligible	NS
R30	<0.1	5.0	<0.1	Negligible	NS
R31	0.1	5.0	<0.1	Negligible	NS
R32	<0.1	5.0	<0.1	Negligible	NS
Max. PC SO ₂ – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)					
PEC – includes PC plus 2 x annual mean background x 1.34 (4.93 µg/m ³)					
Background SO ₂ taken from PT2 monitoring site					
NS = not significant					

Receptor	Max. PC SO ₂	SO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
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S = Significant

Table 11.7.16: 1-hour 99.7th Percentile SO₂ Concentrations Predicted from Point Source Emissions (µg/m³) (SC2b)

Receptor	Max. PC SO ₂	SO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R1	0.5	4.2	0.1	Negligible	NS
R2	0.4	4.1	0.1	Negligible	NS
R3	0.2	3.9	0.1	Negligible	NS
R4	0.1	3.8	<0.1	Negligible	NS
R5	0.1	3.8	<0.1	Negligible	NS
R6	0.1	3.8	<0.1	Negligible	NS
R7	0.1	3.8	<0.1	Negligible	NS
R8	0.1	3.8	<0.1	Negligible	NS
R9	0.1	3.8	<0.1	Negligible	NS
R10	0.1	3.7	<0.1	Negligible	NS
R11	0.1	3.7	<0.1	Negligible	NS
R12	0.1	3.8	<0.1	Negligible	NS
R13	0.1	3.8	<0.1	Negligible	NS
R14	0.1	3.8	<0.1	Negligible	NS
R15	0.1	3.8	<0.1	Negligible	NS
R16	0.1	3.8	<0.1	Negligible	NS
R17	0.1	3.8	<0.1	Negligible	NS
R18	0.1	3.8	<0.1	Negligible	NS
R19	0.1	3.8	<0.1	Negligible	NS
R20	0.1	3.8	<0.1	Negligible	NS
R21	0.1	3.8	<0.1	Negligible	NS
R22	0.1	3.7	<0.1	Negligible	NS
R23	0.1	3.8	<0.1	Negligible	NS
R24	0.1	3.7	<0.1	Negligible	NS
R25	0.1	3.7	<0.1	Negligible	NS

Receptor	Max. PC SO ₂	SO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R26	<0.1	3.7	<0.1	Negligible	NS
R27	<0.1	3.7	<0.1	Negligible	NS
R28	<0.1	3.7	<0.1	Negligible	NS
R29	<0.1	3.7	<0.1	Negligible	NS
R30	<0.1	3.7	<0.1	Negligible	NS
R31	<0.1	3.7	<0.1	Negligible	NS
R32	<0.1	3.7	<0.1	Negligible	NS

Max. PC SO₂ – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)

PEC – includes PC plus 2 x annual mean background (3.68 µg/m³)

Background SO₂ taken from PT2 monitoring site

NS = not significant

S = Significant

Table 11.7.17: 24-hour 99.2nd Percentile SO₂ Concentrations Predicted from Point Source Emissions (µg/m³) (Sc2b)

Receptor	Max. PC SO ₂	SO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R1	0.2	2.4	0.2	Negligible	NS
R2	0.1	2.3	0.1	Negligible	NS
R3	0.1	2.3	0.1	Negligible	NS
R4	0.1	2.2	0.1	Negligible	NS
R5	0.1	2.2	0.1	Negligible	NS
R6	0.1	2.2	0.1	Negligible	NS
R7	<0.1	2.2	<0.1	Negligible	NS
R8	<0.1	2.2	<0.1	Negligible	NS
R9	<0.1	2.2	<0.1	Negligible	NS
R10	<0.1	2.2	<0.1	Negligible	NS
R11	<0.1	2.2	<0.1	Negligible	NS
R12	<0.1	2.2	<0.1	Negligible	NS
R13	<0.1	2.2	<0.1	Negligible	NS
R14	<0.1	2.2	<0.1	Negligible	NS

Receptor	Max. PC SO ₂	SO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R15	<0.1	2.2	<0.1	Negligible	NS
R16	<0.1	2.2	<0.1	Negligible	NS
R17	<0.1	2.2	<0.1	Negligible	NS
R18	0.1	2.3	0.1	Negligible	NS
R19	<0.1	2.2	0.1	Negligible	NS
R20	0.1	2.3	0.1	Negligible	NS
R21	0.1	2.3	0.1	Negligible	NS
R22	<0.1	2.2	<0.1	Negligible	NS
R23	<0.1	2.2	0.1	Negligible	NS
R24	<0.1	2.2	<0.1	Negligible	NS
R25	<0.1	2.2	<0.1	Negligible	NS
R26	<0.1	2.2	<0.1	Negligible	NS
R27	<0.1	2.2	<0.1	Negligible	NS
R28	<0.1	2.2	<0.1	Negligible	NS
R29	<0.1	2.2	<0.1	Negligible	NS
R30	<0.1	2.2	<0.1	Negligible	NS
R31	<0.1	2.2	<0.1	Negligible	NS
R32	<0.1	2.2	<0.1	Negligible	NS

Max. PC SO₂ – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)

PEC – includes PC plus 2 x annual mean background * 0.59 (2.17 µg/m³)

Background SO₂ taken from PT2 monitoring site

NS = not significant

S = Significant

Table 11.7.18: 24-hour 90.4th Percentile PM₁₀ Concentrations Predicted from Point Source Emissions (µg/m³) (SC2b)

Receptor	Max. PC PM ₁₀	PM ₁₀ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R1	<0.1	24.8	0.1	Negligible	NS
R2	<0.1	24.8	0.1	Negligible	NS
R3	<0.1	24.8	0.1	Negligible	NS
R4	<0.1	24.8	0.1	Negligible	NS
R5	<0.1	24.8	0.1	Negligible	NS
R6	<0.1	24.8	0.1	Negligible	NS
R7	<0.1	24.8	<0.1	Negligible	NS
R8	<0.1	24.8	<0.1	Negligible	NS
R9	<0.1	24.8	<0.1	Negligible	NS
R10	<0.1	24.8	<0.1	Negligible	NS
R11	<0.1	24.8	<0.1	Negligible	NS
R12	<0.1	24.8	<0.1	Negligible	NS
R13	<0.1	24.8	<0.1	Negligible	NS
R14	<0.1	24.8	<0.1	Negligible	NS
R15	<0.1	24.8	<0.1	Negligible	NS
R16	<0.1	24.8	<0.1	Negligible	NS
R17	<0.1	24.8	<0.1	Negligible	NS
R18	<0.1	24.8	0.1	Negligible	NS
R19	<0.1	24.8	0.1	Negligible	NS
R20	<0.1	24.8	0.2	Negligible	NS
R21	<0.1	24.8	0.2	Negligible	NS
R22	<0.1	24.8	0.1	Negligible	NS
R23	<0.1	24.8	0.1	Negligible	NS
R24	<0.1	24.8	0.1	Negligible	NS
R25	<0.1	24.8	<0.1	Negligible	NS
R26	<0.1	24.8	0.1	Negligible	NS
R27	<0.1	24.8	<0.1	Negligible	NS
R28	<0.1	24.8	<0.1	Negligible	NS
R29	<0.1	24.8	<0.1	Negligible	NS

Receptor	Max. PC PM ₁₀	PM ₁₀ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R30	<0.1	24.8	<0.1	Negligible	NS
R31	<0.1	24.8	<0.1	Negligible	NS
R32	<0.1	24.8	<0.1	Negligible	NS

Max. PC PM₁₀ – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)

PEC – includes PC plus 2 x annual mean background * 0.59 (24.8 µg/m³)

Background SO₂ taken from PT2 monitoring site

NS = not significant

S = Significant

Table 11.7.19: Percentile Process Concentrations Predicted due to General Scenario (SC2b) at the Point of Maximum Concentration (µg/m³)

Pollutant	OS Grid Reference	PC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	PEC	PEC as % of AQAL	100 th Percentile 1- hr Concentration	comparison Against AEGL (For NO ₂)
99.8 th Percentile of 1-hr NO ₂	276175, 188701	64.7	32.4	Medium	107.7	53.8	103	<AEGL1
90.4 th Percentile of 24-hr PM ₁₀	276615, 188601	0.6	1.2	Negligible	-	NS	-	-
99.8 th Percentile of 15-min SO ₂	276235, 188721	4.4	1.6	Negligible	-	NS	-	-
99.7 th Percentile of 1-hr SO ₂	276235, 188721	4.3	1.2	Negligible	-	NS	-	-
99.2 nd Percentile of 24-hr SO ₂	276235, 188721	3.9	3.1	Negligible	-	NS	-	-

PC <10% of AQAL – negligible, 10-20% - small magnitude, 20-50% - medium magnitude, >50% - large magnitude

Table 11.7.20: 99.8th Percentile (short-term) NO₂ Concentrations Predicted from Point Source Emissions (µg/m³) (SC2c)

Receptor	Max. PC NO _x	Max. PC NO ₂	NO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R1	70.7	24.7	12.4	27.4	Small	NS
R2	54.3	19.0	9.5	24.5	Negligible	NS
R3	29.5	10.3	5.2	20.2	Negligible	NS
R4	25.1	8.8	4.4	19.4	Negligible	NS
R5	29.1	10.2	5.1	20.1	Negligible	NS
R6	32.3	11.3	5.7	20.7	Negligible	NS
R7	23.5	8.2	4.1	19.1	Negligible	NS
R8	27.9	9.8	4.9	19.9	Negligible	NS
R9	36.6	12.8	6.4	21.4	Negligible	NS
R10	21.3	7.5	3.7	18.7	Negligible	NS
R11	23.8	8.3	4.2	19.2	Negligible	NS
R12	38.4	13.4	6.7	21.7	Negligible	NS
R13	42.5	14.9	7.4	22.4	Negligible	NS
R14	37.1	13.0	6.5	21.5	Negligible	NS
R15	23.1	8.1	4.1	19.1	Negligible	NS
R16	15.9	5.6	2.8	17.8	Negligible	NS
R17	30.2	10.6	5.3	20.3	Negligible	NS
R18	62.5	21.9	10.9	25.9	Small	NS
R19	40.9	14.3	7.2	22.2	Negligible	NS
R20	86.7	30.3	15.2	30.2	Small	NS
R21	111.4	39.0	19.5	34.5	Small	NS
R22	43.5	15.2	7.6	22.6	Negligible	NS
R23	64.4	22.6	11.3	26.3	Small	NS
R24	46.6	16.3	8.2	23.2	Negligible	NS
R25	55.4	19.4	9.7	24.7	Negligible	NS
R26	40.6	14.2	7.1	22.1	Negligible	NS
R27	43.7	15.3	7.6	22.6	Negligible	NS
R28	33.0	11.6	5.8	20.8	Negligible	NS
R29	19.1	6.7	3.3	18.3	Negligible	NS

Receptor	Max. PC NO _x	Max. PC NO ₂	NO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R30	28.4	9.9	5.0	20.2	Negligible	NS
R31	25.8	9.0	4.5	19.5	Negligible	NS
R32	8.3	2.9	1.5	16.5	Negligible	NS

Max. PC NO_x – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)

Max. PC NO₂ - calculated based on a conversion factors of 0.35 applied to NO_x

PEC – includes PC plus 2 x annual mean background of 15µg/m³ (i.e. 30 µg/m³)

Background NO₂ assumed as 2019 concentrations of 15µg/m³ recorded at the PT2 Industrial site to ensure a worst-case

NS = not significant

S = Significant

Table 11.7.21: 8-Hour Rolling CO Concentrations Predicted from Point Source Emissions (mg/m³) (SC2c)

Receptor	Max. PC CO	CO PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R1	<0.1	0.298	<0.1	Negligible	NS
R2	<0.1	0.298	<0.1	Negligible	NS
R3	<0.1	0.298	<0.1	Negligible	NS
R4	<0.1	0.298	<0.1	Negligible	NS
R5	<0.1	0.298	<0.1	Negligible	NS
R6	<0.1	0.298	<0.1	Negligible	NS
R7	<0.1	0.298	<0.1	Negligible	NS
R8	<0.1	0.298	<0.1	Negligible	NS
R9	<0.1	0.298	<0.1	Negligible	NS
R10	<0.1	0.298	<0.1	Negligible	NS
R11	<0.1	0.298	<0.1	Negligible	NS
R12	<0.1	0.298	<0.1	Negligible	NS
R13	<0.1	0.298	<0.1	Negligible	NS
R14	<0.1	0.298	<0.1	Negligible	NS
R15	<0.1	0.298	<0.1	Negligible	NS
R16	<0.1	0.298	<0.1	Negligible	NS

Receptor	Max. PC CO	CO PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R17	<0.1	0.298	<0.1	Negligible	NS
R18	<0.1	0.298	<0.1	Negligible	NS
R19	<0.1	0.298	<0.1	Negligible	NS
R20	<0.1	0.298	<0.1	Negligible	NS
R21	<0.1	0.298	<0.1	Negligible	NS
R22	<0.1	0.298	<0.1	Negligible	NS
R23	<0.1	0.298	<0.1	Negligible	NS
R24	<0.1	0.298	<0.1	Negligible	NS
R25	<0.1	0.298	<0.1	Negligible	NS
R26	<0.1	0.298	<0.1	Negligible	NS
R27	<0.1	0.298	<0.1	Negligible	NS
R28	<0.1	0.298	<0.1	Negligible	NS
R29	<0.1	0.298	<0.1	Negligible	NS
R30	<0.1	0.298	<0.1	Negligible	NS
R31	<0.1	0.298	<0.1	Negligible	NS
R32	<0.1	0.298	<0.1	Negligible	NS

Max. PC CO – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)

PEC – includes PC plus 2 x annual mean background x 0.7 (0.298 mg/m³)

Background CO taken from Defra Maps

NS = not significant

S = Significant

Table 11.7.22: 15-minute 99.8th Percentile SO₂ Concentrations Predicted from Point Source Emissions (µg/m³) (SC2c)

Receptor	Max. PC SO ₂	SO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R1	9.4	14.4	3.6	Negligible	NS
R2	7.2	12.1	2.7	Negligible	NS
R3	3.9	8.8	1.5	Negligible	NS
R4	3.3	8.2	1.2	Negligible	NS
R5	3.1	8.1	1.2	Negligible	NS

Receptor	Max. PC SO ₂	SO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R6	2.9	7.8	1.1	Negligible	NS
R7	3.4	8.4	1.3	Negligible	NS
R8	3.9	8.9	1.5	Negligible	NS
R9	6.6	11.5	2.5	Negligible	NS
R10	2.9	7.8	1.1	Negligible	NS
R11	2.9	7.9	1.1	Negligible	NS
R12	6.1	11.0	2.3	Negligible	NS
R13	6.8	11.8	2.6	Negligible	NS
R14	3.8	8.7	1.4	Negligible	NS
R15	3.1	8.1	1.2	Negligible	NS
R16	2.3	7.3	0.9	Negligible	NS
R17	3.8	8.7	1.4	Negligible	NS
R18	8.1	13.0	3.0	Negligible	NS
R19	4.9	9.9	1.9	Negligible	NS
R20	9.3	14.3	3.5	Negligible	NS
R21	12.7	17.6	4.8	Negligible	NS
R22	5.6	10.5	2.1	Negligible	NS
R23	8.2	13.1	3.1	Negligible	NS
R24	5.5	10.5	2.1	Negligible	NS
R25	6.9	11.8	2.6	Negligible	NS
R26	3.5	8.4	1.3	Negligible	NS
R27	6.8	11.7	2.6	Negligible	NS
R28	3.5	8.4	1.3	Negligible	NS
R29	2.6	7.5	1.0	Negligible	NS
R30	5.1	10.0	1.9	Negligible	NS
R31	2.6	7.5	1.0	Negligible	NS
R32	1.2	6.1	0.4	Negligible	NS
Max. PC SO ₂ – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)					
PEC – includes PC plus 2 x annual mean background x 1.34 (4.93 µg/m ³)					
Background SO ₂ taken from PT2 monitoring site					
NS = not significant					

Receptor	Max. PC SO ₂	SO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
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S = Significant

Table 11.7.23: 1-hour 99.7th Percentile SO₂ Concentrations Predicted from Point Source Emissions (µg/m³) (SC2c)

Receptor	Max. PC SO ₂	SO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R1	6.7	10.4	1.9	Negligible	NS
R2	5.7	9.3	1.6	Negligible	NS
R3	3.3	7.0	0.9	Negligible	NS
R4	2.6	6.3	0.7	Negligible	NS
R5	2.5	6.2	0.7	Negligible	NS
R6	2.2	5.9	0.6	Negligible	NS
R7	2.7	6.3	0.8	Negligible	NS
R8	2.9	6.6	0.8	Negligible	NS
R9	3.9	7.5	1.1	Negligible	NS
R10	1.9	5.6	0.5	Negligible	NS
R11	2.4	6.0	0.7	Negligible	NS
R12	4.1	7.8	1.2	Negligible	NS
R13	4.3	8.0	1.2	Negligible	NS
R14	3.1	6.7	0.9	Negligible	NS
R15	2.3	6.0	0.7	Negligible	NS
R16	1.9	5.6	0.6	Negligible	NS
R17	3.2	6.8	0.9	Negligible	NS
R18	5.7	9.4	1.6	Negligible	NS
R19	3.9	7.6	1.1	Negligible	NS
R20	7.2	10.9	2.1	Negligible	NS
R21	8.6	12.3	2.5	Negligible	NS
R22	3.5	7.2	1.0	Negligible	NS
R23	6.1	9.8	1.7	Negligible	NS
R24	4.2	7.9	1.2	Negligible	NS
R25	4.4	8.1	1.2	Negligible	NS

Receptor	Max. PC SO ₂	SO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R26	2.7	6.4	0.8	Negligible	NS
R27	4.1	7.8	1.2	Negligible	NS
R28	3.0	6.7	0.9	Negligible	NS
R29	1.6	5.3	0.5	Negligible	NS
R30	3.0	6.7	0.9	Negligible	NS
R31	2.2	5.8	0.6	Negligible	NS
R32	0.9	4.6	0.3	Negligible	NS

Max. PC SO₂ – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)

PEC – includes PC plus 2 x annual mean background (3.68 µg/m³)

Background SO₂ taken from PT2 monitoring site

NS = not significant

S = Significant

Table 11.7.24: 24-hour 99.2nd Percentile SO₂ Concentrations Predicted from Point Source Emissions (µg/m³) (Sc2c)

Receptor	Max. PC SO ₂	SO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R1	2.1	4.3	1.7	Negligible	NS
R2	2.1	4.2	1.7	Negligible	NS
R3	1.2	3.4	1.0	Negligible	NS
R4	0.9	3.1	0.7	Negligible	NS
R5	0.9	3.1	0.8	Negligible	NS
R6	1.1	3.2	0.8	Negligible	NS
R7	0.9	3.0	0.7	Negligible	NS
R8	0.9	3.1	0.7	Negligible	NS
R9	0.9	3.1	0.7	Negligible	NS
R10	0.5	2.7	0.4	Negligible	NS
R11	0.4	2.6	0.3	Negligible	NS
R12	0.9	3.1	0.7	Negligible	NS
R13	0.8	3.0	0.6	Negligible	NS
R14	0.8	2.9	0.6	Negligible	NS

Receptor	Max. PC SO ₂	SO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R15	0.7	2.8	0.5	Negligible	NS
R16	0.5	2.7	0.4	Negligible	NS
R17	1.0	3.2	0.8	Negligible	NS
R18	1.5	3.7	1.2	Negligible	NS
R19	1.5	3.6	1.2	Negligible	NS
R20	3.0	5.2	2.4	Negligible	NS
R21	3.0	5.1	2.4	Negligible	NS
R22	1.3	3.5	1.1	Negligible	NS
R23	1.7	3.9	1.4	Negligible	NS
R24	1.4	3.5	1.1	Negligible	NS
R25	1.0	3.2	0.8	Negligible	NS
R26	0.8	2.9	0.6	Negligible	NS
R27	1.1	3.2	0.8	Negligible	NS
R28	0.7	2.9	0.6	Negligible	NS
R29	0.5	2.7	0.4	Negligible	NS
R30	1.1	3.3	0.9	Negligible	NS
R31	0.7	2.8	0.5	Negligible	NS
R32	0.3	2.4	0.2	Negligible	NS

Max. PC SO₂ – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)

PEC – includes PC plus 2 x annual mean background * 0.59 (2.17 µg/m³)

Background SO₂ taken from PT2 monitoring site

NS = not significant

S = Significant

Table 11.7.25: 24-hour 90.4th Percentile PM₁₀ Concentrations Predicted from Point Source Emissions (µg/m³) (SC2c)

Receptor	Max. PC PM ₁₀	PM ₁₀ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R1	0.1	24.9	0.2	Negligible	NS
R2	0.1	24.9	0.2	Negligible	NS
R3	0.1	24.9	0.1	Negligible	NS
R4	0.1	24.8	0.1	Negligible	NS
R5	0.1	24.8	0.1	Negligible	NS
R6	<0.1	24.8	0.1	Negligible	NS
R7	<0.1	24.8	0.1	Negligible	NS
R8	<0.1	24.8	0.1	Negligible	NS
R9	<0.1	24.8	0.1	Negligible	NS
R10	<0.1	24.8	0.1	Negligible	NS
R11	<0.1	24.8	<0.1	Negligible	NS
R12	<0.1	24.8	0.1	Negligible	NS
R13	<0.1	24.8	0.1	Negligible	NS
R14	<0.1	24.8	0.1	Negligible	NS
R15	<0.1	24.8	0.1	Negligible	NS
R16	<0.1	24.8	0.1	Negligible	NS
R17	0.1	24.8	0.1	Negligible	NS
R18	0.1	24.9	0.2	Negligible	NS
R19	0.1	24.9	0.2	Negligible	NS
R20	0.2	25.0	0.4	Negligible	NS
R21	0.2	25.0	0.4	Negligible	NS
R22	0.1	24.9	0.2	Negligible	NS
R23	0.1	24.9	0.2	Negligible	NS
R24	0.1	24.9	0.2	Negligible	NS
R25	0.1	24.8	0.1	Negligible	NS
R26	<0.1	24.8	0.1	Negligible	NS
R27	0.1	24.8	0.1	Negligible	NS
R28	<0.1	24.8	0.1	Negligible	NS
R29	<0.1	24.8	0.1	Negligible	NS

Receptor	Max. PC PM ₁₀	PM ₁₀ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R30	<0.1	24.8	0.1	Negligible	NS
R31	<0.1	24.8	0.1	Negligible	NS
R32	<0.1	24.8	<0.1	Negligible	NS

Max. PC PM₁₀ – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)

PEC – includes PC plus 2 x annual mean background * 0.59 (24.8 µg/m³)

Background SO₂ taken from PT2 monitoring site

NS = not significant

S = Significant

Table 11.7.26: Percentile Process Concentrations Predicted due to General Scenario (SC2c) at the Point of Maximum Concentration (µg/m³)

Pollutant	OS Grid Reference	PC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	PEC	PEC as % of AQAL	100 th Percentile 1- hr Concentration	comparison Against AEGL (For NO ₂)
99.8 th Percentile of 1-hr NO ₂	276581, 188607	7296	3648	Large	7327	3663	8399	>AEGL1 but below AGEL2
90.4 th Percentile of 24-hr PM ₁₀	276581, 188607	73.5	146.9	Large	98.2	196	167	Below WEL ¹
99.8 th Percentile of 15-min SO ₂	276620, 188626	1415	532	Large	1419	533	1621	>AEGL1 but below AGEL2
99.7 th Percentile of 1-hr SO ₂	276620, 188626	1400	400	Large	1403	401	1621	>AEGL1 but below AGEL2
99.2 nd Percentile of 24-hr SO ₂	276620, 188626	869	695	Large	871	697	911	>AEGL1 but below AGEL2

A – if short-term PC is less than 20% of the short-term environmental standard minus twice the long-term background concentration (A) – impacts not significant

There are no AEGL for PM₁₀ therefore assessment has been carried out against the WEL

Table 11.7.27: 1-hour 98.8th Percentile NO₂ Concentrations Predicted due to Emergency Flare (SC3) (µg/m³) – operation expected once every 1-25 years

Receptor	Max. PC NO _x	Max. PC NO ₂	NO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R1	120.3	42.1	72.1	21.1	medium	NS
R2	95.7	33.5	63.5	16.7	small	NS
R3	45.3	15.9	45.9	7.9	Negligible	NS
R4	30.6	10.7	40.7	5.4	Negligible	NS
R5	29.7	10.4	40.4	5.2	Negligible	NS
R6	24.4	8.6	38.6	4.3	Negligible	NS
R7	26.5	9.3	39.3	4.6	Negligible	NS
R8	26.9	9.4	39.4	4.7	Negligible	NS
R9	28.4	9.9	39.9	5.0	Negligible	NS
R10	15.4	5.4	35.4	25.7	Negligible	NS
R11	10.8	3.8	33.8	1.9	Negligible	NS
R12	24.3	8.5	38.5	4.2	Negligible	NS
R13	22.7	7.9	39.7	4.0	Negligible	NS
R14	23.0	8.1	38.1	4.0	Negligible	NS
R15	18.8	6.6	36.6	3.3	Negligible	NS
R16	15.1	5.3	35.3	2.6	Negligible	NS
R17	20.3	7.1	37.1	3.5	Negligible	NS
R18	25.2	8.8	38.8	4.4	Negligible	NS
R19	19.3	6.7	36.7	3.4	Negligible	NS
R20	31.3	10.9	40.9	5.5	Negligible	NS
R21	28.8	10.1	40.1	5.0	Negligible	NS
R22	15.1	5.3	35.3	2.6	Negligible	NS
R23	17.2	6.0	36.0	3.0	Negligible	NS
R24	14.3	5.0	35.0	2.5	Negligible	NS
R25	10.8	3.8	33.8	1.9	Negligible	NS
R26	9.8	3.4	33.4	1.7	Negligible	NS
R27	9.6	3.3	33.3	1.7	Negligible	NS
R28	8.0	2.8	32.8	1.4	Negligible	NS
R29	5.6	2.0	32.0	1.0	Negligible	NS

Receptor	Max. PC NO _x	Max. PC NO ₂	NO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R30	7.0	2.4	32.4	1.2	Negligible	NS
R31	11.8	4.1	34.1	2.1	Negligible	NS
R32	6.9	2.4	32.4	1.2	Negligible	NS

Max. PC NO_x – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)

Max. PC NO₂ - calculated based on a conversion factors of 0.35 applied to NO_x

PEC – includes PC plus 2 x annual mean background of 15µg/m³ (i.e. 30 µg/m³)

Background NO₂ assumed as 2019 concentrations of 15µg/m³ recorded at the PT2 Industrial site to ensure a worst-case

NS = not significant

S = Significant

Table 11.7.28: Short-term Process Contributions for SO₂, CO and PM₁₀ Predicted due to Emergency Flare (µg/m³) – operation expected once every 1-25 years

Receptor	8-Hr CO PC as % of AQAL	15-min SO ₂ PC as % of AQAL	1-hr SO ₂ PC as % of AQAL	24-hr SO ₂ PC as % of AQAL	24-hr PM ₁₀ PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R1	0.1	0.9	0.7	0.8	<0.1	Negligible	NS
R2	0.1	0.7	0.5	0.6	<0.1	Negligible	NS
R3	0.1	0.4	0.3	0.5	<0.1	Negligible	NS
R4	0.1	0.2	0.2	0.3	<0.1	Negligible	NS
R5	0.1	0.2	0.2	0.3	<0.1	Negligible	NS
R6	0.1	0.2	0.1	0.3	<0.1	Negligible	NS
R7	0.1	0.2	0.2	0.3	<0.1	Negligible	NS
R8	<0.1	0.2	0.2	0.2	<0.1	Negligible	NS
R9	<0.1	0.2	0.2	0.2	<0.1	Negligible	NS
R10	<0.1	0.1	0.1	0.1	<0.1	Negligible	NS
R11	<0.1	0.1	0.1	0.1	<0.1	Negligible	NS

Receptor	8-Hr CO PC as % of AQAL	15-min SO ₂ PC as % of AQAL	1-hr SO ₂ PC as % of AQAL	24-hr SO ₂ PC as % of AQAL	24-hr PM ₁₀ PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R12	<0.1	0.2	0.1	0.1	<0.1	Negligible	NS
R13	<0.1	0.2	0.1	0.2	<0.1	Negligible	NS
R14	<0.1	0.2	0.1	0.2	<0.1	Negligible	NS
R15	<0.1	0.2	0.1	0.2	<0.1	Negligible	NS
R16	<0.1	0.2	0.1	0.1	<0.1	Negligible	NS
R17	0.1	0.2	0.1	0.2	<0.1	Negligible	NS
R18	0.2	0.2	0.1	0.3	<0.1	Negligible	NS
R19	0.1	0.2	0.1	0.2	<0.1	Negligible	NS
R20	0.2	0.2	0.2	0.3	<0.1	Negligible	NS
R21	0.2	0.2	0.2	0.3	<0.1	Negligible	NS
R22	0.1	0.1	0.1	0.1	<0.1	Negligible	NS
R23	0.1	0.1	0.1	0.1	<0.1	Negligible	NS
R24	<0.1	0.1	0.1	0.1	<0.1	Negligible	NS
R25	<0.1	0.1	0.1	0.1	<0.1	Negligible	NS
R26	<0.1	0.1	0.1	0.1	<0.1	Negligible	NS
R27	<0.1	0.1	0.1	0.1	<0.1	Negligible	NS
R28	<0.1	0.1	0.1	<0.1	<0.1	Negligible	NS
R29	<0.1	<0.1	<0.1	<0.1	<0.1	Negligible	NS
R30	<0.1	0.1	<0.1	<0.1	<0.1	Negligible	NS
R31	0.1	0.1	0.1	0.1	<0.1	Negligible	NS
R32	<0.1	0.1	<0.1	0.0	<0.1	Negligible	NS

PC presented at maximum relevant percentile from five meteorological years as % of the AQAL

NS = not significant

Receptor	8-Hr CO PC as % of AQAL	15-min SO ₂ PC as % of AQAL	1-hr SO ₂ PC as % of AQAL	24-hr SO ₂ PC as % of AQAL	24-hr PM ₁₀ PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
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S = Significant

Table 11.7.29: Percentile Process Concentrations Predicted due to Emergency Flare at the Point of Maximum Concentration (SC3) (µg/m³) – operation expected once every 1-25 years

Pollutant	OS Grid Reference	PC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	PEC	PEC as % of AQAL	100 th Percentile 1- hr Concentration	comparison Against AEGL (For NO ₂)
99.8 th Percentile of 1-hr NO ₂	276237, 188714	323	162	Large	354	177	329	<AEGL1
90.4 th Percentile of 24-hr PM ₁₀	275455, 187621	-	-	-	-	-	-	-
99.8 th Percentile of 15-min SO ₂	276237, 188714	18.6	7.0	Negligible	-	-	-	-
99.7 th Percentile of 1-hr SO ₂	276237, 188714	18.4	5.3	Negligible	-	-	-	-
99.2 nd Percentile of 24-hr SO ₂	276237, 188714	16.6	13.3	Negligible	-	-	-	-

A – if short-term PC is less than 20% of the short-term environmental standard minus twice the long-term background concentration (A) – impacts not significant

Table 11.7.30: 1-hour 98.8th Percentile NO₂ Concentrations Predicted due to Emergency Shut-down Flare (SC4) (µg/m³) – operation intermittent in an emergency

Receptor	Max. PC NO _x	Max. PC NO ₂	NO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R1	73.0	25.5	55.5	12.8	Small	NS
R2	58.8	20.6	50.6	10.3	Small	NS
R3	28.2	9.9	39.9	4.9	Negligible	NS
R4	19.0	6.6	36.6	3.3	Negligible	NS
R5	18.3	6.4	36.4	3.2	Negligible	NS
R6	15.3	5.3	35.3	2.7	Negligible	NS
R7	16.3	5.7	35.7	2.9	Negligible	NS
R8	15.5	5.8	35.8	2.9	Negligible	NS
R9	16.9	5.9	35.9	3.0	Negligible	NS
R10	9.5	3.3	33.3	1.7	Negligible	NS
R11	6.8	2.4	32.4	1.2	Negligible	NS
R12	14.5	5.1	35.1	2.5	Negligible	NS
R13	14.0	4.9	34.9	2.5	Negligible	NS
R14	14.3	5.0	35.0	2.5	Negligible	NS
R15	11.9	4.2	34.2	2.1	Negligible	NS
R16	9.6	3.4	33.4	1.7	Negligible	NS
R17	12.7	4.4	34.4	2.2	Negligible	NS
R18	15.8	5.5	35.5	2.8	Negligible	NS
R19	12.3	4.3	34.3	2.1	Negligible	NS
R20	19.5	6.8	36.8	3.4	Negligible	NS
R21	18.2	6.4	36.4	3.2	Negligible	NS
R22	9.6	3.4	33.4	1.7	Negligible	NS
R23	10.9	3.8	33.8	1.9	Negligible	NS
R24	8.0	2.8	32.8	1.4	Negligible	NS
R25	5.9	2.1	32.1	1.0	Negligible	NS
R26	5.8	2.0	32.0	1.0	Negligible	NS
R27	5.4	1.9	31.9	0.9	Negligible	NS
R28	4.5	1.6	31.6	0.8	Negligible	NS
R29	3.4	1.2	31.2	0.6	Negligible	NS

Receptor	Max. PC NO _x	Max. PC NO ₂	NO ₂ PEC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R30	4.3	1.5	31.5	0.8	Negligible	NS
R31	7.5	2.6	32.6	1.3	Negligible	NS
R32	4.5	1.6	31.6	0.8	Negligible	NS

Max. PC NO_x – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)

Max. PC NO₂ - calculated based on a conversion factors of 0.35 applied to NO_x

PEC – includes PC plus 2 x annual mean background of 15µg/m³ (i.e. 30 µg/m³)

Background NO₂ assumed as 2019 concentrations of 15µg/m³ recorded at the PT2 Industrial site to ensure a worst-case

NS = not significant

S = Significant

Table 11.7.31: Short-term Process Contributions for SO₂, CO and PM₁₀ Predicted due to Emergency Shut-down Flare (SC4) (µg/m³) – operation expected intermittent in an emergency

Receptor	8-Hr CO PC as % of AQAL	15-min SO ₂ PC as % of AQAL	1-hr SO ₂ PC as % of AQAL	24-hr SO ₂ PC as % of AQAL	24-hr PM ₁₀ PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R1	0.1	0.6	0.4	0.4	<0.1	Negligible	NS
R2	<0.1	0.5	0.4	0.4	<0.1	Negligible	NS
R3	0.1	0.2	0.2	0.2	<0.1	Negligible	NS
R4	<0.1	0.2	0.1	0.2	<0.1	Negligible	NS
R5	<0.1	0.2	0.1	0.2	<0.1	Negligible	NS
R6	<0.1	0.1	0.1	0.2	<0.1	Negligible	NS
R7	<0.1	0.1	0.1	0.2	<0.1	Negligible	NS
R8	<0.1	0.1	0.1	0.1	<0.1	Negligible	NS
R9	<0.1	0.2	0.1	0.1	<0.1	Negligible	NS
R10	<0.1	0.1	0.1	0.1	<0.1	Negligible	NS
R11	<0.1	0.1	<0.1	<0.1	<0.1	Negligible	NS

Receptor	8-Hr CO PC as % of AQAL	15-min SO ₂ PC as % of AQAL	1-hr SO ₂ PC as % of AQAL	24-hr SO ₂ PC as % of AQAL	24-hr PM ₁₀ PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
R12	<0.1	0.1	0.1	0.1	<0.1	Negligible	NS
R13	<0.1	0.1	0.1	0.1	<0.1	Negligible	NS
R14	<0.1	0.1	0.1	0.1	<0.1	Negligible	NS
R15	<0.1	0.1	0.1	0.1	<0.1	Negligible	NS
R16	<0.1	0.1	0.1	0.1	<0.1	Negligible	NS
R17	<0.1	0.1	0.1	0.1	<0.1	Negligible	NS
R18	0.1	0.1	0.1	0.2	<0.1	Negligible	NS
R19	0.1	0.1	0.1	0.2	<0.1	Negligible	NS
R20	0.1	0.2	0.1	0.2	<0.1	Negligible	NS
R21	0.1	0.2	0.1	0.2	<0.1	Negligible	NS
R22	<0.1	0.1	0.1	0.1	<0.1	Negligible	NS
R23	<0.1	0.1	0.1	0.1	<0.1	Negligible	NS
R24	<0.1	0.1	<0.1	0.1	<0.1	Negligible	NS
R25	<0.1	0.1	<0.1	<0.1	<0.1	Negligible	NS
R26	<0.1	0.1	<0.1	<0.1	<0.1	Negligible	NS
R27	<0.1	<0.1	<0.1	<0.1	<0.1	Negligible	NS
R28	<0.1	<0.1	<0.1	<0.1	<0.1	Negligible	NS
R29	<0.1	<0.1	<0.1	<0.1	<0.1	Negligible	NS
R30	<0.1	<0.1	<0.1	<0.1	<0.1	Negligible	NS
R31	<0.1	0.1	<0.1	<0.1	<0.1	Negligible	NS
R32	<0.1	<0.1	<0.1	<0.1	<0.1	Negligible	NS

PC presented at maximum relevant percentile from five meteorological years as % of the AQAL

NS = not significant

Receptor	8-Hr CO PC as % of AQAL	15-min SO ₂ PC as % of AQAL	1-hr SO ₂ PC as % of AQAL	24-hr SO ₂ PC as % of AQAL	24-hr PM ₁₀ PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	Significance of Impact
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S = Significant

Table 11.7.32: Percentile Process Concentrations Predicted due to Emergency Shut-down Flare at the Point of Maximum Concentration (SC4) (µg/m³) – operation expected intermittent in emergency

Pollutant	OS Grid Reference	PC	PC as % of AQAL	Magnitude of Impact (EPUK/IAQM)	PEC	PEC as % of AQAL	100 th Percentile 1- hr Concentration	comparison Against AEGL (For NO ₂)
99.8 th Percentile of 1-hr NO ₂	276237, 188714	197	98	Large	227	114	203	<AEGL1
90.4 th Percentile of 24-hr PM ₁₀	275455, 187621	-	-	-	-	-	-	-
99.8 th Percentile of 15-min SO ₂	276237, 188714	12.8	4.8	Negligible	-	-	-	-
99.7 th Percentile of 1-hr SO ₂	276237, 188714	12.7	3.6	Negligible	-	-	-	-
99.2 nd Percentile of 24-hr SO ₂	276237, 188714	11.7	9.4	Negligible	-	-	-	-

A – if short-term PC is less than 20% of the short-term environmental standard minus twice the long-term background concentration (A) – impacts not significant

There are no AEGL for PM₁₀ therefore assessment has been carried out against the WEL

Appendix 11.8: Impacts on Ecological Receptors

Table 11.8.1: Annual mean (Long-term) NO_x Concentrations Predicted at Designated Conservation Sites due to On-site Point Source Emissions (µg/m³)

Receptor	NO _x PC	Background NO _x	NO _x PEC	Impact as % of CL (30µg/m ³)	Significance
LE1 Little Warren SINC	0.09	10.5	10.5	0.3	NS
LE2 Lower River AFAN SINC	0.12	10.5	10.6	0.4	NS
LE3 Harbourside SINC	0.19	17.5	17.7	0.7	NS
LE4 Tai Bach AW	0.15	14.6	14.7	0.4	NS
LE5 Bryn Goytre AW	0.11	15.5	15.6	0.4	NS
R29 Margam Park	0.06	9.9	9.9	0.2	NS
E1 Kenfig SAC	0.01	6.3	6.3	<0.1	NS
E2 Kenfig SAC	0.02	6.3	6.3	0.1	NS
E3 Kenfig SAC	0.02	6.3	6.3	0.1	NS
E4 Kenfig SAC	0.03	6.3	6.3	0.1	NS
E5 Kenfig SAC	0.02	6.3	6.3	0.1	NS
E6 Crymlyn Bog	0.006	12.8	12.8	<0.1	NS
E7 Crymlyn Bog	0.006	12.8	12.8	<0.1	NS
E8 Crymlyn Bog	0.005	12.8	12.8	<0.1	NS
E9 Crymlyn Bog	0.004	12.8	12.8	<0.1	NS
E10 Crymlyn Bog	0.004	12.8	12.8	<0.1	NS
E11 Cefn Cribwr	0.01	12.2	12.2	<0.1	NS

PC NO_x – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)

PEC – includes PC plus background

Background NO_x taken from APIS website

¹ see paragraphs 11.113 and 11.114 of ES Chapter 11

Table 11.8.2: Annual mean (Long-term) SO₂ Concentrations Predicted at Designated Conservation Sites due to On-site Point Source Emissions (µg/m³)

Receptor	SO ₂ PC	Background SO ₂	SO ₂ PEC	Impact as % of CL (10µg/m ³)	Significance
LE1 Little Warren SINC	0.008	3.01	3.0	<0.1	NS
LE2 Lower River AFAN SINC	0.01	3.01	3.0	0.1	NS
LE3 Harbourside SINC	0.02	3.3	3.3	0.1	NS
LE4 Tai Bach AW	0.01	4.2	4.2	0.1	NS
LE5 Bryn Goytre AW	0.01	3.6	3.6	0.1	NS
R29 Margam Park	0.005	2.1	2.1	<0.1	NS
E1 Kenfig SAC	0.001	1.2	1.2	<0.1	NS
E2 Kenfig SAC	0.002	1.2	1.2	<0.1	NS
E3 Kenfig SAC	0.002	1.2	1.2	<0.1	NS
E4 Kenfig SAC	0.003	1.2	1.2	<0.1	NS
E5 Kenfig SAC	0.002	1.2	1.2	<0.1	NS
E6 Crymlyn Bog	0.001	2.0	2.0	<0.1	NS
E7 Crymlyn Bog	0.001	2.0	2.0	<0.1	NS
E8 Crymlyn Bog	<0.001	2.0	2.0	<0.1	NS
E9 Crymlyn Bog	<0.001	2.0	2.0	<0.1	NS
E10 Crymlyn Bog	<0.001	2.0	2.0	<0.1	NS
E11 Cefn Cribwr	0.001	2.8	2.8	<0.1	NS
PC SO ₂ – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)					
PEC – includes PC plus background					
Background SO ₂ taken from APIS website					

Table 11.8.3: Nitrogen Deposition Predicted at Designated Conservation Sites due to On-site Point Source Emissions (kg/ha/yr)

Receptor	N-Deposition PC	Background N-Deposition	N-Deposition PEC	Impact as % of CLO	Significance
LE1 Little Warren SINC	0.004	8.5	8.5	0.1	NS
LE2 Lower River AFAN SINC	0.006	8.5	8.5	0.1	NS
LE3 Harbourside SINC	0.01	8.9	8.9	0.2	NS
LE4 Tai Bach AW	0.012	15.0	15.4	0.1	NS
LE5 Bryn Goytre AW	0.011	15.4	16.8	0.1	NS
R29 Margam Park	0.006	16.8	8.5	0.1	NS
E1 Kenfig SAC	0.001	8.5	8.5	<0.1	NS
E2 Kenfig SAC	0.001	8.5	8.5	<0.1	NS
E3 Kenfig SAC	0.001	8.5	8.5	<0.1	NS
E4 Kenfig SAC	0.001	8.5	8.5	<0.1	NS
E5 Kenfig SAC	0.001	8.5	9.4	<0.1	NS
E6 Crymlyn Bog	0.001	9.4	9.4	<0.1	NS
E7 Crymlyn Bog	0.001	9.4	9.4	<0.1	NS
E8 Crymlyn Bog	0.001	9.4	9.4	<0.1	NS
E9 Crymlyn Bog	0.001	9.4	9.4	<0.1	NS
E10 Crymlyn Bog	0.001	9.4	10.6	<0.1	NS
E11 Cefn Cribwr	0.001	10.6		<0.1	NS
PC N-Deposition – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)					
PEC – includes PC plus background					
Background N-Deposition taken from APIS website					

Table 11.8.4: Acid Deposition Predicted at Designated Conservation Sites due to On-site Point Source Emissions (keq/ha/yr)

Receptor	N Acid-Deposition PC	S Acid-Deposition PC	Total Acid-Deposition	Background Acid-Deposition	Acid Deposition PEC	Impact as % of CLO	Significance
LE1 Little Warren SINC	<0.001	<0.001	0.001	0.8	0.8	0.1	NS
LE2 Lower River AFAN SINC	<0.001	0.001	0.002	0.6	0.6	<0.1	NS
LE3 Harbourside SINC	<0.001	0.002	0.003	0.6	0.6	0.3	NS
LE4 Tai Bach AW	<0.001	0.003	0.003	1.1	1.1	0.9	NS
LE5 Bryn Goytre AW	<0.001	0.002	0.003	1.1	1.39	1.1	NS
R29 Margam Park	<0.001	0.001	0.002	1.39	0.7	0.6	NS
E1 Kenfig SAC	<0.001	<0.001	0.0002	0.7	0.7	<0.1	NS
E2 Kenfig SAC	<0.001	<0.001	0.0002	0.7	0.7	<0.1	NS
E3 Kenfig SAC	<0.001	<0.001	0.0003	0.7	0.7	<0.1	NS
E4 Kenfig SAC	<0.001	<0.001	0.0004	0.7	0.7	<0.1	NS
E5 Kenfig SAC	<0.001	<0.001	0.0003	0.7	0.8	<0.1	NS
E6 Crymlyn Bog	<0.001	<0.001	0.0001	0.8	0.8	<0.1	NS
E7 Crymlyn Bog	<0.001	<0.001	0.0001	0.8	0.8	<0.1	NS
E8 Crymlyn Bog	<0.001	<0.001	0.0001	0.8	0.8	<0.1	NS
E9 Crymlyn Bog	<0.001	<0.001	0.0001	0.8	0.8	<0.1	NS
E10 Crymlyn Bog	<0.001	<0.001	0.0001	0.8	0.8	<0.1	NS

E11 Cefn Cribwyr	<0.001	<0.001	0.0002	0.9	0.9	<0.1	NS
PC NO _x – the maximum Process Contribution predicted from the five meteorological years assessed (2018 to 2022)							
PEC – includes PC plus background							
Background Acid Deposition taken from APIS website							

Table 11.8.5: Annual Mean NO_x Predicted at Designated Conservation Sites due to Operational Traffic Emissions (µg/m³)

Receptor	2022 Existing Scenario	2022 Do-Minimum	2022 Do-Something ¹	Impact due to Proposed Development			In-combination Effects		
				Change due to Development	Impact as % of CL	Significance	Change due to All Development	Change as % of CL	Significance
KF1 rd	19.8	19.9	19.9	<0.1	0.1	NS	0.1	0.4	NS
KF1 10m	18.1	18.2	18.2	<0.1	0.1	NS	0.09	0.3	NS
KF1 20m	17.2	17.2	17.2	<0.1	0.1	NS	0.08	0.3	NS
KF1 30m	16.4	16.4	16.4	<0.1	0.1	NS	0.07	0.2	NS
KF1 50m	15.3	15.4	15.4	<0.1	0.1	NS	0.06	0.2	NS
KF1 70m	14.7	14.7	14.7	<0.1	0.1	NS	0.06	0.2	NS
KF1 90m	14.2	14.2	14.2	<0.1	0.1	NS	0.05	0.2	NS
KF1 110m	13.8	13.8	13.9	<0.1	0.1	NS	0.05	0.2	NS
KF2 rd	26.8	26.9	27.0	<0.1	0.1	NS	0.18	0.6	NS
KF2 10m	24.0	24.1	24.2	<0.1	0.1	NS	0.15	0.5	NS
KF2 20m	21.9	22.0	22.0	<0.1	0.1	NS	0.13	0.4	NS
KF2 30m	20.5	20.6	20.7	<0.1	0.1	NS	0.11	0.4	NS
KF2 50m	18.6	18.6	18.7	<0.1	0.1	NS	0.09	0.3	NS
KF2 70m	17.2	17.3	17.3	<0.1	0.1	NS	0.08	0.3	NS
KF2 90m	16.3	16.4	16.4	<0.1	0.1	NS	0.07	0.2	NS
KF2 110m	15.6	15.7	15.7	<0.1	0.1	NS	0.07	0.2	NS

Receptor	2022 Existing Scenario	2022 Do- Minimum	2022 Do- Something ¹	Impact due to Proposed Development			In-combination Effects		
				Change due to Development	Impact as % of CL	Significance	Change due to All Development	Change as % of CL	Significance

¹ the PC associated with on-site point source emissions as predicted at receptor E5 have been included in the Do-something scenario to ensure a cumulative impact of the whole development

Do-minimum scenario – includes emissions from existing traffic and trips associated with committed development

Do-something scenario – includes emissions from existing traffic, committed development, operational traffic emissions and on-site point source emissions

Background NO_x taken from APIS website

Table 11.8.6: Annual Mean NH₃ Predicted at Designated Conservation Sites due to Operational Traffic Emissions (µg/m³)

Receptor	2022 Existing Scenario	2022 Do-Minimum	2022 Do-Something	Impact due to Proposed Development			In-combination Effects		
				Change due to Development	Impact as % of CL	Significance	Change due to All Development	Change as % of CL	Significance
KF1 rd	1.2	1.2	1.2	<0.1	<0.1	NS	<0.1	0.3	NS
KF1 10m	1.2	1.2	1.2	<0.1	<0.1	NS	<0.1	0.2	NS
KF1 20m	1.2	1.2	1.2	<0.1	<0.1	NS	<0.1	0.2	NS
KF1 30m	1.1	1.1	1.1	<0.1	<0.1	NS	<0.1	0.1	NS
KF1 50m	1.1	1.1	1.1	<0.1	<0.1	NS	<0.1	0.1	NS
KF1 70m	1.1	1.1	1.1	<0.1	<0.1	NS	<0.1	0.1	NS
KF1 90m	1.1	1.1	1.1	<0.1	<0.1	NS	<0.1	0.1	NS
KF1 110m	1.1	1.1	1.1	<0.1	<0.1	NS	<0.1	0.1	NS
KF2 rd	1.4	1.4	1.4	<0.1	<0.1	NS	<0.1	0.5	NS
KF2 10m	1.4	1.4	1.4	<0.1	<0.1	NS	<0.1	0.4	NS
KF2 20m	1.3	1.3	1.3	<0.1	<0.1	NS	<0.1	0.3	NS
KF2 30m	1.3	1.3	1.3	<0.1	<0.1	NS	<0.1	0.3	NS
KF2 50m	1.2	1.2	1.2	<0.1	<0.1	NS	<0.1	0.2	NS
KF2 70m	1.2	1.2	1.2	<0.1	<0.1	NS	<0.1	0.2	NS
KF2 90m	1.1	1.1	1.1	<0.1	<0.1	NS	<0.1	0.1	NS
KF2 110m	1.1	1.1	1.1	<0.1	<0.1	NS	<0.1	0.1	NS

Do-minimum scenario – includes emissions from existing traffic and trips associated with committed development

Receptor	2022 Existing Scenario	2022 Do- Minimum	2022 Do- Something	Impact due to Proposed Development			In-combination Effects		
				Change due to Development	Impact as % of CL	Significance	Change due to All Development	Change as % of CL	Significance

Do-something scenario – includes emissions from existing traffic, committed development, operational traffic emissions and on-site point source emissions

Background NO_x taken from APIS website

Table 11.8.7: Nitrogen Deposition Predicted at Designated Conservation Sites due to Operational Traffic Emissions (kg/ha/yr)

Receptor	2022 Existing Scenario	2022 Do-Minimum	2022 Do-Something ¹	Impact due to Proposed Development			In-combination Effects		
				Change due to Development	Impact as % of CL	Significance	Change due to All Development	Change as % of CLO	Significance
KF1 rd	11.64	11.67	11.67	<0.1	0.1	NS	<0.1	0.6	NS
KF1 10m	11.15	11.17	11.18	<0.1	0.1	NS	<0.1	0.5	NS
KF1 20m	10.87	10.88	10.89	<0.1	0.1	NS	<0.1	0.4	NS
KF1 30m	10.63	10.64	10.65	<0.1	0.1	NS	<0.1	0.4	NS
KF1 50m	10.33	10.34	10.35	<0.1	0.1	NS	<0.1	0.3	NS
KF1 70m	10.13	10.14	10.14	<0.1	0.1	NS	<0.1	0.3	NS
KF1 90m	9.99	9.99	10.00	<0.1	<0.1	NS	<0.1	0.2	NS
KF1 110m	9.88	9.89	9.89	<0.1	<0.1	NS	<0.1	0.2	NS
KF2 rd	13.70	13.75	13.75	<0.1	0.1	NS	<0.1	0.9	NS
KF2 10m	12.88	12.92	12.93	<0.1	0.1	NS	<0.1	0.8	NS
KF2 20m	12.25	12.28	12.29	<0.1	0.1	NS	<0.1	0.7	NS
KF2 30m	11.86	11.89	11.89	<0.1	0.1	NS	<0.1	0.6	NS
KF2 50m	11.28	11.30	11.31	<0.1	0.1	NS	<0.1	0.5	NS
KF2 70m	10.89	10.91	10.91	<0.1	0.1	NS	<0.1	0.4	NS
KF2 90m	10.62	10.63	10.64	<0.1	<0.1	NS	<0.1	0.4	NS
KF2 110m	10.41	10.43	10.43	<0.1	<0.1	NS	<0.1	0.3	NS

¹ includes emissions associated with on-site point sources plus operational traffic providing an in combination assessment

Receptor	2022 Existing Scenario	2022 Do- Minimum	2022 Do- Something ¹	Impact due to Proposed Development			In-combination Effects		
				Change due to Development	Impact as % of CL	Significance	Change due to All Development	Change as % of CLO	Significance

Background taken from APIS website

Table 11.8.8: Acid Deposition Predicted at Designated Conservation Sites due to Operational Traffic Emissions (kg/ha/yr)

Receptor	2022 Existing Scenario	2022 Do-Minimum	2022 Do-Something ¹	Impact due to Proposed Development			In-combination Effects		
				Change due to Development	Impact as % of CL	Significance	Change due to All Development	Change as % of CLO	Significance
KF1 rd	0.97	0.98	0.98	<0.1	0.2	NS	<0.1	0.4	NS
KF1 10m	0.94	0.94	0.94	<0.1	0.2	NS	<0.1	0.3	NS
KF1 20m	0.92	0.92	0.92	<0.1	0.2	NS	<0.1	0.3	NS
KF1 30m	0.90	0.90	0.90	<0.1	0.2	NS	<0.1	0.3	NS
KF1 50m	0.88	0.88	0.88	<0.1	0.2	NS	<0.1	0.2	NS
KF1 70m	0.87	0.87	0.87	<0.1	0.2	NS	<0.1	0.2	NS
KF1 90m	0.86	0.86	0.86	<0.1	0.2	NS	<0.1	0.2	NS
KF1 110m	0.85	0.85	0.85	<0.1	0.1	NS	<0.1	0.2	NS
KF2 rd	1.12	1.12	1.13	<0.1	0.2	NS	<0.1	0.2	NS
KF2 10m	1.06	1.10	1.07	<0.1	0.2	NS	<0.1	0.5	NS
KF2 20m	1.02	1.02	1.02	<0.1	0.2	NS	<0.1	0.4	NS
KF2 30m	0.99	0.99	0.99	<0.1	0.2	NS	<0.1	0.4	NS
KF2 50m	0.95	0.95	0.95	<0.1	0.2	NS	<0.1	0.3	NS
KF2 70m	0.92	0.92	0.92	<0.1	0.2	NS	<0.1	0.3	NS
KF2 90m	0.90	0.90	0.90	<0.1	0.2	NS	<0.1	0.3	NS
KF2 110m	0.89	0.89	0.89	<0.1	0.2	NS	<0.1	0.2	NS

¹ includes emissions associated with on-site point sources plus operational traffic providing an in combination assessment

Receptor	2022 Existing Scenario	2022 Do- Minimum	2022 Do- Something ¹	Impact due to Proposed Development			In-combination Effects		
				Change due to Development	Impact as % of CL	Significance	Change due to All Development	Change as % of CLO	Significance

Background taken from APIS website

ⁱ Environment Agency, H1 Environmental Risk Assessment Annex (f) Air Emissions, 2009