APPENDIX A

Air Quality Assessment Results Tables:

Human Receptors

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1. OPERATION PHASE AIR QUALITY ASSESSMENT RESULTS TABLES: HUMAN RECEPTORS

1.1. BACKGROUND POLLUTANT VALUES USED IN MODELLING: HUMAN RECEPTORS

The respective pollutant background concentrations applied to the post-processing of the dispersion model outputs, for each averaging period and discrete human receptor, are presented in **Table 1.1**.

Details of the sources of the pollutant background data are provided in Table 16 of the variation submission. For background levels of NH_3, SO_2, and HCl, monitored data were used in the absence of spatially varying background data across the operation phase Study Area. For SO_2, the monitored maximum hourly value is used as the background level across the Study Area based on 2020 data. For NH_3 and HCl, the monitored maximum monthly value is used based on 2020 data.

For amines and nitrosamines, there are currently no published background data for the UK.

Table 1.1 - Modelled Background Pollutant Concentrations – Human Receptors

Receptor	Pollutant Background Concentration (µg/m^3)				
	Annual Mean NO_2	Annual Mean PM_{10}	Hourly Max SO_2 *	Monthly Max NH_3 **	Monthly Max HCl ***
Foreman's Cottage	6.67	12.14	20.48	1.60	2.43
East Yorkshire Caravan Park	9.83	12.49	20.48	1.60	2.43
Drax S&C Club	9.83	12.49	20.48	1.60	2.43
Wren Hall	7.01	13.57	20.48	1.60	2.43
3 Pear Tree Ave	6.78	14.40	20.48	1.60	2.43
Crange Cottages	7.43	12.26	20.48	1.60	2.43
Drax Abbey Farm	6.78	14.40	20.48	1.60	2.43
Read School	7.27	12.50	20.48	1.60	2.43
Old Lodge	6.78	14.40	20.48	1.60	2.43
Selby_AQMA	46.5 (1)	13.50	20.48	1.60	2.43
Goole	28.0 (2)	13.30	20.48	1.60	2.43
Hemingbrough	6.94	13.22	20.48	1.60	2.43
Rawcliffe	8.64	14.51	20.48	1.60	2.43
Snaith	8.40	13.45	20.48	1.60	2.43
Hensall	8.52	13.54	20.48	1.60	2.43
Cliffe	6.96	13.99	20.48	1.60	2.43
Breighton	6.51	13.44	20.48	1.60	2.43
Wressle	6.74	14.15	20.48	1.60	2.43
Eastrington	7.73	14.43	20.48	1.60	2.43
Ellerton	5.96	13.74	20.48	1.60	2.43
Fogathorpe	6.65	13.81	20.48	1.60	2.43
Barlby	10.18	14.41	20.48	1.60	2.43
Riccall	6.71	13.98	20.48	1.60	2.43

Receptor	Pollutant Background Concentration (µg/m^3)				
	Annual Mean NO_2	Annual Mean PM_{10}	Hourly Max SO_2 *	Monthly Max NH_3 **	Monthly Max HCl ***
Thorpe Willoughby	7.77	13.93	20.48	1.60	2.43
Kellingley	8.41	14.18	20.48	1.60	2.43
Moorends	9.29	13.45	20.48	1.60	2.43
Thorne	38.0 (3)	13.27	20.48	1.60	2.43
SwineFleet	7.36	14.18	20.48	1.60	2.43
Balne	7.73	14.77	20.48	1.60	2.43
Whitley	8.87	13.83	20.48	1.60	2.43
Barlow	7.07	13.14	20.48	1.60	2.43
Long Drax	6.86	13.92	20.48	1.60	2.43
Drax	7.27	12.50	20.48	1.60	2.43
Newland	7.53	13.98	20.48	1.60	2.43
Carlton	8.14	13.95	20.48	1.60	2.43
Camblesforth	7.40	13.60	20.48	1.60	2.43
Burn	7.76	14.08	20.48	1.60	2.43
Temple Hirst	8.29	14.31	20.48	1.60	2.43
Cawood	7.32	13.24	20.48	1.60	2.43
Biggin	7.76	12.93	20.48	1.60	2.43
Howden	9.11	14.93	20.48	1.60	2.43
Brind	6.58	14.37	20.48	1.60	2.43
South Duffield	6.33	14.55	20.48	1.60	2.43
Highfield	6.33	13.98	20.48	1.60	2.43
Willitoft	6.27	14.12	20.48	1.60	2.43
Receptor Grid Max	13.53	17.56	20.48	1.60	2.43
Notes:					

Receptor	Pollutant Background Concentration (µg/m^3)				
	Annual Mean NO_2	**Annual Mean PM_{10}**	**Hourly Max SO_2 ***	**Monthly Max NH_3 ****	**Monthly Max HCl *****
[1] For purposes of providing a conservative assessment within the Selby AQMA, the 2019 annual mean monitored concentration from diffusion tube site ID S7 (21 New Street) was used as the background for this receptor (Source: Selby District Council (June 2021) *2021 Air Quality Annual Status Report*)					
[2] For purposes of providing a conservative assessment of impacts in Goole, the 2019 annual mean monitored concentration from diffusion tube site ID S5 (Boothferry Rd / Airmyn Rd, Goole) was used as the background for this receptor (Source: East Riding of Yorkshire Council (June 2021) *2021 Air Quality Annual Status Report*)					
[3] For purposes of providing a conservative assessment of impacts in Thorne, the 2019 annual mean monitored concentration from diffusion tube site ID DT50 (King Street, Thorne) was used as the background for this receptor (Source: Doncaster Council (June 2021) *2021 Air Quality Annual Status Report*)					
* Maximum hourly monitored SO_2 used to represent short-term averaging period background level					
** Maximum monthly monitored NH_3 used to represent annual mean level, with each concentration doubled to represent short-term averaging period background level					
*** Maximum monthly monitored HCl doubled to represent short-term averaging period background level					

1.2. IMPACTS ON HUMAN RECEPTORS

The results of the modelling assessment at each modelled discrete human receptor are presented in the below tables for each relevant pollutant and averaging period applicable to the study. For each receptor, the maximum modelled concentration is presented, which is based on modelling over all five years of meteorological data (2016-2020). In addition, the maximum modelled concentration from across the entire 30 km x 30 km grid is provided. The associated IAQM impact descriptor is reported for each receptor, as per the significance criteria detailed in **Variation Application V22 Table 16.**

Both the process contribution (PC) and predicted environmental concentration (PEC), which comprises the PC in addition to the receptor-specific background concentration, are presented for each receptor. For PEC's relating to short-term averaging periods (i.e. sub-hourly, hourly, daily means), the respective annual mean background concentration has been doubled in line with EA guidance (Environment Agency, 2021).

For SO_2, PM_{10} (dust), NH_3, and HCl, only the maximum PC impacts are presented given that they represent an insignificant contribution relative to the air quality objective / EAL and the respective background concentration (see **Table 1.9**).

It is important to note that the maximum PC impact is the maximum difference between Baseline and With Proposed Scheme concentrations and may not coincide with the specific geographic point at which either the maximum Baseline or maximum With Proposed Scheme value occurs.

The human receptor results are presented in sub-sections relating to:

a. Core model scenarios (Baseline and With Proposed Scheme)
b. Cumulative impacts (With Proposed Scheme & Other Projects)
c. Worst case emissions profile sensitivity test (Baseline and With Proposed Scheme); and
d. Amine sensitivity testing (With Proposed Scheme).

CORE MODEL SCENARIOS

Results pertaining to the core model scenarios are presented in **Tables 1.2 to 1.10**.

Table 1.2 - Modelled Maximum Operational Impacts at Human Receptors – Annual Mean NO_2 Concentrations

Receptor	Annual mean NO_2 Concentration ($\mu g/m^3$)					
	Max Baseline PC	Max Baseline PEC	Max Proposed Scheme PC	Max Proposed Scheme PEC	Max PC Impact	Air Modelling Descriptor
Foreman's Cottage	0.00	6.67	0.00	6.67	0.00	Insignificant
East Yorkshire Carav	0.00	9.83	0.00	9.83	0.00	Insignificant
Drax S&C Club	0.00	9.83	0.00	9.83	0.00	Insignificant
Wren Hall	0.00	7.01	0.00	7.01	0.00	Insignificant
3 Pear Tree Ave	0.00	6.78	0.02	6.80	0.02	Insignificant
Crange Cottages	0.00	7.44	0.00	7.44	0.00	Insignificant
Drax Abbey Farm	0.00	6.78	0.00	6.79	0.00	Insignificant
Read School	0.00	7.27	0.01	7.28	0.01	Insignificant
Old Lodge	0.00	6.78	0.01	6.79	0.01	Insignificant
Selby_AQMA	0.01	46.51	0.05	46.55	0.04	Insignificant
Goole	0.02	28.02	0.08	28.08	0.06	Insignificant
Hemingbrough	0.02	6.96	0.08	7.01	0.06	Insignificant
Rawcliffe	0.01	8.65	0.05	8.69	0.04	Insignificant
Snaith	0.01	8.40	0.05	8.45	0.04	Insignificant
Hensall	0.02	8.53	0.06	8.57	0.04	Insignificant
Cliffe	0.01	6.97	0.05	7.00	0.03	Insignificant
Breighton	0.04	6.55	0.13	6.65	0.10	Insignificant
Wressle	0.04	6.77	0.14	6.87	0.10	Insignificant
Eastrington	0.05	7.78	0.14	7.87	0.09	Insignificant
Ellerton	0.03	5.99	0.09	6.05	0.06	Insignificant
Fogathorpe	0.06	6.70	0.16	6.80	0.10	Insignificant
Barlby	0.01	10.19	0.05	10.23	0.04	Insignificant

Receptor	Annual mean NO_2 Concentration (µg/m^3)					
	Max Baseline PC	Max Baseline PEC	Max Proposed Scheme PC	Max Proposed Scheme PEC	Max PC Impact	Air Modelling Descriptor
Riccall	0.02	6.73	0.05	6.76	0.04	Insignificant
Thorpe Willoughby	0.01	7.78	0.03	7.81	0.03	Insignificant
Kellingley	0.02	8.43	0.06	8.47	0.04	Insignificant
Moorends	0.02	9.31	0.05	9.34	0.03	Insignificant
Thorne	0.01	38.01	0.04	38.04	0.02	Insignificant
SwineFleet	0.02	7.39	0.08	7.44	0.05	Insignificant
Balne	0.02	7.75	0.06	7.79	0.04	Insignificant
Whitley	0.02	8.90	0.05	8.93	0.04	Insignificant
Barlow	0.00	7.07	0.01	7.08	0.01	Insignificant
Long Drax	0.01	6.87	0.04	6.90	0.03	Insignificant
Drax	0.00	7.27	0.01	7.28	0.01	Insignificant
Newland	0.00	7.53	0.03	7.56	0.03	Insignificant
Carlton	0.00	8.14	0.03	8.17	0.03	Insignificant
Camblesforth	0.00	7.40	0.01	7.40	0.00	Insignificant
Burn	0.01	7.77	0.03	7.80	0.02	Insignificant
Temple Hirst	0.02	8.30	0.07	8.35	0.05	Insignificant
Cawood	0.02	7.34	0.07	7.39	0.04	Insignificant
Biggin	0.02	7.78	0.05	7.81	0.03	Insignificant
Howden	0.04	9.14	0.14	9.25	0.10	Insignificant
Brind	0.05	6.63	0.14	6.73	0.10	Insignificant
South Duffield	0.02	6.35	0.08	6.41	0.06	Insignificant
Highfield	0.05	6.38	0.13	6.46	0.09	Insignificant
Willitoft	0.05	6.32	0.16	6.42	0.11	Insignificant

Receptor	Annual mean NO_2 Concentration (µg/m^3)					
	Max Baseline PC	Max Baseline PEC	Max Proposed Scheme PC	Max Proposed Scheme PEC	Max PC Impact	Air Modelling Descriptor
Receptor Grid Max	0.06	13.59	0.16	13.69	0.12	Insignificant
AQ Objective	**40**					

Table 1.3 - Modelled Maximum Operational Impacts at Human Receptors – Hourly Mean NO_2 Concentrations

Receptor	Hourly mean NO_2 Concentration (µg/m^3) (Based on 99.79th %ile of hourly values)					
	Max Baseline PC	Max Baseline PEC	Max Proposed Scheme PC	Max Proposed Scheme PEC	Max PC Impact	Air Modelling Descriptor
Foreman's Cottage	0.11	13.45	0.36	13.70	0.27	Insignificant
East Yorkshire Carav	0.02	19.68	0.11	19.76	0.09	Insignificant
Drax S&C Club	0.01	19.67	0.08	19.74	0.07	Insignificant
Wren Hall	0.08	14.10	0.27	14.29	0.18	Insignificant
3 Pear Tree Ave	0.30	13.86	1.39	14.95	1.09	Insignificant
Crange Cottages	0.08	14.95	0.28	15.15	0.25	Insignificant
Drax Abbey Farm	0.08	13.64	0.42	13.98	0.34	Insignificant
Read School	0.18	14.72	0.81	15.35	0.63	Insignificant
Old Lodge	0.20	13.77	0.95	14.51	0.76	Insignificant
Selby_AQMA	1.72	94.72	4.08	97.08	2.36	Insignificant
Goole	2.52	58.52	4.43	60.43	2.08	Insignificant
Hemingbrough	2.72	16.60	3.94	17.82	1.65	Insignificant
Rawcliffe	1.54	18.83	3.98	21.27	3.24	Insignificant
Snaith	1.47	18.26	3.98	20.77	2.59	Insignificant
Hensall	2.55	19.58	4.10	21.13	1.96	Insignificant
Cliffe	2.37	16.28	3.55	17.47	1.91	Insignificant
Breighton	3.07	16.09	4.74	17.76	1.75	Insignificant

Receptor	Hourly mean NO_2 Concentration (µg/m^3) (Based on 99.79th %ile of hourly values)					
	Max Baseline PC	Max Baseline PEC	Max Proposed Scheme PC	Max Proposed Scheme PEC	Max PC Impact	Air Modelling Descriptor
Wressle	3.25	16.72	4.11	17.58	1.61	Insignificant
Eastrington	3.39	18.84	4.36	19.82	0.98	Insignificant
Ellerton	2.84	14.75	3.68	15.60	1.03	Insignificant
Fogathorpe	3.63	16.93	4.47	17.76	1.09	Insignificant
Barlby	2.29	22.65	3.41	23.77	2.08	Insignificant
Riccall	2.40	15.83	3.41	16.84	1.66	Insignificant
Thorpe Willoughby	1.59	17.14	3.78	19.32	2.47	Insignificant
Kellingley	2.89	19.71	3.74	20.56	0.85	Insignificant
Moorends	2.69	21.28	3.60	22.19	1.35	Insignificant
Thorne	2.56	78.56	3.20	79.20	0.95	Insignificant
SwineFleet	3.02	17.74	4.14	18.87	1.49	Insignificant
Balne	2.79	18.25	3.90	19.36	1.11	Insignificant
Whitley	2.72	20.47	3.83	21.58	1.27	Insignificant
Barlow	0.20	14.33	1.40	15.53	1.20	Insignificant
Long Drax	0.78	14.50	2.57	16.29	1.99	Insignificant
Drax	0.21	14.75	0.99	15.52	0.85	Insignificant
Newland	0.65	15.71	3.13	18.19	2.64	Insignificant
Carlton	0.94	17.21	3.30	19.57	2.55	Insignificant
Camblesforth	0.14	14.94	0.67	15.47	0.57	Insignificant
Burn	1.24	16.77	3.26	18.79	2.41	Insignificant
Temple Hirst	2.77	19.34	4.07	20.64	2.42	Insignificant
Cawood	3.06	17.70	4.13	18.77	1.07	Insignificant
Biggin	2.52	18.04	3.62	19.15	1.11	Insignificant

Receptor	Hourly mean NO_2 Concentration (µg/m^3) (Based on 99.79th %ile of hourly values)					
	Max Baseline PC	Max Baseline PEC	Max Proposed Scheme PC	Max Proposed Scheme PEC	Max PC Impact	Air Modelling Descriptor
Howden	3.09	21.30	4.66	22.88	1.85	Insignificant
Brind	3.04	16.21	4.47	17.64	1.65	Insignificant
South Duffield	3.33	15.98	4.08	16.73	0.80	Insignificant
Highfield	2.93	15.59	4.17	16.83	1.48	Insignificant
Willitoft	3.41	15.94	4.35	16.88	1.15	Insignificant
Receptor Grid Max	4.05	31.11	4.96	32.02	3.38	Insignificant
AQ Objective	**200**					

Table 1.4 - Modelled Maximum Operational Impacts at Human Receptors – SO_2 Concentrations

Receptor	SO_2 Concentration (µg/m^3) (15-min / Hourly / Daily mean)										
	Background	Max Baseline PC			Max Proposed Scheme PC			Max PC Impact			Air Modelling Descriptor
		15-min	Hourly	Daily	15-min	Hourly	Daily	15-min	Hourly	Daily	
Foreman's Cottage	20.48	0.59	0.27	0.06	1.80	0.73	0.17	1.31	0.50	0.12	Insignificant
East Yorkshire Carav	20.48	0.21	0.05	0.02	0.72	0.16	0.07	0.57	0.13	0.05	Insignificant
Drax S&C Club	20.48	0.16	0.02	0.02	0.63	0.08	0.05	0.47	0.06	0.04	Insignificant
Wren Hall	20.48	0.65	0.16	0.06	1.79	0.55	0.17	1.37	0.42	0.12	Insignificant
3 Pear Tree Ave	20.48	1.96	0.77	0.18	6.55	2.64	0.56	4.59	1.96	0.43	Insignificant
Crange Cottages	20.48	0.54	0.19	0.06	1.75	0.54	0.17	1.53	0.40	0.14	Insignificant
Drax Abbey Farm	20.48	0.50	0.17	0.05	1.91	0.72	0.17	1.41	0.55	0.12	Insignificant
Read School	20.48	1.18	0.38	0.09	3.87	1.48	0.33	2.96	1.10	0.24	Insignificant
Old Lodge	20.48	1.33	0.51	0.11	4.35	2.03	0.41	3.44	1.52	0.30	Insignificant
Selby_AQMA	20.48	9.95	4.40	1.08	18.11	7.94	1.81	8.77	4.62	0.91	Insignificant
Goole	20.48	15.49	6.95	1.72	19.17	8.58	1.74	8.47	3.49	0.72	Insignificant

Receptor	SO_2 Concentration (µg/m^3) (15-min / Hourly / Daily mean)										
	Background	Max Baseline PC			Max Proposed Scheme PC			Max PC Impact			Air Modelling Descriptor
		15-min	Hourly	Daily	15-min	Hourly	Daily	15-min	Hourly	Daily	
Hemingbrough	20.48	15.41	7.07	2.17	17.22	8.98	2.73	2.89	3.11	0.68	Insignificant
Rawcliffe	20.48	9.55	3.33	0.82	16.37	8.45	1.79	12.01	5.68	1.10	Insignificant
Snaith	20.48	9.92	3.81	1.01	16.12	8.96	2.29	7.71	5.51	1.33	Insignificant
Hensall	20.48	14.42	6.50	1.33	20.36	8.46	1.65	8.79	3.50	0.74	Insignificant
Cliffe	20.48	15.16	5.80	1.82	17.32	7.72	2.18	3.75	3.52	0.97	Insignificant
Breighton	20.48	15.90	8.49	2.18	20.37	9.29	2.19	5.42	1.21	0.29	Insignificant
Wressle	20.48	17.82	9.27	2.57	19.47	10.36	3.11	3.48	2.64	0.77	Insignificant
Eastrington	20.48	19.65	9.53	2.14	23.22	10.57	2.59	3.57	1.18	0.46	Insignificant
Ellerton	20.48	17.52	7.68	1.89	20.71	8.59	2.00	5.68	1.21	0.20	Insignificant
Fogathorpe	20.48	25.47	9.93	2.02	25.04	10.33	2.17	4.86	1.60	0.18	Insignificant
Barlby	20.48	14.81	5.53	1.35	15.51	7.11	1.46	9.66	4.01	0.86	Insignificant
Riccall	20.48	14.06	6.46	1.26	17.45	7.39	1.46	5.38	2.77	0.38	Insignificant
Thorpe Willoughby	20.48	10.50	4.15	1.19	17.65	7.41	1.47	7.75	4.50	0.68	Insignificant
Kellingley	20.48	17.68	7.27	2.28	20.24	8.54	2.22	5.00	1.27	0.27	Insignificant
Moorends	20.48	16.88	7.10	1.28	19.31	7.83	1.59	4.24	1.68	0.31	Insignificant
Thorne	20.48	15.13	6.19	1.10	17.39	7.15	1.18	3.32	1.14	0.21	Insignificant
SwineFleet	20.48	18.13	8.14	1.31	20.98	9.78	1.62	5.23	1.86	0.48	Insignificant
Balne	20.48	18.83	7.83	1.67	21.24	8.77	1.81	2.42	1.67	0.22	Insignificant
Whitley	20.48	15.29	7.62	1.46	18.75	8.53	1.76	3.54	1.66	0.44	Insignificant
Barlow	20.48	1.59	0.40	0.15	6.37	2.74	0.68	5.03	2.34	0.53	Insignificant
Long Drax	20.48	4.57	2.06	0.48	10.65	5.54	1.22	6.28	3.97	0.85	Insignificant
Drax	20.48	1.34	0.49	0.10	5.46	1.74	0.52	4.11	1.42	0.44	Insignificant

Receptor	SO_2 Concentration (µg/m^3) (15-min / Hourly / Daily mean)										
	Background	Max Baseline PC			Max Proposed Scheme PC			Max PC Impact			Air Modelling Descriptor
		15-min	Hourly	Daily	15-min	Hourly	Daily	15-min	Hourly	Daily	
Newland	20.48	5.14	1.66	0.43	13.68	6.88	1.22	9.56	5.27	0.80	Insignificant
Carlton	20.48	8.28	2.03	0.57	14.27	6.99	1.84	8.92	4.96	1.34	Insignificant
Camblesforth	20.48	0.95	0.30	0.11	3.75	1.34	0.36	2.79	1.04	0.26	Insignificant
Burn	20.48	9.52	3.30	1.00	13.69	6.94	1.43	7.00	4.63	0.66	Insignificant
Temple Hirst	20.48	16.58	6.93	2.36	17.80	8.90	2.83	8.15	4.97	1.21	Insignificant
Cawood	20.48	16.90	7.83	1.61	19.61	8.98	1.98	3.07	1.54	0.37	Insignificant
Biggin	20.48	17.95	6.76	1.50	18.96	8.01	1.54	3.32	1.52	0.19	Insignificant
Howden	20.48	16.79	8.82	1.75	20.93	9.48	2.12	6.06	1.85	0.46	Insignificant
Brind	20.48	18.55	8.44	1.97	25.58	9.64	2.13	7.03	1.80	0.39	Insignificant
South Duffield	20.48	17.98	9.41	2.83	18.50	9.94	2.90	0.95	1.91	0.15	Insignificant
Highfield	20.48	15.91	8.16	1.74	20.22	9.46	1.84	4.31	1.37	0.21	Insignificant
Willitoft	20.48	18.64	9.29	2.04	23.69	9.63	2.31	6.04	1.17	0.44	Insignificant
Receptor Grid Max	20.48	26.81	10.96	3.20	27.99	11.75	3.69	13.70	6.99	1.63	Insignificant
AQ Objective		**266**	**350**	**125**	**266**	**350**	**125**	**266**	**350**	**125**	

Table 1.5 - Modelled Maximum Operational Impacts at Human Receptors – Dust (as PM_{10}) Concentrations

Receptor	PM_{10} Concentration (µg/m^3) (Annual & Daily mean)								
	Background		Max Baseline PC		Max Proposed Scheme PC		Max PC Impact		Air Modelling Descriptor
	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	
Foreman's Cottage	12.14	24.28	0.000	0.000	0.000	0.002	0.000	0.001	Negligible
East Yorkshire Carav	12.49	24.97	0.000	0.000	0.000	0.000	0.000	0.000	Negligible
Drax S&C Club	12.49	24.97	0.000	0.000	0.000	0.000	0.000	0.000	Negligible
Wren Hall	13.57	27.14	0.000	0.000	0.000	0.001	0.000	0.000	Negligible

Receptor	PM_{10} Concentration (µg/m^3) (Annual & Daily mean)								
	Background		Max Baseline PC		Max Proposed Scheme PC		Max PC Impact		Air Modelling Descriptor
	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	
3 Pear Tree Ave	14.40	28.79	0.000	0.002	0.001	0.009	0.001	0.007	Insignificant
Crange Cottages	12.26	24.52	0.000	0.000	0.000	0.000	0.000	0.000	Insignificant
Drax Abbey Farm	14.40	28.79	0.000	0.000	0.000	0.002	0.000	0.001	Insignificant
Read School	12.50	25.00	0.000	0.000	0.000	0.002	0.000	0.002	Insignificant
Old Lodge	14.40	28.79	0.000	0.001	0.001	0.006	0.001	0.004	Insignificant
Selby_AQMA	13.50	26.99	0.001	0.004	0.004	0.020	0.003	0.016	Insignificant
Goole	13.30	26.60	0.002	0.021	0.006	0.032	0.004	0.014	Insignificant
Hemingbrough	13.22	26.45	0.002	0.014	0.006	0.040	0.004	0.026	Insignificant
Rawcliffe	14.51	29.02	0.001	0.003	0.003	0.021	0.003	0.018	Insignificant
Snaith	13.45	26.90	0.001	0.001	0.004	0.010	0.003	0.009	Insignificant
Hensall	13.54	27.08	0.001	0.013	0.005	0.034	0.003	0.021	Insignificant
Cliffe	13.99	27.99	0.001	0.009	0.004	0.023	0.003	0.015	Insignificant
Breighton	13.44	26.89	0.004	0.048	0.011	0.063	0.007	0.027	Insignificant
Wressle	14.15	28.30	0.003	0.038	0.011	0.069	0.008	0.030	Insignificant
Eastrington	14.43	28.85	0.004	0.064	0.010	0.073	0.006	0.009	Insignificant
Ellerton	13.74	27.48	0.003	0.045	0.007	0.052	0.004	0.008	Insignificant
Fogathorpe	13.81	27.62	0.005	0.067	0.012	0.075	0.007	0.010	Insignificant
Barlby	14.41	28.82	0.001	0.006	0.003	0.022	0.002	0.018	Insignificant
Riccall	13.98	27.97	0.001	0.015	0.004	0.029	0.002	0.018	Insignificant
Thorpe Willoughby	13.93	27.87	0.001	0.003	0.003	0.009	0.002	0.007	Insignificant
Kellingley	14.18	28.36	0.002	0.012	0.004	0.015	0.002	0.006	Insignificant
Moorends	13.45	26.89	0.001	0.012	0.004	0.017	0.002	0.011	Insignificant

Receptor	PM_{10} Concentration (µg/m^3) (Annual & Daily mean)								
	Background		Max Baseline PC		Max Proposed Scheme PC		Max PC Impact		Air Modelling Descriptor
	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	
Thorne	13.27	26.53	0.001	0.008	0.003	0.013	0.002	0.006	Insignificant
SwineFleet	14.18	28.37	0.002	0.033	0.006	0.039	0.003	0.010	Insignificant
Balne	14.77	29.54	0.002	0.020	0.005	0.032	0.003	0.014	Insignificant
Whitley	13.83	27.66	0.002	0.025	0.005	0.031	0.003	0.006	Insignificant
Barlow	13.14	26.29	0.000	0.000	0.001	0.001	0.001	0.001	Insignificant
Long Drax	13.92	27.84	0.001	0.006	0.003	0.026	0.003	0.020	Insignificant
Drax	12.50	25.00	0.000	0.000	0.001	0.002	0.000	0.002	Insignificant
Newland	13.98	27.95	0.000	0.002	0.002	0.013	0.002	0.011	Insignificant
Carlton	13.95	27.89	0.000	0.000	0.002	0.005	0.002	0.005	Insignificant
Camblesforth	13.60	27.20	0.000	0.000	0.000	0.001	0.000	0.001	Insignificant
Burn	14.08	28.17	0.001	0.001	0.002	0.008	0.002	0.006	Insignificant
Temple Hirst	14.31	28.61	0.001	0.005	0.005	0.024	0.003	0.019	Insignificant
Cawood	13.24	26.48	0.002	0.026	0.005	0.030	0.003	0.004	Insignificant
Biggin	12.93	25.87	0.001	0.007	0.003	0.013	0.002	0.006	Insignificant
Howden	14.93	29.86	0.003	0.048	0.010	0.062	0.007	0.026	Insignificant
Brind	14.37	28.73	0.004	0.061	0.011	0.081	0.007	0.022	Insignificant
South Duffield	14.55	29.11	0.002	0.022	0.006	0.041	0.004	0.023	Insignificant
Highfield	13.98	27.95	0.004	0.056	0.011	0.066	0.006	0.012	Insignificant
Willitoft	14.12	28.23	0.005	0.059	0.012	0.070	0.007	0.016	Insignificant
Receptor Grid Max	17.56	35.11	0.006	0.079	0.012	0.087	0.008	0.050	Insignificant
AQ Objective	**40**	**50**	**40**	**50**	**40**	**50**	**40**	**50**	

Table 1.6 - Modelled Maximum Operational Impacts at Human Receptors – NH_3 Concentrations

Receptor	NH_3 Concentration (µg/m^3) (Annual & Hourly mean)								
	Background		Max Baseline PC		Max Proposed Scheme PC		Max PC Impact		Air Modelling Descriptor
	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	
Foreman's Cottage	1.6	3.2	0.000	0.051	0.000	0.197	0.000	0.154	Insignificant
East Yorkshire Carav	1.6	3.2	0.000	0.060	0.000	0.085	0.000	0.043	Insignificant
Drax S&C Club	1.6	3.2	0.000	0.111	0.000	0.119	0.000	0.095	Insignificant
Wren Hall	1.6	3.2	0.000	0.084	0.000	0.162	0.000	0.131	Insignificant
3 Pear Tree Ave	1.6	3.2	0.000	0.171	0.001	0.432	0.001	0.274	Insignificant
Crange Cottages	1.6	3.2	0.000	0.119	0.000	0.303	0.000	0.277	Insignificant
Drax Abbey Farm	1.6	3.2	0.000	0.046	0.000	0.248	0.000	0.210	Insignificant
Read School	1.6	3.2	0.000	0.098	0.000	0.407	0.000	0.309	Insignificant
Old Lodge	1.6	3.2	0.000	0.119	0.001	0.273	0.001	0.189	Insignificant
Selby_AQMA	1.6	3.2	0.001	0.542	0.004	0.738	0.003	0.455	Insignificant
Goole	1.6	3.2	0.002	0.810	0.006	0.830	0.004	0.246	Insignificant
Hemingbrough	1.6	3.2	0.002	0.741	0.006	1.048	0.004	0.455	Insignificant
Rawcliffe	1.6	3.2	0.001	0.607	0.003	0.994	0.003	0.499	Insignificant
Snaith	1.6	3.2	0.001	0.580	0.004	0.922	0.003	0.345	Insignificant
Hensall	1.6	3.2	0.001	0.789	0.005	0.850	0.003	0.288	Insignificant
Cliffe	1.6	3.2	0.001	0.687	0.004	1.070	0.003	0.541	Insignificant
Breighton	1.6	3.2	0.004	1.203	0.011	1.209	0.007	0.384	Insignificant
Wressle	1.6	3.2	0.003	0.798	0.011	0.837	0.008	0.088	Insignificant
Eastrington	1.6	3.2	0.004	1.034	0.010	1.000	0.006	0.152	Insignificant
Ellerton	1.6	3.2	0.003	0.995	0.007	0.996	0.004	0.138	Insignificant
Fogathorpe	1.6	3.2	0.005	1.017	0.012	0.962	0.007	-0.044	Insignificant
Barlby	1.6	3.2	0.001	0.943	0.003	1.029	0.002	0.516	Insignificant

Receptor	NH_3 Concentration (µg/m^3) (Annual & Hourly mean)								
	Background		Max Baseline PC		Max Proposed Scheme PC		Max PC Impact		Air Modelling Descriptor
	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	
Riccall	1.6	3.2	0.001	1.144	0.004	1.144	0.002	0.000	Insignificant
Thorpe Willoughby	1.6	3.2	0.001	1.165	0.003	1.152	0.002	0.411	Insignificant
Kellingley	1.6	3.2	0.002	0.954	0.004	0.952	0.002	0.209	Insignificant
Moorends	1.6	3.2	0.001	0.811	0.004	0.811	0.002	0.256	Insignificant
Thorne	1.6	3.2	0.001	0.756	0.003	0.836	0.002	0.195	Insignificant
SwineFleet	1.6	3.2	0.002	1.023	0.006	1.047	0.003	0.269	Insignificant
Balne	1.6	3.2	0.002	1.026	0.005	1.034	0.003	0.052	Insignificant
Whitley	1.6	3.2	0.002	0.980	0.005	1.055	0.003	0.228	Insignificant
Barlow	1.6	3.2	0.000	0.151	0.001	0.391	0.001	0.338	Insignificant
Long Drax	1.6	3.2	0.001	0.267	0.003	0.544	0.003	0.309	Insignificant
Drax	1.6	3.2	0.000	0.210	0.001	0.401	0.000	0.260	Insignificant
Newland	1.6	3.2	0.000	0.632	0.002	0.825	0.002	0.505	Insignificant
Carlton	1.6	3.2	0.000	0.628	0.002	0.825	0.002	0.502	Insignificant
Camblesforth	1.6	3.2	0.000	0.156	0.000	0.440	0.000	0.385	Insignificant
Burn	1.6	3.2	0.001	0.594	0.002	0.816	0.002	0.455	Insignificant
Temple Hirst	1.6	3.2	0.001	0.633	0.005	0.979	0.003	0.636	Insignificant
Cawood	1.6	3.2	0.002	0.765	0.005	0.876	0.003	0.303	Insignificant
Biggin	1.6	3.2	0.001	0.688	0.003	0.810	0.002	0.198	Insignificant
Howden	1.6	3.2	0.003	1.220	0.010	1.259	0.007	0.244	Insignificant
Brind	1.6	3.2	0.004	1.376	0.011	1.331	0.007	0.087	Insignificant
South Duffield	1.6	3.2	0.002	0.664	0.006	0.837	0.004	0.198	Insignificant
Highfield	1.6	3.2	0.004	1.191	0.011	1.125	0.006	0.122	Insignificant

Receptor	NH_3 Concentration (µg/m^3) (Annual & Hourly mean)								
	Background		Max Baseline PC		Max Proposed Scheme PC		Max PC Impact		Air Modelling Descriptor
	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	
Willitoft	1.6	3.2	0.005	1.245	0.012	1.263	0.007	0.077	Insignificant
Receptor Grid Max	1.6	3.2	0.006	1.402	0.012	1.407	0.008	1.027	Insignificant
Env. Agency EAL	**180**	**2,500**	**180**	**2,500**	**180**	**2,500**	**180**	**2,500**	

Table 1.7 - Modelled Maximum Operational Impacts at Human Receptors – Hourly Mean HCl Concentrations

Receptor	HCl Hourly Mean Concentration (µg/m^3)				
	Background	Max Baseline PC	Max Proposed Scheme PC	Max PC Impact	Air Modelling Descriptor
Foreman's Cottage	4.86	0.06	0.49	0.44	Insignificant
East Yorkshire Carav	4.86	0.07	0.19	0.12	Insignificant
Drax S&C Club	4.86	0.13	0.30	0.27	Insignificant
Wren Hall	4.86	0.10	0.40	0.37	Insignificant
3 Pear Tree Ave	4.86	0.20	1.08	0.89	Insignificant
Crange Cottages	4.86	0.14	0.76	0.73	Insignificant
Drax Abbey Farm	4.86	0.06	0.62	0.57	Insignificant
Read School	4.86	0.12	1.02	0.90	Insignificant
Old Lodge	4.86	0.14	0.68	0.58	Insignificant
Selby_AQMA	4.86	0.65	1.85	1.45	Insignificant
Goole	4.86	0.97	1.89	1.28	Insignificant
Hemingbrough	4.86	0.89	2.62	1.91	Insignificant
Rawcliffe	4.86	0.73	2.49	1.77	Insignificant
Snaith	4.86	0.70	2.30	1.61	Insignificant
Hensall	4.86	0.95	1.92	1.35	Insignificant
Cliffe	4.86	0.82	2.68	2.04	Insignificant

Receptor	HCl Hourly Mean Concentration (µg/m^3)				
	Background	Max Baseline PC	Max Proposed Scheme PC	Max PC Impact	Air Modelling Descriptor
Breighton	4.86	1.44	2.29	1.65	Insignificant
Wressle	4.86	0.96	1.88	1.08	Insignificant
Eastrington	4.86	1.24	1.86	1.13	Insignificant
Ellerton	4.86	1.19	1.76	0.94	Insignificant
Fogathorpe	4.86	1.22	1.76	0.56	Insignificant
Barlby	4.86	1.13	2.31	1.76	Insignificant
Riccall	4.86	1.37	2.02	0.65	Insignificant
Thorpe Willoughby	4.86	1.40	2.17	1.62	Insignificant
Kellingley	4.86	1.14	1.74	1.08	Insignificant
Moorends	4.86	0.97	2.03	1.23	Insignificant
Thorne	4.86	0.91	1.86	1.08	Insignificant
SwineFleet	4.86	1.23	1.85	0.81	Insignificant
Balne	4.86	1.23	1.83	0.82	Insignificant
Whitley	4.86	1.18	2.15	1.35	Insignificant
Barlow	4.86	0.18	0.98	0.91	Insignificant
Long Drax	4.86	0.32	1.36	1.08	Insignificant
Drax	4.86	0.25	1.00	0.76	Insignificant
Newland	4.86	0.76	2.06	1.68	Insignificant
Carlton	4.86	0.75	2.06	1.66	Insignificant
Camblesforth	4.86	0.19	1.10	1.03	Insignificant
Burn	4.86	0.71	2.04	1.55	Insignificant
Temple Hirst	4.86	0.76	2.45	2.04	Insignificant
Cawood	4.86	0.92	1.86	1.10	Insignificant

Receptor	HCl Hourly Mean Concentration (µg/m^3)				
	Background	Max Baseline PC	Max Proposed Scheme PC	Max PC Impact	Air Modelling Descriptor
Biggin	4.86	0.83	1.70	1.07	Insignificant
Howden	4.86	1.46	2.23	1.33	Insignificant
Brind	4.86	1.65	2.35	0.70	Insignificant
South Duffield	4.86	0.80	2.09	1.33	Insignificant
Highfield	4.86	1.43	2.20	1.29	Insignificant
Willitoft	4.86	1.49	2.23	1.00	Insignificant
Receptor Grid Max	4.86	1.68	2.99	2.79	Insignificant
EAL	**750**				

Table 1.8 - Modelled Maximum Operational Impacts at Human Receptors – Annual and Hourly Mean Aldehyde Concentrations

Receptor	Aldehyde Concentration (µg/m^3) (Annual & Hourly Mean)		
	Max Proposed Scheme PC (1)		Air Modelling Descriptor (applicable to all averaging periods)
	Annual	Hourly	
Foreman's Cottage	0.000	0.20	Insignificant
East Yorkshire Carav	0.000	0.08	Insignificant
Drax S&C Club	0.000	0.12	Insignificant
Wren Hall	0.000	0.16	Insignificant
3 Pear Tree Ave	0.001	0.43	Insignificant
Crange Cottages	0.000	0.30	Insignificant
Drax Abbey Farm	0.000	0.25	Insignificant
Read School	0.000	0.41	Insignificant
Old Lodge	0.001	0.27	Insignificant
Selby_AQMA	0.002	0.74	Insignificant
Goole	0.003	0.76	Insignificant

Receptor	Aldehyde Concentration (µg/m^3) (Annual & Hourly Mean)		
	Max Proposed Scheme PC [(1)]		Air Modelling Descriptor (applicable to all averaging periods)
	Annual	Hourly	
Hemingbrough	0.003	1.05	Insignificant
Rawcliffe	0.002	0.99	Insignificant
Snaith	0.002	0.92	Insignificant
Hensall	0.003	0.77	Insignificant
Cliffe	0.002	1.07	Insignificant
Breighton	0.006	0.92	Insignificant
Wressle	0.006	0.75	Insignificant
Eastrington	0.005	0.74	Insignificant
Ellerton	0.003	0.67	Insignificant
Fogathorpe	0.006	0.70	Insignificant
Barlby	0.002	0.92	Insignificant
Riccall	0.002	0.75	Insignificant
Thorpe Willoughby	0.001	0.87	Insignificant
Kellingley	0.002	0.69	Insignificant
Moorends	0.002	0.81	Insignificant
Thorne	0.001	0.74	Insignificant
SwineFleet	0.003	0.71	Insignificant
Balne	0.002	0.73	Insignificant
Whitley	0.003	0.86	Insignificant
Barlow	0.000	0.39	Insignificant
Long Drax	0.002	0.54	Insignificant
Drax	0.000	0.40	Insignificant

Receptor	Aldehyde Concentration (µg/m^3) (Annual & Hourly Mean)		
	Max Proposed Scheme PC [1]		Air Modelling Descriptor (applicable to all averaging periods)
	Annual	Hourly	
Newland	0.001	0.83	Insignificant
Carlton	0.001	0.82	Insignificant
Camblesforth	0.000	0.44	Insignificant
Burn	0.001	0.82	Insignificant
Temple Hirst	0.003	0.98	Insignificant
Cawood	0.003	0.74	Insignificant
Biggin	0.002	0.68	Insignificant
Howden	0.006	0.84	Insignificant
Brind	0.006	0.85	Insignificant
South Duffield	0.003	0.84	Insignificant
Highfield	0.005	0.88	Insignificant
Willitoft	0.006	0.78	Insignificant
Receptor Grid Max	0.006	1.20	Insignificant
EAL	**5**	**87**	

Notes:

[1] Aldehyde emissions associated with operation of BECCS units only.

Table 1.9 - Modelled Maximum Operational Impacts at Human Receptors – Amines Concentrations

Receptor	Amines Concentration (µg/m^3) (Hourly & Daily mean) – Results presented to 3 d.p.		
	Max Proposed Scheme PC Impact		Air Modelling Descriptor (applicable to all averaging periods)
	Hourly [1]	Daily [1]	
Foreman's Cottage	0.050	0.003	Insignificant
East Yorkshire Carav	0.020	0.002	Insignificant

Receptor	Amines Concentration (µg/m^3) (Hourly & Daily mean) – Results presented to 3 d.p.		
	Max Proposed Scheme PC Impact		Air Modelling Descriptor (applicable to all averaging periods)
	Hourly (1)	Daily (1)	
Drax S&C Club	0.031	0.001	Insignificant
Wren Hall	0.045	0.004	Insignificant
3 Pear Tree Ave	0.116	0.016	Insignificant
Crange Cottages	0.075	0.005	Insignificant
Drax Abbey Farm	0.055	0.004	Insignificant
Read School	0.103	0.013	Insignificant
Old Lodge	0.075	0.010	Insignificant
Selby_AQMA	0.166	0.027	Insignificant
Goole	0.156	0.023	Insignificant
Hemingbrough	0.224	0.045	Insignificant
Rawcliffe	0.201	0.034	Insignificant
Snaith	0.195	0.048	Insignificant
Hensall	0.213	0.029	Insignificant
Cliffe	0.218	0.036	Insignificant
Breighton	0.272	0.038	Insignificant
Wressle	0.216	0.038	Insignificant
Eastrington	0.170	0.026	Insignificant
Ellerton	0.172	0.021	Insignificant
Fogathorpe	0.160	0.025	Insignificant
Barlby	0.270	0.030	Insignificant
Riccall	0.188	0.023	Insignificant
Thorpe Willoughby	0.217	0.020	Insignificant

Receptor	Amines Concentration (µg/m^3) (Hourly & Daily mean) – Results presented to 3 d.p.		
	Max Proposed Scheme PC Impact		Air Modelling Descriptor (applicable to all averaging periods)
	Hourly (1)	Daily (1)	
Kellingley	0.160	0.035	Insignificant
Moorends	0.179	0.022	Insignificant
Thorne	0.130	0.016	Insignificant
SwineFleet	0.174	0.019	Insignificant
Balne	0.178	0.020	Insignificant
Whitley	0.183	0.018	Insignificant
Barlow	0.092	0.012	Insignificant
Long Drax	0.149	0.029	Insignificant
Drax	0.107	0.014	Insignificant
Newland	0.172	0.023	Insignificant
Carlton	0.177	0.040	Insignificant
Camblesforth	0.114	0.009	Insignificant
Burn	0.241	0.024	Insignificant
Temple Hirst	0.178	0.043	Insignificant
Cawood	0.133	0.017	Insignificant
Biggin	0.173	0.015	Insignificant
Howden	0.240	0.033	Insignificant
Brind	0.224	0.031	Insignificant
South Duffield	0.215	0.037	Insignificant
Highfield	0.198	0.033	Insignificant
Willitoft	0.215	0.030	Insignificant
Receptor Grid Max	0.287	0.070	Insignificant

Receptor	Amines Concentration (µg/m^3) (Hourly & Daily mean) – Results presented to 3 d.p.		
	Max Proposed Scheme PC Impact		Air Modelling Descriptor (applicable to all averaging periods)
	Hourly (1)	Daily (1)	
EAL	**53**	**13**	

Notes:

(1) Maximum modelled amine concentrations based on sum of ‘Amine 1’ + ‘Amine 2’ maxima, which is potentially conservative because the ‘Amine 1’ maximum concentration could occur at a different time (hour/day) to the ‘Amine 2’ maximum concentration at any given receptor or grid point. Results based on proposed daily average AELs for ‘Amine 1’ and ‘Amine 2’.

Table 1.10 - Modelled Maximum Operational Impacts at Human Receptors – Annual Mean Nitrosamine (as NDMA) Concentrations

Receptor	NDMA Concentration (ng/m^3)				
	Max Proposed Scheme PC			Max PC Impact	Air Modelling Descriptor
	Direct [1]	Indirect [2]	Total [3]		
Foreman's Cottage	0.0000	0.000	0.000	0.000	Insignificant
East Yorkshire Carav	0.0000	0.000	0.000	0.000	Insignificant
Drax S&C Club	0.0000	0.000	0.000	0.000	Insignificant
Wren Hall	0.0000	0.000	0.000	0.000	Insignificant
3 Pear Tree Ave	0.0000	0.001	0.001	0.001	Insignificant
Crange Cottages	0.0000	0.000	0.000	0.000	Insignificant
Drax Abbey Farm	0.0000	0.000	0.000	0.000	Insignificant
Read School	0.0000	0.000	0.000	0.000	Insignificant
Old Lodge	0.0000	0.001	0.001	0.001	Insignificant
Selby_AQMA	0.0001	0.008	0.008	0.008	No discernible risk of AQAL Exceedance
Goole	0.0001	0.010	0.011	0.011	No discernible risk of AQAL Exceedance
Hemingbrough	0.0001	0.003	0.003	0.003	No discernible risk of AQAL Exceedance
Rawcliffe	0.0001	0.004	0.004	0.004	No discernible risk of AQAL Exceedance
Snaith	0.0001	0.005	0.005	0.005	No discernible risk of AQAL Exceedance
Hensall	0.0001	0.008	0.008	0.008	No discernible risk of AQAL Exceedance
Cliffe	0.0001	0.003	0.003	0.003	No discernible risk of AQAL Exceedance
Breighton	0.0001	0.011	0.011	0.011	No discernible risk of AQAL Exceedance
Wressle	0.0002	0.010	0.011	0.011	No discernible risk of AQAL Exceedance
Eastrington	0.0001	0.020	0.020	0.020	No discernible risk of AQAL Exceedance
Ellerton	0.0001	0.009	0.009	0.009	No discernible risk of AQAL Exceedance
Fogathorpe	0.0001	0.016	0.016	0.016	No discernible risk of AQAL Exceedance
Barlby	0.0000	0.005	0.005	0.005	No discernible risk of AQAL Exceedance

Receptor	NDMA Concentration (ng/m^3)				
	Max Proposed Scheme PC			Max PC Impact	Air Modelling Descriptor
	Direct [1]	Indirect [2]	Total [3]		
Riccall	0.0000	0.007	0.007	0.007	No discernible risk of AQAL Exceedance
Thorpe Willoughby	0.0000	0.006	0.006	0.006	No discernible risk of AQAL Exceedance
Kellingley	0.0001	0.009	0.009	0.009	No discernible risk of AQAL Exceedance
Moorends	0.0000	0.007	0.007	0.007	No discernible risk of AQAL Exceedance
Thorne	0.0000	0.006	0.006	0.006	No discernible risk of AQAL Exceedance
SwineFleet	0.0001	0.011	0.012	0.012	No discernible risk of AQAL Exceedance
Balne	0.0001	0.009	0.009	0.009	No discernible risk of AQAL Exceedance
Whitley	0.0001	0.009	0.009	0.009	No discernible risk of AQAL Exceedance
Barlow	0.0000	0.001	0.001	0.001	No discernible risk of AQAL Exceedance
Long Drax	0.0000	0.002	0.002	0.002	No discernible risk of AQAL Exceedance
Drax	0.0000	0.000	0.000	0.000	No discernible risk of AQAL Exceedance
Newland	0.0000	0.003	0.003	0.003	No discernible risk of AQAL Exceedance
Carlton	0.0000	0.003	0.003	0.003	No discernible risk of AQAL Exceedance
Camblesforth	0.0000	0.000	0.000	0.000	No discernible risk of AQAL Exceedance
Burn	0.0000	0.005	0.005	0.005	No discernible risk of AQAL Exceedance
Temple Hirst	0.0001	0.007	0.007	0.007	No discernible risk of AQAL Exceedance
Cawood	0.0001	0.013	0.013	0.013	No discernible risk of AQAL Exceedance
Biggin	0.0000	0.009	0.009	0.009	No discernible risk of AQAL Exceedance
Howden	0.0001	0.017	0.017	0.017	No discernible risk of AQAL Exceedance
Brind	0.0002	0.016	0.017	0.017	No discernible risk of AQAL Exceedance
South Duffield	0.0001	0.005	0.005	0.005	No discernible risk of AQAL Exceedance
Highfield	0.0001	0.013	0.013	0.013	No discernible risk of AQAL Exceedance

Receptor	NDMA Concentration (ng/m^3)				
	Max Proposed Scheme PC			Max PC Impact	Air Modelling Descriptor
	Direct [1]	Indirect [2]	Total [3]		
Willitoft	0.0002	0.015	0.016	0.016	No discernible risk of AQAL Exceedance
Receptor Grid Max	0.0002	0.020	0.020	0.020	No discernible risk of AQAL Exceedance
EAL	**0.2**				

[1] Based on direct mass emissions of 'Nitrosamine 1' and 'Nitrosamine 2' from Main Stack only. PC to ground level is insignificant (<0.1% of the EAL for NDMA). There is no requirement to propose an annual average ELV for direct nitrosamine emissions.

[2] Accounts for application of ADMS Amine Chemistry Module and relates to indirect formation of nitrosamines and nitramines through atmospheric reactions.

[3] Equal to sum of modelled direct and indirect nitrosamine + nitramine concentrations.

CUMULATIVE IMPACTS (WITH PROPOSED SCHEME & OTHER PROJECTS)

Results pertaining to the cumulative impacts are presented in **Tables 1.11 to 1.13**.

Table 1.11 - Modelled Maximum Cumulative Impacts at Human Receptors – Annual Mean NO_2 Concentrations

Receptor	Annual mean NO_2 Concentration ($\mu g/m^3$)					
	Baseline + Other Projects		Baseline + Other Projects + With Scheme		Max Cumulative PC Impact	IAQM Impact Descriptor
	Max PC	Max PEC	Max PC	Max PEC		
Foreman's Cottage	0.44	7.11	0.44	7.11	0.00	Negligible
East Yorkshire Carav	0.38	10.21	0.38	10.21	0.00	Negligible
Drax S&C Club	0.38	10.21	0.38	10.21	0.00	Negligible
Wren Hall	0.39	7.40	0.39	7.40	0.00	Negligible
3 Pear Tree Ave	0.40	7.18	0.41	7.19	0.01	Negligible
Crange Cottages	0.40	7.84	0.40	7.84	0.00	Negligible
Drax Abbey Farm	0.42	7.20	0.43	7.21	0.00	Negligible
Read School	0.37	7.64	0.38	7.65	0.01	Negligible
Old Lodge	0.41	7.19	0.42	7.20	0.01	Negligible
Selby_AQMA	0.34	46.84	0.38	46.88	0.04	Negligible
Goole	0.30	28.30	0.36	28.36	0.06	Negligible
Hemingbrough	0.47	7.41	0.52	7.46	0.06	Negligible
Rawcliffe	0.30	8.94	0.34	8.98	0.04	Negligible
Snaith	0.27	8.66	0.31	8.70	0.04	Negligible
Hensall	0.41	8.93	0.45	8.97	0.04	Negligible
Cliffe	0.48	7.43	0.51	7.47	0.03	Negligible
Breighton	0.42	6.93	0.51	7.02	0.09	Negligible
Wressle	0.41	7.15	0.51	7.24	0.10	Negligible
Eastrington	0.29	8.02	0.38	8.11	0.09	Negligible
Ellerton	0.33	6.29	0.39	6.34	0.06	Negligible
Fogathorpe	0.36	7.01	0.46	7.11	0.10	Negligible

Receptor	Annual mean NO_2 Concentration ($\mu g/m^3$)					
	Baseline + Other Projects		Baseline + Other Projects + With Scheme		Max Cumulative PC Impact	IAQM Impact Descriptor
	Max PC	Max PEC	Max PC	Max PEC		
Barlby	0.36	10.54	0.40	10.58	0.04	Negligible
Riccall	0.20	6.91	0.23	6.94	0.04	Negligible
Thorpe Willoughby	0.18	7.96	0.21	7.98	0.03	Negligible
Kellingley	0.17	8.58	0.20	8.61	0.04	Negligible
Moorends	0.23	9.52	0.26	9.55	0.03	Negligible
Thorne	0.23	38.23	0.26	38.26	0.02	Negligible
SwineFleet	0.28	7.64	0.33	7.69	0.05	Negligible
Balne	0.15	7.88	0.19	7.92	0.04	Negligible
Whitley	0.29	9.17	0.33	9.20	0.03	Negligible
Barlow	0.51	7.58	0.52	7.59	0.01	Negligible
Long Drax	0.40	7.26	0.44	7.30	0.03	Negligible
Drax	0.36	7.63	0.37	7.63	0.01	Negligible
Newland	0.33	7.86	0.36	7.89	0.03	Negligible
Carlton	0.39	8.53	0.42	8.56	0.03	Negligible
Camblesforth	0.41	7.81	0.41	7.81	0.00	Negligible
Burn	0.44	8.20	0.46	8.23	0.02	Negligible
Temple Hirst	0.71	8.99	0.76	9.04	0.05	Negligible
Cawood	0.14	7.46	0.18	7.50	0.04	Negligible
Biggin	0.17	7.93	0.20	7.96	0.03	Negligible
Howden	0.32	9.42	0.42	9.53	0.10	Negligible
Brind	0.35	6.93	0.45	7.03	0.10	Negligible

Receptor	Annual mean NO_2 Concentration ($\mu g/m^3$)					
	Baseline + Other Projects		Baseline + Other Projects + With Scheme		Max Cumulative PC Impact	IAQM Impact Descriptor
	Max PC	Max PEC	Max PC	Max PEC		
South Duffield	0.45	6.78	0.51	6.84	0.06	Negligible
Highfield	0.39	6.72	0.47	6.80	0.09	Negligible
Willitoft	0.37	6.64	0.48	6.74	0.10	Negligible
Receptor Grid Max (at point of max PC)	9.98	23.51	10.03	23.56	0.05	Negligible
AQ Objective	**40**					

Table 1.12 - Modelled Maximum Cumulative Impacts at Human Receptors – PM_{10} Concentrations

Receptor	Annual mean PM_{10} Concentration ($\mu g/m^3$)					
	Baseline + Other Projects		Baseline + Other Projects + With Scheme		Max Cumulative PC Impact	IAQM Impact Descriptor
	Max PC	Max PEC	Max PC	Max PEC		
Foreman's Cottage	0.00	12.14	0.00	12.14	0.00	Negligible
East Yorkshire Carav	0.00	12.49	0.00	12.49	0.00	Negligible
Drax S&C Club	0.00	12.49	0.00	12.49	0.00	Negligible
Wren Hall	0.00	13.57	0.00	13.57	0.00	Negligible
3 Pear Tree Ave	0.00	14.40	0.00	14.40	0.00	Negligible
Crange Cottages	0.00	12.26	0.00	12.26	0.00	Negligible
Drax Abbey Farm	0.00	14.40	0.00	14.40	0.00	Negligible
Read School	0.00	12.50	0.00	12.50	0.00	Negligible
Old Lodge	0.00	14.40	0.00	14.40	0.00	Negligible
Selby_AQMA	0.00	13.50	0.00	13.50	0.00	Negligible

Receptor	Annual mean PM_{10} Concentration ($\mu g/m^3$)					
	Baseline + Other Projects		Baseline + Other Projects + With Scheme		Max Cumulative PC Impact	IAQM Impact Descriptor
	Max PC	Max PEC	Max PC	Max PEC		
Goole	0.00	13.30	0.01	13.30	0.00	Negligible
Hemingbrough	0.00	13.23	0.01	13.23	0.00	Negligible
Rawcliffe	0.00	14.51	0.00	14.51	0.00	Negligible
Snaith	0.00	13.45	0.00	13.45	0.00	Negligible
Hensall	0.00	13.54	0.01	13.54	0.00	Negligible
Cliffe	0.00	13.99	0.00	13.99	0.00	Negligible
Breighton	0.00	13.45	0.01	13.45	0.01	Negligible
Wressle	0.00	14.15	0.01	14.15	0.01	Negligible
Eastrington	0.01	14.43	0.01	14.43	0.01	Negligible
Ellerton	0.00	13.75	0.01	13.75	0.00	Negligible
Fogathorpe	0.01	13.82	0.01	13.82	0.01	Negligible
Barlby	0.00	14.41	0.00	14.41	0.00	Negligible
Riccall	0.00	13.99	0.00	13.99	0.00	Negligible
Thorpe Willoughby	0.00	13.94	0.00	13.94	0.00	Negligible
Kellingley	0.00	14.18	0.00	14.18	0.00	Negligible
Moorends	0.00	13.45	0.01	13.45	0.00	Negligible
Thorne	0.00	13.27	0.01	13.27	0.00	Negligible
SwineFleet	0.00	14.19	0.01	14.19	0.00	Negligible
Balne	0.00	14.77	0.01	14.77	0.00	Negligible
Whitley	0.00	13.83	0.01	13.83	0.00	Negligible
Barlow	0.00	13.14	0.00	13.14	0.00	Negligible

Receptor	Annual mean PM_{10} Concentration ($\mu g/m^3$)					
	Baseline + Other Projects		Baseline + Other Projects + With Scheme		Max Cumulative PC Impact	IAQM Impact Descriptor
	Max PC	Max PEC	Max PC	Max PEC		
Long Drax	0.00	13.92	0.00	13.92	0.00	Negligible
Drax	0.00	12.50	0.00	12.50	0.00	Negligible
Newland	0.00	13.98	0.00	13.98	0.00	Negligible
Carlton	0.00	13.95	0.00	13.95	0.00	Negligible
Camblesforth	0.00	13.60	0.00	13.60	0.00	Negligible
Burn	0.00	14.08	0.00	14.08	0.00	Negligible
Temple Hirst	0.00	14.31	0.01	14.31	0.00	Negligible
Cawood	0.00	13.24	0.01	13.24	0.00	Negligible
Biggin	0.00	12.94	0.00	12.94	0.00	Negligible
Howden	0.00	14.93	0.01	14.93	0.01	Negligible
Brind	0.00	14.37	0.01	14.37	0.01	Negligible
South Duffield	0.00	14.56	0.01	14.56	0.00	Negligible
Highfield	0.00	13.98	0.01	13.98	0.01	Negligible
Willitoft	0.01	14.12	0.01	14.12	0.01	Negligible
Receptor Grid Max (at point of max PC)	0.01	17.56	0.01	17.56	0.00	Negligible
AQ Objective	**40**					

Table 1.13 - Modelled Maximum Cumulative Impacts at Human Receptors – NH_3 Concentrations

Receptor	Annual mean NH_3 Concentration ($\mu g/m^3$)			
	Baseline + Other Projects	Baseline + Other Projects + With Scheme	Max Cumulative PC Impact	IAQM Impact Descriptor
	Max PC	Max PC		
Foreman's Cottage	0.00	0.00	0.00	Negligible
East Yorkshire Carav	0.00	0.00	0.00	Negligible
Drax S&C Club	0.00	0.00	0.00	Negligible
Wren Hall	0.00	0.00	0.00	Negligible
3 Pear Tree Ave	0.00	0.00	0.00	Negligible
Crange Cottages	0.00	0.00	0.00	Negligible
Drax Abbey Farm	0.00	0.00	0.00	Negligible
Read School	0.00	0.00	0.00	Negligible
Old Lodge	0.00	0.00	0.00	Negligible
Selby_AQMA	0.00	0.01	0.00	Negligible
Goole	0.01	0.01	0.00	Negligible
Hemingbrough	0.01	0.01	0.00	Negligible
Rawcliffe	0.01	0.01	0.00	Negligible
Snaith	0.00	0.01	0.00	Negligible
Hensall	0.00	0.01	0.00	Negligible
Cliffe	0.00	0.01	0.00	Negligible
Breighton	0.01	0.01	0.01	Negligible
Wressle	0.01	0.02	0.01	Negligible
Eastrington	0.01	0.01	0.01	Negligible

Receptor	Annual mean NH_3 Concentration ($\mu g/m^3$)			
	Baseline + Other Projects	Baseline + Other Projects + With Scheme	Max Cumulative PC Impact	IAQM Impact Descriptor
	Max PC	Max PC		
Ellerton	0.01	0.01	0.00	Negligible
Fogathorpe	0.01	0.01	0.01	Negligible
Barlby	0.00	0.01	0.00	Negligible
Riccall	0.00	0.01	0.00	Negligible
Thorpe Willoughby	0.00	0.00	0.00	Negligible
Kellingley	0.00	0.01	0.00	Negligible
Moorends	0.01	0.01	0.00	Negligible
Thorne	0.01	0.01	0.00	Negligible
SwineFleet	0.01	0.01	0.00	Negligible
Balne	0.00	0.01	0.00	Negligible
Whitley	0.00	0.01	0.00	Negligible
Barlow	0.00	0.00	0.00	Negligible
Long Drax	0.00	0.01	0.00	Negligible
Drax	0.00	0.00	0.00	Negligible
Newland	0.00	0.01	0.00	Negligible
Carlton	0.00	0.01	0.00	Negligible
Camblesforth	0.00	0.00	0.00	Negligible
Burn	0.00	0.00	0.00	Negligible
Temple Hirst	0.00	0.01	0.00	Negligible
Cawood	0.00	0.01	0.00	Negligible

Receptor	Annual mean NH_3 Concentration ($\mu g/m^3$)			
	Baseline + Other Projects	Baseline + Other Projects + With Scheme	Max Cumulative PC Impact	IAQM Impact Descriptor
	Max PC	Max PC		
Biggin	0.00	0.01	0.00	Negligible
Howden	0.01	0.02	0.01	Negligible
Brind	0.01	0.02	0.01	Negligible
South Duffield	0.01	0.01	0.00	Negligible
Highfield	0.01	0.01	0.01	Negligible
Willitoft	0.01	0.02	0.01	Negligible
Receptor Grid Max (at point of max PC)	0.03	0.03	0.00	Negligible
EAL	**180**			

SENSITIVITY TEST: WORST CASE EMISSIONS PROFILE

Results pertaining to the worst-case emissions profile sensitivity test are presented in **Tables 1.14 to 1.22**.

It is evident that, for the annual mean averaging period, modelled maximum PC concentrations increase in the Baseline scenario under worst case emission conditions, relative to the core modelling scenario equivalents (see **Table 1.2** for NO_2 annual mean). Whereas, in the With PCC scenario, there is no or very small change in modelled annual mean concentrations when comparing the core and worst-case emissions modelling.

This is a function of all four biomass units in the Baseline scenario switching from 'mid-merit' operation (full load for 4,000 hours per year) to continuous operation (full load for 8,760 hours per year), resulting in more pollutants being emitted and thus more pronounced changes in annual mean concentrations relative to the With Proposed Scheme, where operation changes from 'mid-merit' to continuous full load at the two non-BECCS biomass units only (BECCS units already assumed to operate at continuous full load in core modelling scenario). As the non-BECCS units emit flue gas at a higher temperature relative to the BECCS units, there is enhanced plume buoyancy when all units operate continuously, resulting in some minor reductions in maximum PC annual mean concentrations.

The net outcome of the above effects, under worst case emissions conditions, is that the majority of modelled Baseline annual mean concentrations increase, whilst With PCC concentrations remain largely unchanged or reduce slightly. Therefore, the maximum impacts on annual mean concentrations are reported to decrease at the majority of receptors relative to the core modelling equivalents.

For short-term averaging periods, under worst case emissions conditions, the modelled maximum PC concentrations in the Baseline scenario are shown to be identical to the core modelling equivalents (see **Table 1.3** for NO_2 hourly mean). This is because modelling was undertaken with all biomass units at full load for all hours in the year in both core and worst-case Baseline scenarios, to capture all potential meteorological conditions in any given hour or day.

In the With PCC scenario, under worst case conditions, the maximum short-term PC concentrations are lower at receptors closer to the Main Stack relative to the core modelling results. This is due to the effect of enhanced plume buoyancy when the non-BECCS units operate continuously with the BECCS units (as discussed above). At distances further from the Main Stack, the effect of enhanced buoyancy on short-term maxima diminishes, resulting in no or very small changes in maximum PC concentrations relative to the core modelling.

The net outcome of the above, under worst case emissions conditions, is that the majority of modelled Baseline short-term averaged concentrations are unchanged, whilst With PCC maximum concentrations are largely unchanged or reduce slightly. Therefore, the maximum impacts on short-term averaged concentrations are reported to decrease at the majority of receptors relative to the core modelling equivalents.

Whilst the maximum short-term grid PC concentrations do not change in the worst case modelling relative to the core modelling (excluding amines), in both the Baseline and With PCC scenarios, the maximum modelled impacts are lower. This is a function of the location of the maximum impact shifting under worst case emissions, again due to the change in Main Stack plume buoyancy (i.e. the

maximum impact does not occur at the same location as the maximum PC concentration in the With PCC scenario).

Given that the results of the core scenario modelling represent the highest modelled impacts associated with the Proposed Scheme operation, there was no need to repeat this sensitivity test in relation to ecological receptors.

Table 1.14 - Modelled Maximum Operational Impacts at Human Receptors – Annual Mean NO_2 Concentrations (Worst Case Emissions Profile)

Receptor	Annual mean NO_2 Concentration ($\mu g/m^3$)					
	Max Baseline PC	Max Baseline PEC	Max Proposed Scheme PC	Max Proposed Scheme PEC	Max PC Impact	IAQM Impact Descriptor
Foreman's Cottage	0.00	6.67	0.00	6.67	0.00	Negligible
East Yorkshire Carav	0.00	9.83	0.00	9.83	0.00	Negligible
Drax S&C Club	0.00	9.83	0.00	9.83	0.00	Negligible
Wren Hall	0.00	7.01	0.00	7.01	0.00	Negligible
3 Pear Tree Ave	0.00	6.79	0.01	6.79	0.00	Negligible
Crange Cottages	0.00	7.44	0.00	7.44	0.00	Negligible
Drax Abbey Farm	0.00	6.78	0.00	6.78	0.00	Negligible
Read School	0.00	7.27	0.00	7.27	0.00	Negligible
Old Lodge	0.00	6.78	0.00	6.79	0.00	Negligible
Selby_AQMA	0.02	46.52	0.03	46.53	0.01	Negligible
Goole	0.04	28.04	0.06	28.06	0.02	Negligible
Hemingbrough	0.04	6.98	0.06	6.99	0.02	Negligible
Rawcliffe	0.02	8.66	0.03	8.67	0.01	Negligible
Snaith	0.02	8.41	0.03	8.43	0.01	Negligible
Hensall	0.04	8.55	0.04	8.56	0.01	Negligible
Cliffe	0.03	6.98	0.04	6.99	0.01	Negligible
Breighton	0.10	6.61	0.11	6.62	0.03	Negligible
Wressle	0.08	6.82	0.10	6.83	0.03	Negligible
Eastrington	0.11	7.84	0.14	7.87	0.03	Negligible
Ellerton	0.07	6.03	0.09	6.05	0.02	Negligible
Fogathorpe	0.13	6.77	0.16	6.80	0.04	Negligible
Barlby	0.02	10.21	0.04	10.22	0.01	Negligible

Receptor	Annual mean NO_2 Concentration ($\mu g/m^3$)					
	Max Baseline PC	Max Baseline PEC	Max Proposed Scheme PC	Max Proposed Scheme PEC	Max PC Impact	IAQM Impact Descriptor
Riccall	0.03	6.75	0.05	6.76	0.01	Negligible
Thorpe Willoughby	0.02	7.79	0.03	7.80	0.01	Negligible
Kellingley	0.04	8.45	0.06	8.47	0.01	Negligible
Moorends	0.04	9.33	0.05	9.34	0.02	Negligible
Thorne	0.03	38.03	0.04	38.04	0.02	Negligible
SwineFleet	0.05	7.42	0.07	7.44	0.02	Negligible
Balne	0.05	7.78	0.06	7.79	0.02	Negligible
Whitley	0.05	8.92	0.05	8.92	0.01	Negligible
Barlow	0.00	7.07	0.00	7.07	0.00	Negligible
Long Drax	0.01	6.87	0.02	6.88	0.01	Negligible
Drax	0.00	7.27	0.00	7.27	0.00	Negligible
Newland	0.01	7.54	0.01	7.54	0.01	Negligible
Carlton	0.01	8.15	0.02	8.15	0.01	Negligible
Camblesforth	0.00	7.40	0.00	7.40	0.00	Negligible
Burn	0.01	7.78	0.02	7.79	0.01	Negligible
Temple Hirst	0.03	8.32	0.05	8.34	0.02	Negligible
Cawood	0.05	7.37	0.06	7.38	0.02	Negligible
Biggin	0.03	7.80	0.05	7.81	0.01	Negligible
Howden	0.08	9.19	0.12	9.23	0.04	Negligible
Brind	0.10	6.68	0.12	6.71	0.04	Negligible
South Duffield	0.05	6.38	0.07	6.39	0.02	Negligible
Highfield	0.10	6.43	0.12	6.45	0.03	Negligible
Willitoft	0.12	6.38	0.14	6.41	0.04	Negligible

Receptor	Annual mean NO_2 Concentration ($\mu g/m^3$)					
	Max Baseline PC	Max Baseline PEC	Max Proposed Scheme PC	Max Proposed Scheme PEC	Max PC Impact	IAQM Impact Descriptor
Receptor Grid Max	0.14	13.67	0.17	13.70	0.04	Negligible
AQ Objective	**40**					

Table 1.15 - Modelled Maximum Operational Impacts at Human Receptors – Hourly Mean NO_2 Concentrations (Worst Case Emissions Profile)

Receptor	Hourly mean NO_2 Concentration ($\mu g/m^3$) (Based on 99.79th %ile of hourly values)					
	Max Baseline PC	Max Baseline PEC	Max Proposed Scheme PC	Max Proposed Scheme PEC	Max PC Impact	IAQM Impact Descriptor
Foreman's Cottage	0.11	13.45	0.36	13.70	0.27	Negligible
East Yorkshire Carav	0.02	19.68	0.11	19.76	0.09	Negligible
Drax S&C Club	0.01	19.67	0.08	19.74	0.07	Negligible
Wren Hall	0.08	14.10	0.27	14.29	0.18	Negligible
3 Pear Tree Ave	0.30	13.86	1.39	14.95	1.09	Negligible
Crange Cottages	0.08	14.95	0.28	15.15	0.25	Negligible
Drax Abbey Farm	0.08	13.64	0.42	13.98	0.34	Negligible
Read School	0.18	14.72	0.81	15.35	0.63	Negligible
Old Lodge	0.20	13.77	0.95	14.51	0.76	Negligible
Selby_AQMA	1.72	94.72	4.08	97.08	2.36	Negligible
Goole	2.52	58.52	4.43	60.43	2.08	Negligible
Hemingbrough	2.72	16.60	3.94	17.82	1.65	Negligible
Rawcliffe	1.54	18.83	3.98	21.27	3.24	Negligible
Snaith	1.47	18.26	3.98	20.77	2.59	Negligible
Hensall	2.55	19.58	4.10	21.13	1.96	Negligible
Cliffe	2.37	16.28	3.55	17.47	1.91	Negligible
Breighton	3.07	16.09	4.74	17.76	1.75	Negligible

Receptor	Hourly mean NO_2 Concentration (µg/m^3) (Based on 99.79th %ile of hourly values)					
	Max Baseline PC	Max Baseline PEC	Max Proposed Scheme PC	Max Proposed Scheme PEC	Max PC Impact	IAQM Impact Descriptor
Wressle	3.25	16.72	4.11	17.58	1.61	Negligible
Eastrington	3.39	18.84	4.36	19.82	0.98	Negligible
Ellerton	2.84	14.75	3.68	15.60	1.03	Negligible
Fogathorpe	3.63	16.93	4.47	17.76	1.09	Negligible
Barlby	2.29	22.65	3.41	23.77	2.08	Negligible
Riccall	2.40	15.83	3.41	16.84	1.66	Negligible
Thorpe Willoughby	1.59	17.14	3.78	19.32	2.47	Negligible
Kellingley	2.89	19.71	3.74	20.56	0.85	Negligible
Moorends	2.69	21.28	3.60	22.19	1.35	Negligible
Thorne	2.56	78.56	3.20	79.20	0.95	Negligible
SwineFleet	3.02	17.74	4.14	18.87	1.49	Negligible
Balne	2.79	18.25	3.90	19.36	1.11	Negligible
Whitley	2.72	20.47	3.83	21.58	1.27	Negligible
Barlow	0.20	14.33	1.40	15.53	1.20	Negligible
Long Drax	0.78	14.50	2.57	16.29	1.99	Negligible
Drax	0.21	14.75	0.99	15.52	0.85	Negligible
Newland	0.65	15.71	3.13	18.19	2.64	Negligible
Carlton	0.94	17.21	3.30	19.57	2.55	Negligible
Camblesforth	0.14	14.94	0.67	15.47	0.57	Negligible
Burn	1.24	16.77	3.26	18.79	2.41	Negligible
Temple Hirst	2.77	19.34	4.07	20.64	2.42	Negligible
Cawood	3.06	17.70	4.13	18.77	1.07	Negligible
Biggin	2.52	18.04	3.62	19.15	1.11	Negligible

Receptor	Hourly mean NO_2 Concentration ($\mu g/m^3$) (Based on 99.79th %ile of hourly values)					
	Max Baseline PC	Max Baseline PEC	Max Proposed Scheme PC	Max Proposed Scheme PEC	Max PC Impact	IAQM Impact Descriptor
Howden	3.09	21.30	4.66	22.88	1.85	Negligible
Brind	3.04	16.21	4.47	17.64	1.65	Negligible
South Duffield	3.33	15.98	4.08	16.73	0.80	Negligible
Highfield	2.93	15.59	4.17	16.83	1.48	Negligible
Willitoft	3.41	15.94	4.35	16.88	1.15	Negligible
Receptor Grid Max	4.05	31.11	4.96	32.02	3.38	Negligible
AQ Objective	**200**					

Table 1.16 - Modelled Maximum Operational Impacts at Human Receptors – SO_2 Concentrations (Worst Case Emissions Profile)

Receptor	SO_2 Concentration ($\mu g/m^3$) (15-min / Hourly / Daily mean)										
	Background	Max Baseline PC			Max Proposed Scheme PC			Max PC Impact			IAQM Impact Descriptor (applicable to all averaging periods)
		15-min	Hourly	Daily	15-min	Hourly	Daily	15-min	Hourly	Daily	
Foreman's Cottage	20.48	0.59	0.27	0.06	1.80	0.73	0.17	1.31	0.50	0.12	Negligible
East Yorkshire Carav	20.48	0.21	0.05	0.02	0.72	0.16	0.07	0.57	0.13	0.05	Negligible
Drax S&C Club	20.48	0.16	0.02	0.02	0.63	0.08	0.05	0.47	0.06	0.04	Negligible
Wren Hall	20.48	0.65	0.16	0.06	1.79	0.55	0.17	1.37	0.42	0.12	Negligible
3 Pear Tree Ave	20.48	1.96	0.77	0.18	6.55	2.64	0.56	4.59	1.96	0.43	Negligible
Crange Cottages	20.48	0.54	0.19	0.06	1.75	0.54	0.17	1.53	0.40	0.14	Negligible
Drax Abbey Farm	20.48	0.50	0.17	0.05	1.91	0.72	0.17	1.41	0.55	0.12	Negligible
Read School	20.48	1.18	0.38	0.09	3.87	1.48	0.33	2.96	1.10	0.24	Negligible
Old Lodge	20.48	1.33	0.51	0.11	4.35	2.03	0.41	3.44	1.52	0.30	Negligible
Selby_AQMA	20.48	9.95	4.40	1.08	18.11	7.94	1.81	8.77	4.62	0.91	Negligible
Goole	20.48	15.49	6.95	1.72	19.17	8.58	1.74	8.47	3.49	0.72	Negligible

Receptor	SO_2 Concentration (µg/m^3) (15-min / Hourly / Daily mean)										
	Background	Max Baseline PC			Max Proposed Scheme PC			Max PC Impact			IAQM Impact Descriptor (applicable to all averaging periods)
		15-min	Hourly	Daily	15-min	Hourly	Daily	15-min	Hourly	Daily	
Hemingbrough	20.48	15.41	7.07	2.17	17.22	8.98	2.73	2.89	3.11	0.68	Negligible
Rawcliffe	20.48	9.55	3.33	0.82	16.37	8.45	1.79	12.01	5.68	1.10	Negligible
Snaith	20.48	9.92	3.81	1.01	16.12	8.96	2.29	7.71	5.51	1.33	Negligible
Hensall	20.48	14.42	6.50	1.33	20.36	8.46	1.65	8.79	3.50	0.74	Negligible
Cliffe	20.48	15.16	5.80	1.82	17.32	7.72	2.18	3.75	3.52	0.97	Negligible
Breighton	20.48	15.90	8.49	2.18	20.37	9.29	2.19	5.42	1.21	0.29	Negligible
Wressle	20.48	17.82	9.27	2.57	19.47	10.36	3.11	3.48	2.64	0.77	Negligible
Eastrington	20.48	19.65	9.53	2.14	23.22	10.57	2.59	3.57	1.18	0.46	Negligible
Ellerton	20.48	17.52	7.68	1.89	20.71	8.59	2.00	5.68	1.21	0.20	Negligible
Fogathorpe	20.48	25.47	9.93	2.02	25.04	10.33	2.17	4.86	1.60	0.18	Negligible
Barlby	20.48	14.81	5.53	1.35	15.51	7.11	1.46	9.66	4.01	0.86	Negligible
Riccall	20.48	14.06	6.46	1.26	17.45	7.39	1.46	5.38	2.77	0.38	Negligible
Thorpe Willoughby	20.48	10.50	4.15	1.19	17.65	7.41	1.47	7.75	4.50	0.68	Negligible
Kellingley	20.48	17.68	7.27	2.28	20.24	8.54	2.22	5.00	1.27	0.27	Negligible
Moorends	20.48	16.88	7.10	1.28	19.31	7.83	1.59	4.24	1.68	0.31	Negligible
Thorne	20.48	15.13	6.19	1.10	17.39	7.15	1.18	3.32	1.14	0.21	Negligible
SwineFleet	20.48	18.13	8.14	1.31	20.98	9.78	1.62	5.23	1.86	0.48	Negligible
Balne	20.48	18.83	7.83	1.67	21.24	8.77	1.81	2.42	1.67	0.22	Negligible
Whitley	20.48	15.29	7.62	1.46	18.75	8.53	1.76	3.54	1.66	0.44	Negligible
Barlow	20.48	1.59	0.40	0.15	6.37	2.74	0.68	5.03	2.34	0.53	Negligible
Long Drax	20.48	4.57	2.06	0.48	10.65	5.54	1.22	6.28	3.97	0.85	Negligible
Drax	20.48	1.34	0.49	0.10	5.46	1.74	0.52	4.11	1.42	0.44	Negligible

Receptor	SO_2 Concentration (µg/m^3) (15-min / Hourly / Daily mean)										
	Background	Max Baseline PC			Max Proposed Scheme PC			Max PC Impact			IAQM Impact Descriptor (applicable to all averaging periods)
		15-min	Hourly	Daily	15-min	Hourly	Daily	15-min	Hourly	Daily	
Newland	20.48	5.14	1.66	0.43	13.68	6.88	1.22	9.56	5.27	0.80	Negligible
Carlton	20.48	8.28	2.03	0.57	14.27	6.99	1.84	8.92	4.96	1.34	Negligible
Camblesforth	20.48	0.95	0.30	0.11	3.75	1.34	0.36	2.79	1.04	0.26	Negligible
Burn	20.48	9.52	3.30	1.00	13.69	6.94	1.43	7.00	4.63	0.66	Negligible
Temple Hirst	20.48	16.58	6.93	2.36	17.80	8.90	2.83	8.15	4.97	1.21	Negligible
Cawood	20.48	16.90	7.83	1.61	19.61	8.98	1.98	3.07	1.54	0.37	Negligible
Biggin	20.48	17.95	6.76	1.50	18.96	8.01	1.54	3.32	1.52	0.19	Negligible
Howden	20.48	16.79	8.82	1.75	20.93	9.48	2.12	6.06	1.85	0.46	Negligible
Brind	20.48	18.55	8.44	1.97	25.58	9.64	2.13	7.03	1.80	0.39	Negligible
South Duffield	20.48	17.98	9.41	2.83	18.50	9.94	2.90	0.95	1.91	0.15	Negligible
Highfield	20.48	15.91	8.16	1.74	20.22	9.46	1.84	4.31	1.37	0.21	Negligible
Willitoft	20.48	18.64	9.29	2.04	23.69	9.63	2.31	6.04	1.17	0.44	Negligible
Receptor Grid Max	20.48	26.81	10.96	3.20	27.99	11.75	3.69	13.70	6.99	1.63	Negligible
AQ Objective		**266**	**350**	**125**	**266**	**350**	**125**	**266**	**350**	**125**	

Table 1.17 - Modelled Maximum Operational Impacts at Human Receptors – Dust (as PM_{10}) Concentrations (Worst Case Emissions Profile)

Receptor	PM_{10} Concentration (µg/m^3) (Annual & Daily mean)								
	Background		Max Baseline PC		Max Proposed Scheme PC		Max PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	
Foreman's Cottage	12.14	24.28	0.000	0.000	0.000	0.002	0.000	0.001	Negligible
East Yorkshire Carav	12.49	24.97	0.000	0.000	0.000	0.000	0.000	0.000	Negligible
Drax S&C Club	12.49	24.97	0.000	0.000	0.000	0.000	0.000	0.000	Negligible

Receptor	PM_{10} Concentration ($\mu g/m^3$) (Annual & Daily mean)								
	Background		Max Baseline PC		Max Proposed Scheme PC		Max PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	
Wren Hall	13.57	27.14	0.000	0.000	0.000	0.001	0.000	0.000	Negligible
3 Pear Tree Ave	14.40	28.79	0.000	0.002	0.001	0.009	0.000	0.007	Negligible
Crange Cottages	12.26	24.52	0.000	0.000	0.000	0.000	0.000	0.000	Negligible
Drax Abbey Farm	14.40	28.79	0.000	0.000	0.000	0.002	0.000	0.001	Negligible
Read School	12.50	25.00	0.000	0.000	0.000	0.002	0.000	0.002	Negligible
Old Lodge	14.40	28.79	0.000	0.001	0.000	0.006	0.000	0.004	Negligible
Selby_AQMA	13.50	26.99	0.002	0.004	0.002	0.020	0.001	0.016	Negligible
Goole	13.30	26.60	0.004	0.021	0.005	0.032	0.001	0.014	Negligible
Hemingbrough	13.22	26.45	0.004	0.014	0.005	0.040	0.001	0.026	Negligible
Rawcliffe	14.51	29.02	0.002	0.003	0.002	0.021	0.001	0.018	Negligible
Snaith	13.45	26.90	0.002	0.001	0.002	0.010	0.001	0.009	Negligible
Hensall	13.54	27.08	0.003	0.013	0.004	0.034	0.001	0.021	Negligible
Cliffe	13.99	27.99	0.002	0.009	0.003	0.023	0.001	0.015	Negligible
Breighton	13.44	26.89	0.009	0.048	0.011	0.063	0.002	0.027	Negligible
Wressle	14.15	28.30	0.008	0.038	0.010	0.069	0.002	0.030	Negligible
Eastrington	14.43	28.85	0.010	0.064	0.011	0.073	0.002	0.009	Negligible
Ellerton	13.74	27.48	0.007	0.045	0.007	0.052	0.001	0.008	Negligible
Fogathorpe	13.81	27.62	0.011	0.067	0.013	0.075	0.002	0.010	Negligible
Barlby	14.41	28.82	0.002	0.006	0.003	0.022	0.001	0.018	Negligible
Riccall	13.98	27.97	0.003	0.015	0.004	0.029	0.001	0.018	Negligible
Thorpe Willoughby	13.93	27.87	0.002	0.003	0.002	0.009	0.001	0.007	Negligible
Kellingley	14.18	28.36	0.004	0.012	0.005	0.015	0.001	0.006	Negligible

Receptor	PM_{10} Concentration (µg/m^3) (Annual & Daily mean)								
	Background		Max Baseline PC		Max Proposed Scheme PC		Max PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	
Moorends	13.45	26.89	0.003	0.012	0.004	0.017	0.001	0.011	Negligible
Thorne	13.27	26.53	0.003	0.008	0.003	0.013	0.000	0.006	Negligible
SwineFleet	14.18	28.37	0.005	0.033	0.006	0.039	0.001	0.010	Negligible
Balne	14.77	29.54	0.004	0.020	0.005	0.032	0.001	0.014	Negligible
Whitley	13.83	27.66	0.004	0.025	0.005	0.031	0.001	0.006	Negligible
Barlow	13.14	26.29	0.000	0.000	0.000	0.001	0.000	0.001	Negligible
Long Drax	13.92	27.84	0.001	0.006	0.002	0.026	0.001	0.020	Negligible
Drax	12.50	25.00	0.000	0.000	0.000	0.002	0.000	0.002	Negligible
Newland	13.98	27.95	0.001	0.002	0.001	0.013	0.000	0.011	Negligible
Carlton	13.95	27.89	0.001	0.000	0.001	0.005	0.000	0.005	Negligible
Camblesforth	13.60	27.20	0.000	0.000	0.000	0.001	0.000	0.001	Negligible
Burn	14.08	28.17	0.001	0.001	0.002	0.008	0.001	0.006	Negligible
Temple Hirst	14.31	28.61	0.003	0.005	0.004	0.024	0.001	0.019	Negligible
Cawood	13.24	26.48	0.004	0.026	0.005	0.030	0.001	0.004	Negligible
Biggin	12.93	25.87	0.003	0.007	0.004	0.013	0.001	0.006	Negligible
Howden	14.93	29.86	0.007	0.048	0.010	0.062	0.002	0.026	Negligible
Brind	14.37	28.73	0.009	0.061	0.011	0.081	0.002	0.022	Negligible
South Duffield	14.55	29.11	0.005	0.022	0.006	0.041	0.001	0.023	Negligible
Highfield	13.98	27.95	0.009	0.056	0.011	0.066	0.002	0.012	Negligible
Willitoft	14.12	28.23	0.010	0.059	0.012	0.070	0.002	0.016	Negligible
Receptor Grid Max	17.56	35.11	0.012	0.079	0.013	0.087	0.002	0.050	Negligible
AQ Objective	**40**	**50**	**40**	**50**	**40**	**50**	**40**	**50**	

Table 1.18 - Modelled Maximum Operational Impacts at Human Receptors – NH_3 Concentrations (Worst Case Emissions Profile)

Receptor	NH_3 Concentration (µg/m^3) (Annual & Hourly mean)								
	Background		Max Baseline PC		Max Proposed Scheme PC		Max PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	
Foreman's Cottage	1.6	3.2	0.000	0.051	0.000	0.197	0.000	0.154	Negligible
East Yorkshire Carav	1.6	3.2	0.000	0.060	0.000	0.085	0.000	0.043	Negligible
Drax S&C Club	1.6	3.2	0.000	0.111	0.000	0.119	0.000	0.095	Negligible
Wren Hall	1.6	3.2	0.000	0.084	0.000	0.162	0.000	0.131	Negligible
3 Pear Tree Ave	1.6	3.2	0.000	0.171	0.001	0.432	0.000	0.274	Negligible
Crange Cottages	1.6	3.2	0.000	0.119	0.000	0.303	0.000	0.277	Negligible
Drax Abbey Farm	1.6	3.2	0.000	0.046	0.000	0.248	0.000	0.210	Negligible
Read School	1.6	3.2	0.000	0.098	0.000	0.407	0.000	0.309	Negligible
Old Lodge	1.6	3.2	0.000	0.119	0.000	0.273	0.000	0.189	Negligible
Selby_AQMA	1.6	3.2	0.002	0.542	0.002	0.738	0.001	0.455	Negligible
Goole	1.6	3.2	0.004	0.810	0.005	0.830	0.001	0.246	Negligible
Hemingbrough	1.6	3.2	0.004	0.741	0.005	1.048	0.001	0.455	Negligible
Rawcliffe	1.6	3.2	0.002	0.607	0.002	0.994	0.001	0.499	Negligible
Snaith	1.6	3.2	0.002	0.580	0.002	0.922	0.001	0.345	Negligible
Hensall	1.6	3.2	0.003	0.789	0.004	0.850	0.001	0.288	Negligible
Cliffe	1.6	3.2	0.002	0.687	0.003	1.070	0.001	0.541	Negligible
Breighton	1.6	3.2	0.009	1.203	0.011	1.209	0.002	0.384	Negligible
Wressle	1.6	3.2	0.008	0.798	0.010	0.837	0.002	0.088	Negligible
Eastrington	1.6	3.2	0.010	1.034	0.011	1.000	0.002	0.152	Negligible
Ellerton	1.6	3.2	0.007	0.995	0.007	0.996	0.001	0.138	Negligible
Fogathorpe	1.6	3.2	0.011	1.017	0.013	0.962	0.002	-0.044	Negligible

Receptor	NH_3 Concentration (µg/m^3) (Annual & Hourly mean)								
	Background		Max Baseline PC		Max Proposed Scheme PC		Max PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	
Barlby	1.6	3.2	0.002	0.943	0.003	1.029	0.001	0.516	Negligible
Riccall	1.6	3.2	0.003	1.144	0.004	1.144	0.001	0.000	Negligible
Thorpe Willoughby	1.6	3.2	0.002	1.165	0.002	1.152	0.001	0.411	Negligible
Kellingley	1.6	3.2	0.004	0.954	0.005	0.952	0.001	0.209	Negligible
Moorends	1.6	3.2	0.003	0.811	0.004	0.811	0.001	0.256	Negligible
Thorne	1.6	3.2	0.003	0.756	0.003	0.836	0.000	0.195	Negligible
SwineFleet	1.6	3.2	0.005	1.023	0.006	1.047	0.001	0.269	Negligible
Balne	1.6	3.2	0.004	1.026	0.005	1.034	0.001	0.052	Negligible
Whitley	1.6	3.2	0.004	0.980	0.005	1.055	0.001	0.228	Negligible
Barlow	1.6	3.2	0.000	0.151	0.000	0.391	0.000	0.338	Negligible
Long Drax	1.6	3.2	0.001	0.267	0.002	0.544	0.001	0.309	Negligible
Drax	1.6	3.2	0.000	0.210	0.000	0.401	0.000	0.260	Negligible
Newland	1.6	3.2	0.001	0.632	0.001	0.825	0.000	0.505	Negligible
Carlton	1.6	3.2	0.001	0.628	0.001	0.825	0.000	0.502	Negligible
Camblesforth	1.6	3.2	0.000	0.156	0.000	0.440	0.000	0.385	Negligible
Burn	1.6	3.2	0.001	0.594	0.002	0.816	0.001	0.455	Negligible
Temple Hirst	1.6	3.2	0.003	0.633	0.004	0.979	0.001	0.636	Negligible
Cawood	1.6	3.2	0.004	0.765	0.005	0.876	0.001	0.303	Negligible
Biggin	1.6	3.2	0.003	0.688	0.004	0.810	0.001	0.198	Negligible
Howden	1.6	3.2	0.007	1.220	0.010	1.259	0.002	0.244	Negligible
Brind	1.6	3.2	0.009	1.376	0.011	1.331	0.002	0.087	Negligible
South Duffield	1.6	3.2	0.005	0.664	0.006	0.837	0.001	0.198	Negligible

Receptor	NH_3 Concentration (µg/m^3) (Annual & Hourly mean)								
	Background		Max Baseline PC		Max Proposed Scheme PC		Max PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	
Highfield	1.6	3.2	0.009	1.191	0.011	1.125	0.002	0.122	Negligible
Willitoft	1.6	3.2	0.010	1.245	0.012	1.263	0.002	0.077	Negligible
Receptor Grid Max	1.6	3.2	0.012	1.402	0.013	1.407	0.002	1.027	Negligible
Env. Agency EAL	**180**	**2,500**	**180**	**2,500**	**180**	**2,500**	**180**	**2,500**	

Table 1.19 - Modelled Maximum Operational Impacts at Human Receptors – Hourly Mean HCl Concentrations (Worst Case Emissions Profile)

Receptor	HCl Concentration (µg/m^3)				
	Background	Max Baseline PC	Max Proposed Scheme PC	Max PC Impact	IAQM Impact Descriptor
Foreman's Cottage	4.86	0.06	0.49	0.44	Negligible
East Yorkshire Carav	4.86	0.07	0.19	0.12	Negligible
Drax S&C Club	4.86	0.13	0.30	0.27	Negligible
Wren Hall	4.86	0.10	0.40	0.37	Negligible
3 Pear Tree Ave	4.86	0.20	1.08	0.89	Negligible
Crange Cottages	4.86	0.14	0.76	0.73	Negligible
Drax Abbey Farm	4.86	0.06	0.62	0.57	Negligible
Read School	4.86	0.12	1.02	0.90	Negligible
Old Lodge	4.86	0.14	0.68	0.58	Negligible
Selby_AQMA	4.86	0.65	1.85	1.45	Negligible
Goole	4.86	0.97	1.89	1.28	Negligible
Hemingbrough	4.86	0.89	2.62	1.91	Negligible
Rawcliffe	4.86	0.73	2.49	1.77	Negligible
Snaith	4.86	0.70	2.30	1.61	Negligible

Receptor	HCl Concentration (µg/m^3)				
	Background	Max Baseline PC	Max Proposed Scheme PC	Max PC Impact	IAQM Impact Descriptor
Hensall	4.86	0.95	1.92	1.35	Negligible
Cliffe	4.86	0.82	2.68	2.04	Negligible
Breighton	4.86	1.44	2.29	1.65	Negligible
Wressle	4.86	0.96	1.88	1.08	Negligible
Eastrington	4.86	1.24	1.86	1.13	Negligible
Ellerton	4.86	1.19	1.76	0.94	Negligible
Fogathorpe	4.86	1.22	1.76	0.56	Negligible
Barlby	4.86	1.13	2.31	1.76	Negligible
Riccall	4.86	1.37	2.02	0.65	Negligible
Thorpe Willoughby	4.86	1.40	2.17	1.62	Negligible
Kellingley	4.86	1.14	1.74	1.08	Negligible
Moorends	4.86	0.97	2.03	1.23	Negligible
Thorne	4.86	0.91	1.86	1.08	Negligible
SwineFleet	4.86	1.23	1.85	0.81	Negligible
Balne	4.86	1.23	1.83	0.82	Negligible
Whitley	4.86	1.18	2.15	1.35	Negligible
Barlow	4.86	0.18	0.98	0.91	Negligible
Long Drax	4.86	0.32	1.36	1.08	Negligible
Drax	4.86	0.25	1.00	0.76	Negligible
Newland	4.86	0.76	2.06	1.68	Negligible
Carlton	4.86	0.75	2.06	1.66	Negligible
Camblesforth	4.86	0.19	1.10	1.03	Negligible
Burn	4.86	0.71	2.04	1.55	Negligible

Receptor	HCl Concentration (µg/m^3)				
	Background	Max Baseline PC	Max Proposed Scheme PC	Max PC Impact	IAQM Impact Descriptor
Temple Hirst	4.86	0.76	2.45	2.04	Negligible
Cawood	4.86	0.92	1.86	1.10	Negligible
Biggin	4.86	0.83	1.70	1.07	Negligible
Howden	4.86	1.46	2.23	1.33	Negligible
Brind	4.86	1.65	2.35	0.70	Negligible
South Duffield	4.86	0.80	2.09	1.33	Negligible
Highfield	4.86	1.43	2.20	1.29	Negligible
Willitoft	4.86	1.49	2.23	1.00	Negligible
Receptor Grid Max	4.86	1.68	2.99	2.79	Negligible
EAL	**750**				

Table 1.20 - Modelled Maximum Operational Impacts at Human Receptors – Annual and Hourly Mean Aldehyde Concentrations (Worst Case Emissions Profile)

Receptor	Aldehyde Concentration (µg/m^3) (Annual & Hourly Mean)		
	Max Proposed Scheme PC (1)		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Hourly	
Foreman's Cottage	0.000	0.20	Negligible
East Yorkshire Carav	0.000	0.08	Negligible
Drax S&C Club	0.000	0.12	Negligible
Wren Hall	0.000	0.16	Negligible
3 Pear Tree Ave	0.000	0.43	Negligible
Crange Cottages	0.000	0.30	Negligible
Drax Abbey Farm	0.000	0.25	Negligible
Read School	0.000	0.41	Negligible
Old Lodge	0.000	0.27	Negligible

Receptor	Aldehyde Concentration (µg/m^3) (Annual & Hourly Mean)		
	Max Proposed Scheme PC [(1)]		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Hourly	
Selby_AQMA	0.001	0.74	Negligible
Goole	0.002	0.76	Negligible
Hemingbrough	0.002	1.05	Negligible
Rawcliffe	0.001	0.99	Negligible
Snaith	0.001	0.92	Negligible
Hensall	0.001	0.77	Negligible
Cliffe	0.001	1.07	Negligible
Breighton	0.003	0.92	Negligible
Wressle	0.003	0.75	Negligible
Eastrington	0.004	0.74	Negligible
Ellerton	0.002	0.67	Negligible
Fogathorpe	0.004	0.70	Negligible
Barlby	0.001	0.92	Negligible
Riccall	0.001	0.75	Negligible
Thorpe Willoughby	0.001	0.87	Negligible
Kellingley	0.001	0.69	Negligible
Moorends	0.001	0.81	Negligible
Thorne	0.001	0.74	Negligible
SwineFleet	0.002	0.71	Negligible
Balne	0.002	0.73	Negligible
Whitley	0.002	0.86	Negligible
Barlow	0.000	0.39	Negligible

Receptor	Aldehyde Concentration (µg/m^3) (Annual & Hourly Mean)		
	Max Proposed Scheme PC [(1)]		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Hourly	
Long Drax	0.001	0.54	Negligible
Drax	0.000	0.40	Negligible
Newland	0.000	0.83	Negligible
Carlton	0.000	0.82	Negligible
Camblesforth	0.000	0.44	Negligible
Burn	0.001	0.82	Negligible
Temple Hirst	0.001	0.98	Negligible
Cawood	0.002	0.74	Negligible
Biggin	0.001	0.68	Negligible
Howden	0.003	0.84	Negligible
Brind	0.003	0.85	Negligible
South Duffield	0.002	0.84	Negligible
Highfield	0.003	0.88	Negligible
Willitoft	0.004	0.78	Negligible
Receptor Grid Max	0.004	1.20	Negligible
EAL	**5**	**87**	

Notes:

[(1)] Aldehyde emissions associated with operation of BECCS units only.

Table 1.21 - Modelled Maximum Operational Impacts at Human Receptors – Amines Concentrations (Worst Case Emissions Profile)

Receptor	Amines Concentration (µg/m^3) (Hourly & Daily mean) – Results presented to 3 d.p.		
	Max Proposed Scheme PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Hourly	Daily	
Foreman's Cottage	0.050	0.003	Negligible
East Yorkshire Carav	0.020	0.002	Negligible
Drax S&C Club	0.031	0.001	Negligible
Wren Hall	0.045	0.004	Negligible
3 Pear Tree Ave	0.116	0.016	Negligible
Crange Cottages	0.075	0.005	Negligible
Drax Abbey Farm	0.055	0.004	Negligible
Read School	0.103	0.013	Negligible
Old Lodge	0.075	0.010	Negligible
Selby_AQMA	0.166	0.027	Negligible
Goole	0.156	0.023	Negligible
Hemingbrough	0.224	0.045	Negligible
Rawcliffe	0.201	0.034	Negligible
Snaith	0.195	0.048	Negligible
Hensall	0.213	0.029	Negligible
Cliffe	0.218	0.036	Negligible
Breighton	0.272	0.038	Negligible
Wressle	0.216	0.038	Negligible
Eastrington	0.170	0.026	Negligible
Ellerton	0.172	0.021	Negligible
Fogathorpe	0.160	0.025	Negligible
Barlby	0.270	0.030	Negligible

Receptor	Amines Concentration (µg/m^3) (Hourly & Daily mean) – Results presented to 3 d.p.		
	Max Proposed Scheme PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Hourly	Daily	
Riccall	0.188	0.023	Negligible
Thorpe Willoughby	0.217	0.020	Negligible
Kellingley	0.160	0.035	Negligible
Moorends	0.179	0.022	Negligible
Thorne	0.130	0.016	Negligible
SwineFleet	0.174	0.019	Negligible
Balne	0.178	0.020	Negligible
Whitley	0.183	0.018	Negligible
Barlow	0.092	0.012	Negligible
Long Drax	0.149	0.029	Negligible
Drax	0.107	0.014	Negligible
Newland	0.172	0.023	Negligible
Carlton	0.177	0.040	Negligible
Camblesforth	0.114	0.009	Negligible
Burn	0.241	0.024	Negligible
Temple Hirst	0.178	0.043	Negligible
Cawood	0.133	0.017	Negligible
Biggin	0.173	0.015	Negligible
Howden	0.240	0.033	Negligible
Brind	0.224	0.031	Negligible
South Duffield	0.215	0.037	Negligible
Highfield	0.198	0.033	Negligible

Receptor	Amines Concentration (µg/m^3) (Hourly & Daily mean) – Results presented to 3 d.p.		
	Max Proposed Scheme PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Hourly	Daily	
Willitoft	0.215	0.030	Negligible
Receptor Grid Max	0.287	0.070	Negligible
EAL	**53**	**13**	

Table 1.22 - Modelled Maximum Operational Impacts at Human Receptors – Annual Mean Nitrosamine (as NDMA) Concentrations (Worst Case Emissions Profile)

Receptor	NDMA Concentration (ng/m^3)				
	Max Proposed Scheme PC			Max PC Impact	IAQM Impact Descriptor
	Direct (1)	Indirect (2)	Total (3)		
Foreman's Cottage	0.0000	0.000	0.000	0.000	Negligible
East Yorkshire Carav	0.0000	0.000	0.000	0.000	Negligible
Drax S&C Club	0.0000	0.000	0.000	0.000	Negligible
Wren Hall	0.0000	0.000	0.000	0.000	Negligible
3 Pear Tree Ave	0.0000	0.000	0.000	0.000	Negligible
Crange Cottages	0.0000	0.000	0.000	0.000	Negligible
Drax Abbey Farm	0.0000	0.000	0.000	0.000	Negligible
Read School	0.0000	0.000	0.000	0.000	Negligible
Old Lodge	0.0000	0.000	0.000	0.000	Negligible
Selby_AQMA	0.0001	0.003	0.003	0.003	Negligible
Goole	0.0001	0.005	0.005	0.005	Negligible
Hemingbrough	0.0001	0.001	0.001	0.001	Negligible
Rawcliffe	0.0001	0.001	0.001	0.001	Negligible
Snaith	0.0001	0.002	0.002	0.002	Negligible
Hensall	0.0001	0.003	0.004	0.004	Negligible

Receptor	NDMA Concentration (ng/m^3)				
	Max Proposed Scheme PC			Max PC Impact	IAQM Impact Descriptor
	Direct [1]	Indirect [2]	Total [3]		
Cliffe	0.0001	0.001	0.001	0.001	Negligible
Breighton	0.0001	0.005	0.005	0.005	Negligible
Wressle	0.0002	0.004	0.004	0.004	Negligible
Eastrington	0.0001	0.014	0.014	0.014	Slight adverse (6.9% of EAL)
Ellerton	0.0001	0.006	0.006	0.006	Negligible
Fogathorpe	0.0001	0.011	0.011	0.011	Negligible
Barlby	0.0000	0.002	0.002	0.002	Negligible
Riccall	0.0000	0.003	0.003	0.003	Negligible
Thorpe Willoughby	0.0000	0.003	0.003	0.003	Negligible
Kellingley	0.0001	0.006	0.006	0.006	Negligible
Moorends	0.0000	0.004	0.004	0.004	Negligible
Thorne	0.0000	0.004	0.004	0.004	Negligible
SwineFleet	0.0001	0.007	0.007	0.007	Negligible
Balne	0.0001	0.006	0.006	0.006	Negligible
Whitley	0.0001	0.006	0.006	0.006	Negligible
Barlow	0.0000	0.000	0.000	0.000	Negligible
Long Drax	0.0000	0.000	0.000	0.000	Negligible
Drax	0.0000	0.000	0.000	0.000	Negligible
Newland	0.0000	0.001	0.001	0.001	Negligible
Carlton	0.0000	0.001	0.001	0.001	Negligible
Camblesforth	0.0000	0.000	0.000	0.000	Negligible
Burn	0.0000	0.002	0.002	0.002	Negligible

Receptor	NDMA Concentration (ng/m^3)				
	Max Proposed Scheme PC			Max PC Impact	IAQM Impact Descriptor
	Direct [1]	Indirect [2]	Total [3]		
Temple Hirst	0.0001	0.002	0.002	0.002	Negligible
Cawood	0.0001	0.008	0.008	0.008	Negligible
Biggin	0.0000	0.006	0.006	0.006	Negligible
Howden	0.0001	0.009	0.009	0.009	Negligible
Brind	0.0002	0.009	0.009	0.009	Negligible
South Duffield	0.0001	0.002	0.002	0.002	Negligible
Highfield	0.0001	0.008	0.008	0.008	Negligible
Willitoft	0.0002	0.009	0.009	0.009	Negligible
Receptor Grid Max	0.0002	0.015	0.016	0.016	Slight adverse (7.8% of EAL)
EAL	**0.2**				

[1] Based on direct mass emissions of 'Nitrosamine 1' and 'Nitrosamine 2' from Main Stack only. PC to ground level is insignificant (<0.1% of the EAL for NDMA). There is no requirement to propose an annual average ELV for direct nitrosamine emissions.

[2] Accounts for application of ADMS Amine Chemistry Module and relates to indirect formation of nitrosamines and nitramines through atmospheric reactions.

[3] Equal to sum of modelled direct and indirect nitrosamine + nitramine concentrations.

SENSITIVITY TESTING: AMINE CHEMISTRY

1.2.1. Results pertaining to the amine chemistry sensitivity testing are presented in **Tables 1.23** (MEA) and **1.24** (NDMA). The grid receptor reporting the maximum modelled process contributions are presented, based on the results of modelling completed for low and high range values relating to the atmospheric reaction kinetics detailed in **Table 1.43** for the proxy compounds.

1.2.2. As stated in **Table 1.43,** amine sensitivity modelling was based on initial design mass emission data that is no longer representative of the proposed BECCS plant. However, the initial design emissions represent higher mass emissions of the amine compounds relative to the proposed permit ELVs used in the core scenario modelling. As such, the initial design emission rates were used and also applied to the proprietary solvent (confidential) data as part of the sensitivity testing to allow a direct comparison with the proxy compound modelling results, whilst also providing a conservative assessment of amine mass emissions from the Main Stack. The maximum modelled PCs for the proprietary amine compounds are also presented in the below tables alongside the proxy compound results.

1.2.3. Therefore, the results of the amine sensitivity modelling are self-contained and should not be compared to the core scenario modelling results.

1.2.4. The maximum hourly (0.10 µg/m^3) and daily mean (0.02 µg/m^3) MEA concentrations from the sensitivity tests were modelled to be equivalent to the concentrations reported for the proprietary amine solvent (0.10 µg/m^3 and 0.02 µg/m^3 respectively), when modelling an identical mass emission rate for amines in all tests.

1.2.5. The maximum annual mean NDMA concentrations reported from the sensitivity tests (0.03 ng/m^3) was modelled to be 67% higher than the equivalent concentration reported for the proprietary amine solvent (0.02 ng/m^3). However, the maximum concentration from the sensitivity tests still remains well below the annual mean EAL for NDMA, equating to 14% of the EAL.

1.2.6. Therefore, the results of the sensitivity testing do not affect the outcome of the core assessment results, such that emissions in the With PCC scenario would still not result in significant air quality effects at human receptors in terms of amine (MEA) and nitrosamine (NDMA) concentrations.

Table 1 - Modelled Minimum and Maximum Operational Impacts at Human Receptors – Amines (as MEA) Concentrations (amine sensitivity testing)

Receptor	MEA Concentration (µg/m^3) (Hourly & Daily mean)					
	Maximum PC Impact (Proxy Data; Lower Range Reaction Rate Values)		Maximum PC Impact (Proxy Data; Upper Range Reaction Rate Values)		Maximum PC Impact (Proprietary Solvent)	
	Hourly	Daily	Hourly	Daily	Hourly	Daily
Grid Max	0.101	0.0215	0.101	0.0214	0.103	0.0218
EAL	**400**	**100**	**400**	**100**	**400**	**100**

Table 2 – Modelled Minimum and Maximum Operational Impacts at Human Receptors – Annual Mean Nitrosamine (as NDMA) Concentrations (amine sensitivity testing)

Receptor	NDMA Concentration (ng/m^3) – Results presented to 4 d.p.		
	Maximum PC Impact (Proxy Data; Lower Range Reaction Rate Values)	Maximum PC Impact (Proxy Data; Upper Range Reaction Rate Values)	Maximum PC Impact (Proprietary Solvent)
Grid Max	0.0005	0.0282	0.0169
EAL	**0.2**		

1.3. IMPACTS ON HUMAN RECEPTORS

Equivalent results tables are presented below for the core model scenarios and sensitivity testing scenarios (worst case emissions profile), inclusive of measures outlined in as updated by 2.10 of the supplement information submitted for V22

CORE MODEL SCENARIOS

Results pertaining to the core model scenarios, are presented in **Tables 1.25 to 1.33**.

Table 1.23 - Modelled Maximum Operational Impacts at Human Receptors – Annual Mean NO_2 Concentrations

Receptor	Annual mean NO_2 Concentration ($\mu g/m^3$)					
	Max Baseline PC	Max Baseline PEC	Max Proposed Scheme PC	Max Proposed Scheme PEC	Max PC Impact	IAQM Impact Descriptor
Foreman's Cottage	0.00	6.67	0.00	6.67	0.00	Negligible
East Yorkshire Carav	0.00	9.83	0.00	9.83	0.00	Negligible
Drax S&C Club	0.00	9.83	0.00	9.83	0.00	Negligible
Wren Hall	0.00	7.01	0.00	7.01	0.00	Negligible
3 Pear Tree Ave	0.00	6.78	0.01	6.79	0.01	Negligible
Crange Cottages	0.00	7.44	0.00	7.44	0.00	Negligible
Drax Abbey Farm	0.00	6.78	0.00	6.78	0.00	Negligible
Read School	0.00	7.27	0.00	7.27	0.00	Negligible
Old Lodge	0.00	6.78	0.01	6.79	0.01	Negligible
Selby_AQMA	0.01	46.51	0.04	46.54	0.03	Negligible
Goole	0.02	28.02	0.07	28.07	0.05	Negligible
Hemingbrough	0.02	6.96	0.06	7.00	0.05	Negligible
Rawcliffe	0.01	8.65	0.04	8.68	0.03	Negligible
Snaith	0.01	8.40	0.04	8.44	0.03	Negligible
Hensall	0.02	8.53	0.05	8.56	0.03	Negligible
Cliffe	0.01	6.97	0.04	7.00	0.03	Negligible
Breighton	0.04	6.55	0.12	6.63	0.08	Negligible
Wressle	0.04	6.77	0.12	6.85	0.08	Negligible
Eastrington	0.05	7.78	0.13	7.85	0.08	Negligible
Ellerton	0.03	5.99	0.08	6.04	0.05	Negligible
Fogathorpe	0.06	6.70	0.14	6.79	0.09	Negligible
Barlby	0.01	10.19	0.04	10.22	0.03	Negligible

Receptor	Annual mean NO_2 Concentration ($\mu g/m^3$)					
	Max Baseline PC	Max Baseline PEC	Max Proposed Scheme PC	Max Proposed Scheme PEC	Max PC Impact	IAQM Impact Descriptor
Riccall	0.02	6.73	0.04	6.76	0.03	Negligible
Thorpe Willoughby	0.01	7.78	0.03	7.80	0.02	Negligible
Kellingley	0.02	8.43	0.05	8.46	0.03	Negligible
Moorends	0.02	9.31	0.05	9.34	0.03	Negligible
Thorne	0.01	38.01	0.03	38.03	0.02	Negligible
SwineFleet	0.02	7.39	0.07	7.43	0.04	Negligible
Balne	0.02	7.75	0.06	7.79	0.04	Negligible
Whitley	0.02	8.90	0.05	8.92	0.03	Negligible
Barlow	0.00	7.07	0.01	7.07	0.01	Negligible
Long Drax	0.01	6.87	0.03	6.89	0.02	Negligible
Drax	0.00	7.27	0.01	7.27	0.00	Negligible
Newland	0.00	7.53	0.02	7.55	0.02	Negligible
Carlton	0.00	8.14	0.02	8.16	0.02	Negligible
Camblesforth	0.00	7.40	0.00	7.40	0.00	Negligible
Burn	0.01	7.77	0.03	7.79	0.02	Negligible
Temple Hirst	0.02	8.30	0.05	8.34	0.04	Negligible
Cawood	0.02	7.34	0.06	7.38	0.04	Negligible
Biggin	0.02	7.78	0.04	7.81	0.03	Negligible
Howden	0.04	9.14	0.12	9.23	0.09	Negligible
Brind	0.05	6.63	0.13	6.71	0.09	Negligible
South Duffield	0.02	6.35	0.07	6.40	0.05	Negligible
Highfield	0.05	6.38	0.12	6.45	0.08	Negligible
Willitoft	0.05	6.32	0.14	6.41	0.09	Negligible

Receptor	Annual mean NO_2 Concentration ($\mu g/m^3$)					
	Max Baseline PC	Max Baseline PEC	Max Proposed Scheme PC	Max Proposed Scheme PEC	Max PC Impact	IAQM Impact Descriptor
Receptor Grid Max	0.06	13.59	0.15	13.68	0.10	Negligible
AQ Objective	**40**					

Table 1.24 - Modelled Maximum Operational Impacts at Human Receptors – Hourly Mean NO_2 Concentrations

Receptor	Hourly mean NO_2 Concentration ($\mu g/m^3$) (Based on 99.79th %ile of hourly values)					
	Max Baseline PC	Max Baseline PEC	Max Proposed Scheme PC	Max Proposed Scheme PEC	Max PC Impact	IAQM Impact Descriptor
Foreman's Cottage	0.11	13.45	0.25	13.59	0.18	Negligible
East Yorkshire Carav	0.02	19.68	0.08	19.74	0.06	Negligible
Drax S&C Club	0.01	19.67	0.06	19.71	0.05	Negligible
Wren Hall	0.08	14.10	0.17	14.19	0.11	Negligible
3 Pear Tree Ave	0.30	13.86	0.97	14.53	0.68	Negligible
Crange Cottages	0.08	14.95	0.17	15.04	0.13	Negligible
Drax Abbey Farm	0.08	13.64	0.24	13.81	0.17	Negligible
Read School	0.18	14.72	0.47	15.01	0.36	Negligible
Old Lodge	0.20	13.77	0.64	14.20	0.46	Negligible
Selby_AQMA	1.72	94.72	3.24	96.24	1.78	Negligible
Goole	2.52	58.52	3.57	59.57	1.56	Negligible
Hemingbrough	2.72	16.60	3.46	17.34	1.13	Negligible
Rawcliffe	1.54	18.83	3.29	20.58	2.11	Negligible
Snaith	1.47	18.26	3.46	20.25	2.04	Negligible
Hensall	2.55	19.58	3.39	20.42	1.45	Negligible
Cliffe	2.37	16.28	3.18	17.09	1.44	Negligible
Breighton	3.07	16.09	3.93	16.95	0.94	Negligible

Receptor	Hourly mean NO_2 Concentration ($\mu g/m^3$) (Based on 99.79th %ile of hourly values)					
	Max Baseline PC	Max Baseline PEC	Max Proposed Scheme PC	Max Proposed Scheme PEC	Max PC Impact	IAQM Impact Descriptor
Wressle	3.25	16.72	3.90	17.37	1.01	Negligible
Eastrington	3.39	18.84	4.04	19.49	0.68	Negligible
Ellerton	2.84	14.75	3.44	15.35	0.67	Negligible
Fogathorpe	3.63	16.93	4.27	17.57	0.92	Negligible
Barlby	2.29	22.65	2.93	23.29	1.49	Negligible
Riccall	2.40	15.83	2.85	16.28	1.01	Negligible
Thorpe Willoughby	1.59	17.14	3.15	18.70	1.84	Negligible
Kellingley	2.89	19.71	3.30	20.12	0.56	Negligible
Moorends	2.69	21.28	3.38	21.96	0.90	Negligible
Thorne	2.56	78.56	3.12	79.12	0.72	Negligible
SwineFleet	3.02	17.74	3.88	18.61	0.91	Negligible
Balne	2.79	18.25	3.71	19.18	0.92	Negligible
Whitley	2.72	20.47	3.50	21.25	0.92	Negligible
Barlow	0.20	14.33	0.98	15.12	0.78	Negligible
Long Drax	0.78	14.50	1.92	15.63	1.40	Negligible
Drax	0.21	14.75	0.56	15.10	0.43	Negligible
Newland	0.65	15.71	2.33	17.39	1.72	Negligible
Carlton	0.94	17.21	2.44	18.72	1.70	Negligible
Camblesforth	0.14	14.94	0.44	15.24	0.37	Negligible
Burn	1.24	16.77	2.77	18.30	1.62	Negligible
Temple Hirst	2.77	19.34	3.53	20.10	1.84	Negligible
Cawood	3.06	17.70	3.73	18.37	0.73	Negligible
Biggin	2.52	18.04	3.25	18.78	0.74	Negligible

Receptor	Hourly mean NO_2 Concentration ($\mu g/m^3$) (Based on 99.79th %ile of hourly values)					
	Max Baseline PC	Max Baseline PEC	Max Proposed Scheme PC	Max Proposed Scheme PEC	Max PC Impact	IAQM Impact Descriptor
Howden	3.09	21.30	3.86	22.07	1.05	Negligible
Brind	3.04	16.21	4.11	17.28	1.12	Negligible
South Duffield	3.33	15.98	3.88	16.53	0.68	Negligible
Highfield	2.93	15.59	3.80	16.46	0.87	Negligible
Willitoft	3.41	15.94	4.11	16.64	0.87	Negligible
Receptor Grid Max	4.05	31.11	4.58	31.64	2.55	Negligible
AQ Objective	**200**					

Table 1.25 - Modelled Maximum Operational Impacts at Human Receptors – SO_2 Concentrations

Receptor	SO_2 Concentration ($\mu g/m^3$) (15-min / Hourly / Daily mean)										
	Background	Max Baseline PC			Max Proposed Scheme PC			Max PC Impact			IAQM Impact Descriptor (applicable to all averaging periods)
		15-min	Hourly	Daily	15-min	Hourly	Daily	15-min	Hourly	Daily	
Foreman's Cottage	20.48	0.59	0.27	0.06	1.07	0.50	0.14	0.61	0.32	0.09	Negligible
East Yorkshire Carav	20.48	0.21	0.05	0.02	0.60	0.14	0.05	0.53	0.08	0.04	Negligible
Drax S&C Club	20.48	0.16	0.02	0.02	0.55	0.08	0.04	0.39	0.06	0.03	Negligible
Wren Hall	20.48	0.65	0.16	0.06	1.21	0.34	0.11	0.56	0.21	0.05	Negligible
3 Pear Tree Ave	20.48	1.96	0.77	0.18	4.25	1.86	0.40	2.29	1.11	0.28	Negligible
Crange Cottages	20.48	0.54	0.19	0.06	1.07	0.30	0.11	0.85	0.24	0.09	Negligible
Drax Abbey Farm	20.48	0.50	0.17	0.05	1.26	0.48	0.10	0.76	0.34	0.06	Negligible
Read School	20.48	1.18	0.38	0.09	2.53	0.87	0.19	1.59	0.56	0.11	Negligible
Old Lodge	20.48	1.33	0.51	0.11	3.22	1.32	0.29	2.00	0.92	0.19	Negligible
Selby_AQMA	20.48	9.95	4.40	1.08	13.54	6.98	1.59	5.51	3.03	0.56	Negligible
Goole	20.48	15.49	6.95	1.72	16.48	7.93	1.69	5.44	2.10	0.40	Negligible

Receptor	SO_2 Concentration (µg/m^3) (15-min / Hourly / Daily mean)										
	Background	Max Baseline PC			Max Proposed Scheme PC			Max PC Impact			IAQM Impact Descriptor (applicable to all averaging periods)
		15-min	Hourly	Daily	15-min	Hourly	Daily	15-min	Hourly	Daily	
Hemingbrough	20.48	15.41	7.07	2.17	16.48	7.95	2.53	1.80	1.54	0.54	Negligible
Rawcliffe	20.48	9.55	3.33	0.82	14.04	6.87	1.54	8.21	3.84	0.78	Negligible
Snaith	20.48	9.92	3.81	1.01	14.18	7.11	1.88	5.34	3.82	0.91	Negligible
Hensall	20.48	14.42	6.50	1.33	16.18	7.92	1.52	5.13	2.73	0.49	Negligible
Cliffe	20.48	15.16	5.80	1.82	16.20	6.86	2.05	2.30	2.54	0.90	Negligible
Breighton	20.48	15.90	8.49	2.18	17.49	8.90	2.13	2.75	0.63	0.19	Negligible
Wressle	20.48	17.82	9.27	2.57	17.66	9.94	2.91	2.07	1.35	0.35	Negligible
Eastrington	20.48	19.65	9.53	2.14	21.55	10.14	2.49	1.90	0.72	0.35	Negligible
Ellerton	20.48	17.52	7.68	1.89	19.10	8.15	1.96	3.97	0.77	0.16	Negligible
Fogathorpe	20.48	25.47	9.93	2.02	24.93	9.85	2.10	3.29	1.13	0.11	Negligible
Barlby	20.48	14.81	5.53	1.35	15.08	6.36	1.40	7.32	2.74	0.52	Negligible
Riccall	20.48	14.06	6.46	1.26	16.11	6.88	1.40	3.74	1.21	0.28	Negligible
Thorpe Willoughby	20.48	10.50	4.15	1.19	16.03	5.72	1.31	6.12	3.20	0.26	Negligible
Kellingley	20.48	17.68	7.27	2.28	19.42	7.93	2.18	3.45	0.66	0.19	Negligible
Moorends	20.48	16.88	7.10	1.28	18.87	7.51	1.52	1.98	0.99	0.27	Negligible
Thorne	20.48	15.13	6.19	1.10	16.39	6.62	1.14	2.51	0.61	0.13	Negligible
SwineFleet	20.48	18.13	8.14	1.31	19.65	9.25	1.58	2.45	1.10	0.28	Negligible
Balne	20.48	18.83	7.83	1.67	20.55	8.37	1.77	2.04	1.34	0.18	Negligible
Whitley	20.48	15.29	7.62	1.46	16.68	8.15	1.67	1.58	1.12	0.21	Negligible
Barlow	20.48	1.59	0.40	0.15	4.59	1.87	0.47	3.25	1.47	0.32	Negligible
Long Drax	20.48	4.57	2.06	0.48	8.01	4.12	0.89	4.38	2.58	0.51	Negligible
Drax	20.48	1.34	0.49	0.10	3.31	1.09	0.35	1.97	0.80	0.27	Negligible

Receptor	SO_2 Concentration (µg/m^3) (15-min / Hourly / Daily mean)										
	Background	Max Baseline PC			Max Proposed Scheme PC			Max PC Impact			IAQM Impact Descriptor (applicable to all averaging periods)
		15-min	Hourly	Daily	15-min	Hourly	Daily	15-min	Hourly	Daily	
Newland	20.48	5.14	1.66	0.43	11.51	5.12	1.02	7.89	3.51	0.60	Negligible
Carlton	20.48	8.28	2.03	0.57	10.97	5.33	1.28	6.23	3.75	0.77	Negligible
Camblesforth	20.48	0.95	0.30	0.11	2.31	0.92	0.25	1.67	0.66	0.14	Negligible
Burn	20.48	9.52	3.30	1.00	12.16	5.99	1.31	5.21	3.32	0.44	Negligible
Temple Hirst	20.48	16.58	6.93	2.36	17.21	7.99	2.62	5.82	3.58	0.76	Negligible
Cawood	20.48	16.90	7.83	1.61	18.27	8.70	1.93	2.00	0.87	0.32	Negligible
Biggin	20.48	17.95	6.76	1.50	18.66	7.20	1.49	2.84	1.25	0.09	Negligible
Howden	20.48	16.79	8.82	1.75	18.23	8.98	2.12	3.36	1.30	0.38	Negligible
Brind	20.48	18.55	8.44	1.97	23.25	9.22	2.05	4.71	1.15	0.28	Negligible
South Duffield	20.48	17.98	9.41	2.83	17.63	9.55	2.81	0.12	1.21	0.10	Negligible
Highfield	20.48	15.91	8.16	1.74	18.20	8.84	1.76	2.29	0.74	0.11	Negligible
Willitoft	20.48	18.64	9.29	2.04	21.06	9.25	2.19	3.32	0.84	0.23	Negligible
Receptor Grid Max	20.48	26.81	10.96	3.20	26.84	11.25	3.48	10.03	5.36	1.33	Negligible
AQ Objective		**266**	**350**	**125**	**266**	**350**	**125**	**266**	**350**	**125**	

Table 1.26 - Modelled Maximum Operational Impacts at Human Receptors – Dust (as PM_{10}) Concentrations

Receptor	PM_{10} Concentration (µg/m^3) (Annual & Daily mean)								
	Background		Max Baseline PC		Max Proposed Scheme PC		Max PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	
Foreman's Cottage	12.14	24.28	0.000	0.000	0.000	0.001	0.000	0.001	Negligible
East Yorkshire Carav	12.49	24.97	0.000	0.000	0.000	0.000	0.000	0.000	Negligible
Drax S&C Club	12.49	24.97	0.000	0.000	0.000	0.000	0.000	0.000	Negligible

Receptor	PM_{10} Concentration (µg/m^3) (Annual & Daily mean)								
	Background		Max Baseline PC		Max Proposed Scheme PC		Max PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	
Wren Hall	13.57	27.14	0.000	0.000	0.000	0.001	0.000	0.000	Negligible
3 Pear Tree Ave	14.40	28.79	0.000	0.002	0.001	0.006	0.001	0.004	Negligible
Crange Cottages	12.26	24.52	0.000	0.000	0.000	0.000	0.000	0.000	Negligible
Drax Abbey Farm	14.40	28.79	0.000	0.000	0.000	0.001	0.000	0.001	Negligible
Read School	12.50	25.00	0.000	0.000	0.000	0.002	0.000	0.002	Negligible
Old Lodge	14.40	28.79	0.000	0.001	0.001	0.004	0.000	0.003	Negligible
Selby_AQMA	13.50	26.99	0.001	0.004	0.003	0.014	0.002	0.010	Negligible
Goole	13.30	26.60	0.002	0.021	0.005	0.039	0.003	0.017	Negligible
Hemingbrough	13.22	26.45	0.002	0.014	0.005	0.029	0.003	0.017	Negligible
Rawcliffe	14.51	29.02	0.001	0.003	0.003	0.013	0.002	0.010	Negligible
Snaith	13.45	26.90	0.001	0.001	0.003	0.006	0.002	0.005	Negligible
Hensall	13.54	27.08	0.001	0.013	0.004	0.026	0.003	0.013	Negligible
Cliffe	13.99	27.99	0.001	0.009	0.003	0.019	0.002	0.010	Negligible
Breighton	13.44	26.89	0.004	0.048	0.010	0.057	0.006	0.016	Negligible
Wressle	14.15	28.30	0.003	0.038	0.010	0.060	0.006	0.023	Negligible
Eastrington	14.43	28.85	0.004	0.064	0.010	0.069	0.005	0.007	Negligible
Ellerton	13.74	27.48	0.003	0.045	0.006	0.050	0.003	0.007	Negligible
Fogathorpe	13.81	27.62	0.005	0.067	0.011	0.069	0.006	0.006	Negligible
Barlby	14.41	28.82	0.001	0.006	0.003	0.017	0.002	0.012	Negligible
Riccall	13.98	27.97	0.001	0.015	0.003	0.021	0.002	0.011	Negligible
Thorpe Willoughby	13.93	27.87	0.001	0.003	0.002	0.007	0.001	0.005	Negligible
Kellingley	14.18	28.36	0.002	0.012	0.004	0.012	0.002	0.005	Negligible

Receptor	PM_{10} Concentration (µg/m^3) (Annual & Daily mean)								
	Background		Max Baseline PC		Max Proposed Scheme PC		Max PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	
Moorends	13.45	26.89	0.001	0.012	0.003	0.015	0.002	0.007	Negligible
Thorne	13.27	26.53	0.001	0.008	0.003	0.012	0.001	0.004	Negligible
SwineFleet	14.18	28.37	0.002	0.033	0.005	0.039	0.003	0.009	Negligible
Balne	14.77	29.54	0.002	0.020	0.004	0.028	0.002	0.009	Negligible
Whitley	13.83	27.66	0.002	0.025	0.005	0.029	0.003	0.006	Negligible
Barlow	13.14	26.29	0.000	0.000	0.000	0.000	0.000	0.000	Negligible
Long Drax	13.92	27.84	0.001	0.006	0.002	0.018	0.002	0.012	Negligible
Drax	12.50	25.00	0.000	0.000	0.000	0.002	0.000	0.002	Negligible
Newland	13.98	27.95	0.000	0.002	0.002	0.008	0.001	0.007	Negligible
Carlton	13.95	27.89	0.000	0.000	0.002	0.003	0.001	0.002	Negligible
Camblesforth	13.60	27.20	0.000	0.000	0.000	0.001	0.000	0.000	Negligible
Burn	14.08	28.17	0.001	0.001	0.002	0.006	0.001	0.005	Negligible
Temple Hirst	14.31	28.61	0.001	0.005	0.004	0.017	0.003	0.013	Negligible
Cawood	13.24	26.48	0.002	0.026	0.004	0.027	0.002	0.002	Negligible
Biggin	12.93	25.87	0.001	0.007	0.003	0.011	0.002	0.003	Negligible
Howden	14.93	29.86	0.003	0.048	0.009	0.058	0.006	0.017	Negligible
Brind	14.37	28.73	0.004	0.061	0.010	0.068	0.006	0.014	Negligible
South Duffield	14.55	29.11	0.002	0.022	0.005	0.033	0.003	0.017	Negligible
Highfield	13.98	27.95	0.004	0.056	0.010	0.063	0.005	0.008	Negligible
Willitoft	14.12	28.23	0.005	0.059	0.011	0.065	0.006	0.012	Negligible
Receptor Grid Max	17.56	35.11	0.006	0.079	0.011	0.082	0.006	0.035	Negligible
AQ Objective	**40**	**50**	**40**	**50**	**40**	**50**	**40**	**50**	

Table 1.27 - Modelled Maximum Operational Impacts at Human Receptors – NH_3 Concentrations

Receptor	NH_3 Concentration (µg/m^3) (Annual & Hourly mean)								
	Background		Max Baseline PC		Max Proposed Scheme PC		Max PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	
Foreman's Cottage	1.6	3.2	0.000	0.051	0.000	0.126	0.000	0.079	Negligible
East Yorkshire Carav	1.6	3.2	0.000	0.060	0.000	0.141	0.000	0.086	Negligible
Drax S&C Club	1.6	3.2	0.000	0.111	0.000	0.072	0.000	0.034	Negligible
Wren Hall	1.6	3.2	0.000	0.084	0.000	0.109	0.000	0.078	Negligible
3 Pear Tree Ave	1.6	3.2	0.000	0.171	0.001	0.295	0.001	0.138	Negligible
Crange Cottages	1.6	3.2	0.000	0.119	0.000	0.169	0.000	0.144	Negligible
Drax Abbey Farm	1.6	3.2	0.000	0.046	0.000	0.133	0.000	0.096	Negligible
Read School	1.6	3.2	0.000	0.098	0.000	0.285	0.000	0.190	Negligible
Old Lodge	1.6	3.2	0.000	0.119	0.001	0.196	0.000	0.116	Negligible
Selby_AQMA	1.6	3.2	0.001	0.542	0.003	0.679	0.002	0.402	Negligible
Goole	1.6	3.2	0.002	0.810	0.005	0.795	0.003	0.130	Negligible
Hemingbrough	1.6	3.2	0.002	0.741	0.005	0.737	0.003	0.037	Negligible
Rawcliffe	1.6	3.2	0.001	0.607	0.003	0.700	0.002	0.302	Negligible
Snaith	1.6	3.2	0.001	0.580	0.003	0.626	0.002	0.115	Negligible
Hensall	1.6	3.2	0.001	0.789	0.004	0.816	0.003	0.205	Negligible
Cliffe	1.6	3.2	0.001	0.687	0.003	0.677	0.002	0.133	Negligible
Breighton	1.6	3.2	0.004	1.203	0.010	1.165	0.006	0.322	Negligible
Wressle	1.6	3.2	0.003	0.798	0.010	0.806	0.006	0.039	Negligible
Eastrington	1.6	3.2	0.004	1.034	0.010	0.960	0.005	0.096	Negligible
Ellerton	1.6	3.2	0.003	0.995	0.006	0.961	0.003	0.066	Negligible
Fogathorpe	1.6	3.2	0.005	1.017	0.011	0.932	0.006	-0.035	Negligible

Receptor	NH_3 Concentration (µg/m^3) (Annual & Hourly mean)								
	Background		Max Baseline PC		Max Proposed Scheme PC		Max PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	
Barlby	1.6	3.2	0.001	0.943	0.003	0.985	0.002	0.269	Negligible
Riccall	1.6	3.2	0.001	1.144	0.003	1.104	0.002	-0.038	Negligible
Thorpe Willoughby	1.6	3.2	0.001	1.165	0.002	1.117	0.001	0.148	Negligible
Kellingley	1.6	3.2	0.002	0.954	0.004	0.919	0.002	0.104	Negligible
Moorends	1.6	3.2	0.001	0.811	0.003	0.760	0.002	0.208	Negligible
Thorne	1.6	3.2	0.001	0.756	0.003	0.801	0.001	0.159	Negligible
SwineFleet	1.6	3.2	0.002	1.023	0.005	1.004	0.003	0.185	Negligible
Balne	1.6	3.2	0.002	1.026	0.004	0.996	0.002	0.016	Negligible
Whitley	1.6	3.2	0.002	0.980	0.005	1.013	0.003	0.079	Negligible
Barlow	1.6	3.2	0.000	0.151	0.000	0.243	0.000	0.189	Negligible
Long Drax	1.6	3.2	0.001	0.267	0.002	0.428	0.002	0.193	Negligible
Drax	1.6	3.2	0.000	0.210	0.000	0.273	0.000	0.116	Negligible
Newland	1.6	3.2	0.000	0.632	0.002	0.678	0.001	0.344	Negligible
Carlton	1.6	3.2	0.000	0.628	0.002	0.682	0.001	0.224	Negligible
Camblesforth	1.6	3.2	0.000	0.156	0.000	0.304	0.000	0.204	Negligible
Burn	1.6	3.2	0.001	0.594	0.002	0.710	0.001	0.272	Negligible
Temple Hirst	1.6	3.2	0.001	0.633	0.004	0.821	0.003	0.294	Negligible
Cawood	1.6	3.2	0.002	0.765	0.004	0.773	0.002	0.200	Negligible
Biggin	1.6	3.2	0.001	0.688	0.003	0.768	0.002	0.111	Negligible
Howden	1.6	3.2	0.003	1.220	0.009	1.205	0.006	0.099	Negligible
Brind	1.6	3.2	0.004	1.376	0.010	1.291	0.006	0.043	Negligible
South Duffield	1.6	3.2	0.002	0.664	0.005	0.795	0.003	0.154	Negligible

Receptor	NH_3 Concentration (µg/m^3) (Annual & Hourly mean)								
	Background		Max Baseline PC		Max Proposed Scheme PC		Max PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	
Highfield	1.6	3.2	0.004	1.191	0.010	1.137	0.005	0.029	Negligible
Willitoft	1.6	3.2	0.005	1.245	0.011	1.214	0.006	0.038	Negligible
Receptor Grid Max	1.6	3.2	0.006	1.402	0.011	1.349	0.006	0.645	Negligible
Env. Agency EAL	**180**	**2,500**	**180**	**2,500**	**180**	**2,500**	**180**	**2,500**	

Table 1.28 - Modelled Maximum Operational Impacts at Human Receptors – Hourly Mean HCl Concentrations

Receptor	HCl Hourly Mean Concentration (µg/m^3)				
	Background	Max Baseline PC	Max Proposed Scheme PC	Max PC Impact	IAQM Impact Descriptor
Foreman's Cottage	4.86	0.06	0.32	0.26	Negligible
East Yorkshire Carav	4.86	0.07	0.35	0.29	Negligible
Drax S&C Club	4.86	0.13	0.18	0.13	Negligible
Wren Hall	4.86	0.10	0.27	0.24	Negligible
3 Pear Tree Ave	4.86	0.20	0.74	0.55	Negligible
Crange Cottages	4.86	0.14	0.42	0.39	Negligible
Drax Abbey Farm	4.86	0.06	0.33	0.29	Negligible
Read School	4.86	0.12	0.71	0.60	Negligible
Old Lodge	4.86	0.14	0.49	0.39	Negligible
Selby_AQMA	4.86	0.65	1.70	1.32	Negligible
Goole	4.86	0.97	1.68	0.99	Negligible
Hemingbrough	4.86	0.89	1.48	0.77	Negligible
Rawcliffe	4.86	0.73	1.75	1.22	Negligible
Snaith	4.86	0.70	1.54	0.94	Negligible

Receptor	HCl Hourly Mean Concentration (µg/m^3)				
	Background	Max Baseline PC	Max Proposed Scheme PC	Max PC Impact	IAQM Impact Descriptor
Hensall	4.86	0.95	1.72	1.14	Negligible
Cliffe	4.86	0.82	1.58	0.98	Negligible
Breighton	4.86	1.44	2.13	1.50	Negligible
Wressle	4.86	0.96	1.75	0.96	Negligible
Eastrington	4.86	1.24	1.70	0.73	Negligible
Ellerton	4.86	1.19	1.70	0.65	Negligible
Fogathorpe	4.86	1.22	1.65	0.47	Negligible
Barlby	4.86	1.13	2.01	1.15	Negligible
Riccall	4.86	1.37	1.95	0.58	Negligible
Thorpe Willoughby	4.86	1.40	1.97	0.97	Negligible
Kellingley	4.86	1.14	1.63	0.65	Negligible
Moorends	4.86	0.97	1.81	1.14	Negligible
Thorne	4.86	0.91	1.57	0.80	Negligible
SwineFleet	4.86	1.23	1.78	0.71	Negligible
Balne	4.86	1.23	1.76	0.61	Negligible
Whitley	4.86	1.18	1.87	1.07	Negligible
Barlow	4.86	0.18	0.61	0.54	Negligible
Long Drax	4.86	0.32	1.07	0.79	Negligible
Drax	4.86	0.25	0.68	0.48	Negligible
Newland	4.86	0.76	1.66	1.28	Negligible
Carlton	4.86	0.75	1.46	0.98	Negligible
Camblesforth	4.86	0.19	0.76	0.59	Negligible
Burn	4.86	0.71	1.77	1.23	Negligible

Receptor	HCl Hourly Mean Concentration (µg/m^3)				
	Background	Max Baseline PC	Max Proposed Scheme PC	Max PC Impact	IAQM Impact Descriptor
Temple Hirst	4.86	0.76	2.05	1.32	Negligible
Cawood	4.86	0.92	1.52	0.76	Negligible
Biggin	4.86	0.83	1.60	0.85	Negligible
Howden	4.86	1.46	2.13	1.04	Negligible
Brind	4.86	1.65	2.28	0.68	Negligible
South Duffield	4.86	0.80	1.99	1.22	Negligible
Highfield	4.86	1.43	2.01	0.86	Negligible
Willitoft	4.86	1.49	2.15	0.74	Negligible
Receptor Grid Max	4.86	1.68	2.50	1.99	Negligible
EAL	**750**				

Table 1.29 - Modelled Maximum Operational Impacts at Human Receptors – Annual and Hourly Mean Aldehyde Concentrations

Receptor	Aldehyde Concentration (µg/m^3) (Annual & Hourly Mean)		
	Max Proposed Scheme PC (1)		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Hourly	
Foreman's Cottage	0.000	0.13	Negligible
East Yorkshire Carav	0.000	0.14	Negligible
Drax S&C Club	0.000	0.07	Negligible
Wren Hall	0.000	0.11	Negligible
3 Pear Tree Ave	0.001	0.29	Negligible
Crange Cottages	0.000	0.17	Negligible
Drax Abbey Farm	0.000	0.13	Negligible
Read School	0.000	0.28	Negligible
Old Lodge	0.000	0.20	Negligible

Receptor	Aldehyde Concentration (µg/m^3) (Annual & Hourly Mean)		
	Max Proposed Scheme PC [(1)]		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Hourly	
Selby_AQMA	0.002	0.68	Negligible
Goole	0.003	0.67	Negligible
Hemingbrough	0.003	0.59	Negligible
Rawcliffe	0.002	0.70	Negligible
Snaith	0.002	0.62	Negligible
Hensall	0.002	0.69	Negligible
Cliffe	0.002	0.63	Negligible
Breighton	0.005	0.85	Negligible
Wressle	0.005	0.70	Negligible
Eastrington	0.005	0.59	Negligible
Ellerton	0.003	0.56	Negligible
Fogathorpe	0.005	0.61	Negligible
Barlby	0.002	0.80	Negligible
Riccall	0.002	0.67	Negligible
Thorpe Willoughby	0.001	0.69	Negligible
Kellingley	0.002	0.63	Negligible
Moorends	0.002	0.72	Negligible
Thorne	0.001	0.63	Negligible
SwineFleet	0.003	0.60	Negligible
Balne	0.002	0.65	Negligible
Whitley	0.002	0.75	Negligible
Barlow	0.000	0.24	Negligible

Receptor	Aldehyde Concentration (µg/m^3) (Annual & Hourly Mean)		
	Max Proposed Scheme PC [(1)]		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Hourly	
Long Drax	0.001	0.43	Negligible
Drax	0.000	0.27	Negligible
Newland	0.001	0.66	Negligible
Carlton	0.001	0.59	Negligible
Camblesforth	0.000	0.30	Negligible
Burn	0.001	0.71	Negligible
Temple Hirst	0.002	0.82	Negligible
Cawood	0.002	0.61	Negligible
Biggin	0.002	0.64	Negligible
Howden	0.005	0.79	Negligible
Brind	0.005	0.75	Negligible
South Duffield	0.003	0.80	Negligible
Highfield	0.005	0.71	Negligible
Willitoft	0.006	0.69	Negligible
Receptor Grid Max	0.006	1.00	Negligible
EAL	**5**	**87**	

Notes:

[(1)] Aldehyde emissions associated with operation of BECCS units only.

Table 1.30 - Modelled Maximum Operational Impacts at Human Receptors – Amines Concentrations

Receptor	Amines Concentration (µg/m^3) (Hourly & Daily mean) – Results presented to 3 d.p.		
	Max Proposed Scheme PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Hourly (1)	Daily (1)	
Foreman's Cottage	0.035	0.002	Negligible
East Yorkshire Carav	0.039	0.002	Negligible
Drax S&C Club	0.020	0.002	Negligible
Wren Hall	0.030	0.002	Negligible
3 Pear Tree Ave	0.079	0.011	Negligible
Crange Cottages	0.041	0.003	Negligible
Drax Abbey Farm	0.029	0.003	Negligible
Read School	0.080	0.007	Negligible
Old Lodge	0.054	0.007	Negligible
Selby_AQMA	0.150	0.024	Negligible
Goole	0.155	0.020	Negligible
Hemingbrough	0.142	0.039	Negligible
Rawcliffe	0.153	0.028	Negligible
Snaith	0.116	0.042	Negligible
Hensall	0.198	0.027	Negligible
Cliffe	0.123	0.031	Negligible
Breighton	0.254	0.034	Negligible
Wressle	0.198	0.035	Negligible
Eastrington	0.153	0.024	Negligible
Ellerton	0.157	0.019	Negligible
Fogathorpe	0.157	0.022	Negligible
Barlby	0.235	0.029	Negligible

Receptor	Amines Concentration (µg/m^3) (Hourly & Daily mean) – Results presented to 3 d.p.		
	Max Proposed Scheme PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Hourly [1]	Daily [1]	
Riccall	0.187	0.020	Negligible
Thorpe Willoughby	0.204	0.018	Negligible
Kellingley	0.160	0.034	Negligible
Moorends	0.168	0.019	Negligible
Thorne	0.119	0.014	Negligible
SwineFleet	0.160	0.015	Negligible
Balne	0.177	0.017	Negligible
Whitley	0.170	0.017	Negligible
Barlow	0.056	0.008	Negligible
Long Drax	0.117	0.024	Negligible
Drax	0.076	0.010	Negligible
Newland	0.148	0.017	Negligible
Carlton	0.150	0.034	Negligible
Camblesforth	0.078	0.006	Negligible
Burn	0.200	0.020	Negligible
Temple Hirst	0.130	0.040	Negligible
Cawood	0.116	0.016	Negligible
Biggin	0.163	0.015	Negligible
Howden	0.224	0.028	Negligible
Brind	0.223	0.028	Negligible
South Duffield	0.188	0.033	Negligible
Highfield	0.180	0.031	Negligible

Receptor	Amines Concentration (µg/m^3) (Hourly & Daily mean) – Results presented to 3 d.p.		
	Max Proposed Scheme PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Hourly (1)	Daily (1)	
Willitoft	0.201	0.028	Negligible
Receptor Grid Max	0.258	0.063	Negligible
EAL	**53**	**13**	

Notes:
(1) Maximum modelled amine concentrations based on sum of 'Amine 1' + 'Amine 2' maxima, which is potentially conservative because the 'Amine 1' maximum concentration could occur at a different time (hour/day) to the 'Amine 2' maximum concentration at any given receptor or grid point. Results based on proposed daily average AELs for 'Amine 1' and 'Amine 2'

Table 1.31 - Modelled Maximum Operational Impacts at Human Receptors – Annual Mean Nitrosamine (as NDMA) Concentrations

Receptor	NDMA Concentration (ng/m^3)				
	Max Proposed Scheme PC			Max PC Impact	IAQM Impact Descriptor
	Direct (1)	Indirect (2)	Total (3)		
Foreman's Cottage	0.0000	0.000	0.000	0.000	Negligible
East Yorkshire Carav	0.0000	0.000	0.000	0.000	Negligible
Drax S&C Club	0.0000	0.000	0.000	0.000	Negligible
Wren Hall	0.0000	0.000	0.000	0.000	Negligible
3 Pear Tree Ave	0.0000	0.001	0.001	0.001	Negligible
Crange Cottages	0.0000	0.000	0.000	0.000	Negligible
Drax Abbey Farm	0.0000	0.000	0.000	0.000	Negligible
Read School	0.0000	0.000	0.000	0.000	Negligible
Old Lodge	0.0000	0.000	0.000	0.000	Negligible
Selby_AQMA	0.0001	0.006	0.006	0.006	Negligible
Goole	0.0001	0.009	0.009	0.009	Negligible
Hemingbrough	0.0001	0.002	0.002	0.002	Negligible
Rawcliffe	0.0001	0.003	0.003	0.003	Negligible

Receptor	NDMA Concentration (ng/m^3)				
	Max Proposed Scheme PC			Max PC Impact	IAQM Impact Descriptor
	Direct [1]	Indirect [2]	Total [3]		
Snaith	0.0001	0.004	0.004	0.004	Negligible
Hensall	0.0001	0.007	0.007	0.007	Negligible
Cliffe	0.0001	0.002	0.003	0.003	Negligible
Breighton	0.0001	0.009	0.009	0.009	Negligible
Wressle	0.0002	0.008	0.009	0.009	Negligible
Eastrington	0.0001	0.018	0.018	0.018	Slight adverse (9.1% of EAL)
Ellerton	0.0001	0.008	0.008	0.008	Negligible
Fogathorpe	0.0001	0.014	0.015	0.015	Slight adverse (7.3% of EAL)
Barlby	0.0000	0.004	0.004	0.004	Negligible
Riccall	0.0000	0.006	0.006	0.006	Negligible
Thorpe Willoughby	0.0000	0.005	0.005	0.005	Negligible
Kellingley	0.0001	0.008	0.008	0.008	Negligible
Moorends	0.0000	0.006	0.006	0.006	Negligible
Thorne	0.0000	0.005	0.005	0.005	Negligible
SwineFleet	0.0001	0.010	0.011	0.011	Negligible
Balne	0.0001	0.008	0.008	0.008	Negligible
Whitley	0.0001	0.008	0.008	0.008	Negligible
Barlow	0.0000	0.000	0.000	0.000	Negligible
Long Drax	0.0000	0.001	0.001	0.001	Negligible
Drax	0.0000	0.000	0.000	0.000	Negligible
Newland	0.0000	0.002	0.002	0.002	Negligible
Carlton	0.0000	0.002	0.002	0.002	Negligible

Receptor	NDMA Concentration (ng/m^3)				
	Max Proposed Scheme PC			Max PC Impact	IAQM Impact Descriptor
	Direct [1]	Indirect [2]	Total [3]		
Camblesforth	0.0000	0.000	0.000	0.000	Negligible
Burn	0.0000	0.004	0.004	0.004	Negligible
Temple Hirst	0.0001	0.005	0.005	0.005	Negligible
Cawood	0.0001	0.012	0.012	0.012	Slight adverse (6.0% of EAL)
Biggin	0.0000	0.008	0.008	0.008	Negligible
Howden	0.0001	0.015	0.015	0.015	Slight adverse (7.4% of EAL)
Brind	0.0002	0.014	0.015	0.015	Slight adverse (7.3% of EAL)
South Duffield	0.0001	0.004	0.004	0.004	Negligible
Highfield	0.0001	0.011	0.011	0.011	Slight adverse (5.7% of EAL)
Willitoft	0.0002	0.014	0.014	0.014	Slight adverse (7.1% of EAL)
Receptor Grid Max	0.0002	0.019	0.019	0.019	Slight adverse (9.6% of EAL)
EAL	**0.2**				

[1] Based on direct mass emissions of ‘Nitrosamine 1’ and ‘Nitrosamine 2’ from Main Stack only. PC to ground level is insignificant (<0.1% of the EAL for NDMA). There is no requirement to propose an annual average ELV for direct nitrosamine emissions.

[2] Accounts for application of ADMS Amine Chemistry Module and relates to indirect formation of nitrosamines and nitramines through atmospheric reactions.

[3] Equal to sum of modelled direct and indirect nitrosamine + nitramine concentrations.

SENSITIVITY TEST: WORST CASE EMISSIONS PROFILE

1.3.1. Results pertaining to the worst-case emissions profile sensitivity test, are presented in **Tables 1.34 to 1.42**.

Table 1.32 - Modelled Maximum Operational Impacts at Human Receptors – Annual Mean NO_2 Concentrations (Worst Case Emissions Profile)

Receptor	Annual mean NO_2 Concentration ($\mu g/m^3$)					
	Max Baseline PC	Max Baseline PEC	Max Proposed Scheme PC	Max Proposed Scheme PEC	Max PC Impact	IAQM Impact Descriptor
Foreman's Cottage	0.00	6.67	0.00	6.67	0.00	Negligible
East Yorkshire Carav	0.00	9.83	0.00	9.83	0.00	Negligible
Drax S&C Club	0.00	9.83	0.00	9.83	0.00	Negligible
Wren Hall	0.00	7.01	0.00	7.01	0.00	Negligible
3 Pear Tree Ave	0.00	6.79	0.01	6.79	0.00	Negligible
Crange Cottages	0.00	7.44	0.00	7.44	0.00	Negligible
Drax Abbey Farm	0.00	6.78	0.00	6.78	0.00	Negligible
Read School	0.00	7.27	0.00	7.27	0.00	Negligible
Old Lodge	0.00	6.78	0.00	6.79	0.00	Negligible
Selby_AQMA	0.02	46.52	0.03	46.53	0.01	Negligible
Goole	0.04	28.04	0.06	28.06	0.02	Negligible
Hemingbrough	0.04	6.98	0.05	6.99	0.01	Negligible
Rawcliffe	0.02	8.66	0.03	8.67	0.01	Negligible
Snaith	0.02	8.41	0.03	8.42	0.01	Negligible
Hensall	0.04	8.55	0.04	8.56	0.01	Negligible
Cliffe	0.03	6.98	0.03	6.99	0.01	Negligible
Breighton	0.10	6.61	0.10	6.61	0.02	Negligible
Wressle	0.08	6.82	0.09	6.83	0.02	Negligible
Eastrington	0.11	7.84	0.14	7.86	0.03	Negligible
Ellerton	0.07	6.03	0.09	6.04	0.02	Negligible
Fogathorpe	0.13	6.77	0.15	6.79	0.03	Negligible
Barlby	0.02	10.21	0.03	10.21	0.01	Negligible

Receptor	Annual mean NO_2 Concentration ($\mu g/m^3$)					
	Max Baseline PC	Max Baseline PEC	Max Proposed Scheme PC	Max Proposed Scheme PEC	Max PC Impact	IAQM Impact Descriptor
Riccall	0.03	6.75	0.04	6.76	0.01	Negligible
Thorpe Willoughby	0.02	7.79	0.03	7.80	0.01	Negligible
Kellingley	0.04	8.45	0.05	8.46	0.01	Negligible
Moorends	0.04	9.33	0.05	9.34	0.02	Negligible
Thorne	0.03	38.03	0.04	38.04	0.02	Negligible
SwineFleet	0.05	7.42	0.07	7.43	0.01	Negligible
Balne	0.05	7.78	0.05	7.78	0.01	Negligible
Whitley	0.05	8.92	0.05	8.92	0.01	Negligible
Barlow	0.00	7.07	0.00	7.07	0.00	Negligible
Long Drax	0.01	6.87	0.02	6.87	0.01	Negligible
Drax	0.00	7.27	0.00	7.27	0.00	Negligible
Newland	0.01	7.54	0.01	7.54	0.00	Negligible
Carlton	0.01	8.15	0.01	8.15	0.00	Negligible
Camblesforth	0.00	7.40	0.00	7.40	0.00	Negligible
Burn	0.01	7.78	0.02	7.78	0.01	Negligible
Temple Hirst	0.03	8.32	0.05	8.33	0.01	Negligible
Cawood	0.05	7.37	0.06	7.38	0.01	Negligible
Biggin	0.03	7.80	0.04	7.81	0.01	Negligible
Howden	0.08	9.19	0.11	9.22	0.03	Negligible
Brind	0.10	6.68	0.11	6.70	0.03	Negligible
South Duffield	0.05	6.38	0.06	6.39	0.01	Negligible
Highfield	0.10	6.43	0.12	6.45	0.02	Negligible
Willitoft	0.12	6.38	0.13	6.40	0.03	Negligible

Receptor	Annual mean NO_2 Concentration ($\mu g/m^3$)					
	Max Baseline PC	Max Baseline PEC	Max Proposed Scheme PC	Max Proposed Scheme PEC	Max PC Impact	IAQM Impact Descriptor
Receptor Grid Max	0.14	13.67	0.16	13.69	0.03	Negligible
AQ Objective	**40**					

Table 1.33 - Modelled Maximum Operational Impacts at Human Receptors – Hourly Mean NO_2 Concentrations (Worst Case Emissions Profile)

Receptor	Hourly mean NO_2 Concentration ($\mu g/m^3$) (Based on 99.79th %ile of hourly values)					
	Max Baseline PC	Max Baseline PEC	Max Proposed Scheme PC	Max Proposed Scheme PEC	Max PC Impact	IAQM Impact Descriptor
Foreman's Cottage	0.11	13.45	0.25	13.59	0.18	Negligible
East Yorkshire Carav	0.02	19.68	0.08	19.74	0.06	Negligible
Drax S&C Club	0.01	19.67	0.06	19.71	0.05	Negligible
Wren Hall	0.08	14.10	0.17	14.19	0.11	Negligible
3 Pear Tree Ave	0.30	13.86	0.97	14.53	0.68	Negligible
Crange Cottages	0.08	14.95	0.17	15.04	0.13	Negligible
Drax Abbey Farm	0.08	13.64	0.24	13.81	0.17	Negligible
Read School	0.18	14.72	0.47	15.01	0.36	Negligible
Old Lodge	0.20	13.77	0.64	14.20	0.46	Negligible
Selby_AQMA	1.72	94.72	3.24	96.24	1.78	Negligible
Goole	2.52	58.52	3.57	59.57	1.56	Negligible
Hemingbrough	2.72	16.60	3.46	17.34	1.13	Negligible
Rawcliffe	1.54	18.83	3.29	20.58	2.11	Negligible
Snaith	1.47	18.26	3.46	20.25	2.04	Negligible
Hensall	2.55	19.58	3.39	20.42	1.45	Negligible
Cliffe	2.37	16.28	3.18	17.09	1.44	Negligible
Breighton	3.07	16.09	3.93	16.95	0.94	Negligible

Receptor	Hourly mean NO_2 Concentration ($\mu g/m^3$) (Based on 99.79th %ile of hourly values)					
	Max Baseline PC	Max Baseline PEC	Max Proposed Scheme PC	Max Proposed Scheme PEC	Max PC Impact	IAQM Impact Descriptor
Wressle	3.25	16.72	3.90	17.37	1.01	Negligible
Eastrington	3.39	18.84	4.04	19.49	0.68	Negligible
Ellerton	2.84	14.75	3.44	15.35	0.67	Negligible
Fogathorpe	3.63	16.93	4.27	17.57	0.92	Negligible
Barlby	2.29	22.65	2.93	23.29	1.49	Negligible
Riccall	2.40	15.83	2.85	16.28	1.01	Negligible
Thorpe Willoughby	1.59	17.14	3.15	18.70	1.84	Negligible
Kellingley	2.89	19.71	3.30	20.12	0.56	Negligible
Moorends	2.69	21.28	3.38	21.96	0.90	Negligible
Thorne	2.56	78.56	3.12	79.12	0.72	Negligible
SwineFleet	3.02	17.74	3.88	18.61	0.91	Negligible
Balne	2.79	18.25	3.71	19.18	0.92	Negligible
Whitley	2.72	20.47	3.50	21.25	0.92	Negligible
Barlow	0.20	14.33	0.98	15.12	0.78	Negligible
Long Drax	0.78	14.50	1.92	15.63	1.40	Negligible
Drax	0.21	14.75	0.56	15.10	0.43	Negligible
Newland	0.65	15.71	2.33	17.39	1.72	Negligible
Carlton	0.94	17.21	2.44	18.72	1.70	Negligible
Camblesforth	0.14	14.94	0.44	15.24	0.37	Negligible
Burn	1.24	16.77	2.77	18.30	1.62	Negligible
Temple Hirst	2.77	19.34	3.53	20.10	1.84	Negligible
Cawood	3.06	17.70	3.73	18.37	0.73	Negligible
Biggin	2.52	18.04	3.25	18.78	0.74	Negligible

Receptor	Hourly mean NO_2 Concentration ($\mu g/m^3$) (Based on 99.79th %ile of hourly values)					
	Max Baseline PC	Max Baseline PEC	Max Proposed Scheme PC	Max Proposed Scheme PEC	Max PC Impact	IAQM Impact Descriptor
Howden	3.09	21.30	3.86	22.07	1.05	Negligible
Brind	3.04	16.21	4.11	17.28	1.12	Negligible
South Duffield	3.33	15.98	3.88	16.53	0.68	Negligible
Highfield	2.93	15.59	3.80	16.46	0.87	Negligible
Willitoft	3.41	15.94	4.11	16.64	0.87	Negligible
Receptor Grid Max	4.05	31.11	4.58	31.64	2.55	Negligible
AQ Objective	**200**					

Table 1.34 - Modelled Maximum Operational Impacts at Human Receptors – SO_2 Concentrations (Worst Case Emissions Profile)

Receptor	SO_2 Concentration ($\mu g/m^3$) (15-min / Hourly / Daily mean)										
	Background	Max Baseline PC			Max Proposed Scheme PC			Max PC Impact			IAQM Impact Descriptor (applicable to all averaging periods)
		15-min	Hourly	Daily	15-min	Hourly	Daily	15-min	Hourly	Daily	
Foreman's Cottage	20.48	0.59	0.27	0.06	1.07	0.50	0.14	0.61	0.32	0.09	Negligible
East Yorkshire Carav	20.48	0.21	0.05	0.02	0.60	0.14	0.05	0.53	0.08	0.04	Negligible
Drax S&C Club	20.48	0.16	0.02	0.02	0.55	0.08	0.04	0.39	0.06	0.03	Negligible
Wren Hall	20.48	0.65	0.16	0.06	1.21	0.34	0.11	0.56	0.21	0.05	Negligible
3 Pear Tree Ave	20.48	1.96	0.77	0.18	4.25	1.86	0.40	2.29	1.11	0.28	Negligible
Crange Cottages	20.48	0.54	0.19	0.06	1.07	0.30	0.11	0.85	0.24	0.09	Negligible
Drax Abbey Farm	20.48	0.50	0.17	0.05	1.26	0.48	0.10	0.76	0.34	0.06	Negligible
Read School	20.48	1.18	0.38	0.09	2.53	0.87	0.19	1.59	0.56	0.11	Negligible
Old Lodge	20.48	1.33	0.51	0.11	3.22	1.32	0.29	2.00	0.92	0.19	Negligible
Selby_AQMA	20.48	9.95	4.40	1.08	13.54	6.98	1.59	5.51	3.03	0.56	Negligible
Goole	20.48	15.49	6.95	1.72	16.48	7.93	1.69	5.44	2.10	0.40	Negligible

Receptor	SO_2 Concentration (µg/m^3) (15-min / Hourly / Daily mean)										
	Background	Max Baseline PC			Max Proposed Scheme PC			Max PC Impact			IAQM Impact Descriptor (applicable to all averaging periods)
		15-min	Hourly	Daily	15-min	Hourly	Daily	15-min	Hourly	Daily	
Hemingbrough	20.48	15.41	7.07	2.17	16.48	7.95	2.53	1.80	1.54	0.54	Negligible
Rawcliffe	20.48	9.55	3.33	0.82	14.04	6.87	1.54	8.21	3.84	0.78	Negligible
Snaith	20.48	9.92	3.81	1.01	14.18	7.11	1.88	5.34	3.82	0.91	Negligible
Hensall	20.48	14.42	6.50	1.33	16.18	7.92	1.52	5.13	2.73	0.49	Negligible
Cliffe	20.48	15.16	5.80	1.82	16.20	6.86	2.05	2.30	2.54	0.90	Negligible
Breighton	20.48	15.90	8.49	2.18	17.49	8.90	2.13	2.75	0.63	0.19	Negligible
Wressle	20.48	17.82	9.27	2.57	17.66	9.94	2.91	2.07	1.35	0.35	Negligible
Eastrington	20.48	19.65	9.53	2.14	21.55	10.14	2.49	1.90	0.72	0.35	Negligible
Ellerton	20.48	17.52	7.68	1.89	19.10	8.15	1.96	3.97	0.77	0.16	Negligible
Fogathorpe	20.48	25.47	9.93	2.02	24.93	9.85	2.10	3.29	1.13	0.11	Negligible
Barlby	20.48	14.81	5.53	1.35	15.08	6.36	1.40	7.32	2.74	0.52	Negligible
Riccall	20.48	14.06	6.46	1.26	16.11	6.88	1.40	3.74	1.21	0.28	Negligible
Thorpe Willoughby	20.48	10.50	4.15	1.19	16.03	5.72	1.31	6.12	3.20	0.26	Negligible
Kellingley	20.48	17.68	7.27	2.28	19.42	7.93	2.18	3.45	0.66	0.19	Negligible
Moorends	20.48	16.88	7.10	1.28	18.87	7.51	1.52	1.98	0.99	0.27	Negligible
Thorne	20.48	15.13	6.19	1.10	16.39	6.62	1.14	2.51	0.61	0.13	Negligible
SwineFleet	20.48	18.13	8.14	1.31	19.65	9.25	1.58	2.45	1.10	0.28	Negligible
Balne	20.48	18.83	7.83	1.67	20.55	8.37	1.77	2.04	1.34	0.18	Negligible
Whitley	20.48	15.29	7.62	1.46	16.68	8.15	1.67	1.58	1.12	0.21	Negligible
Barlow	20.48	1.59	0.40	0.15	4.59	1.87	0.47	3.25	1.47	0.32	Negligible
Long Drax	20.48	4.57	2.06	0.48	8.01	4.12	0.89	4.38	2.58	0.51	Negligible
Drax	20.48	1.34	0.49	0.10	3.31	1.09	0.35	1.97	0.80	0.27	Negligible

Receptor	SO_2 Concentration (µg/m^3) (15-min / Hourly / Daily mean)										
	Background	Max Baseline PC			Max Proposed Scheme PC			Max PC Impact			IAQM Impact Descriptor (applicable to all averaging periods)
		15-min	Hourly	Daily	15-min	Hourly	Daily	15-min	Hourly	Daily	
Newland	20.48	5.14	1.66	0.43	11.51	5.12	1.02	7.89	3.51	0.60	Negligible
Carlton	20.48	8.28	2.03	0.57	10.97	5.33	1.28	6.23	3.75	0.77	Negligible
Camblesforth	20.48	0.95	0.30	0.11	2.31	0.92	0.25	1.67	0.66	0.14	Negligible
Burn	20.48	9.52	3.30	1.00	12.16	5.99	1.31	5.21	3.32	0.44	Negligible
Temple Hirst	20.48	16.58	6.93	2.36	17.21	7.99	2.62	5.82	3.58	0.76	Negligible
Cawood	20.48	16.90	7.83	1.61	18.27	8.70	1.93	2.00	0.87	0.32	Negligible
Biggin	20.48	17.95	6.76	1.50	18.66	7.20	1.49	2.84	1.25	0.09	Negligible
Howden	20.48	16.79	8.82	1.75	18.23	8.98	2.12	3.36	1.30	0.38	Negligible
Brind	20.48	18.55	8.44	1.97	23.25	9.22	2.05	4.71	1.15	0.28	Negligible
South Duffield	20.48	17.98	9.41	2.83	17.63	9.55	2.81	0.12	1.21	0.10	Negligible
Highfield	20.48	15.91	8.16	1.74	18.20	8.84	1.76	2.29	0.74	0.11	Negligible
Willitoft	20.48	18.64	9.29	2.04	21.06	9.25	2.19	3.32	0.84	0.23	Negligible
Receptor Grid Max	20.48	26.81	10.96	3.20	26.84	11.25	3.48	10.03	5.36	1.33	Negligible
AQ Objective		**266**	**350**	**125**	**266**	**350**	**125**	**266**	**350**	**125**	

Table 1.35 - Modelled Maximum Operational Impacts at Human Receptors – Dust (as PM_{10}) Concentrations (Worst Case Emissions Profile)

Receptor	PM_{10} Concentration (µg/m^3) (Annual & Daily mean)								
	Background		Max Baseline PC		Max Proposed Scheme PC		Max PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	
Foreman's Cottage	12.14	24.28	0.000	0.000	0.000	0.001	0.000	0.001	Negligible
East Yorkshire Carav	12.49	24.97	0.000	0.000	0.000	0.000	0.000	0.000	Negligible
Drax S&C Club	12.49	24.97	0.000	0.000	0.000	0.000	0.000	0.000	Negligible

Receptor	PM_{10} Concentration (µg/m^3) (Annual & Daily mean)								
	Background		Max Baseline PC		Max Proposed Scheme PC		Max PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	
Wren Hall	13.57	27.14	0.000	0.000	0.000	0.001	0.000	0.000	Negligible
3 Pear Tree Ave	14.40	28.79	0.000	0.002	0.001	0.006	0.000	0.004	Negligible
Crange Cottages	12.26	24.52	0.000	0.000	0.000	0.000	0.000	0.000	Negligible
Drax Abbey Farm	14.40	28.79	0.000	0.000	0.000	0.001	0.000	0.001	Negligible
Read School	12.50	25.00	0.000	0.000	0.000	0.002	0.000	0.002	Negligible
Old Lodge	14.40	28.79	0.000	0.001	0.000	0.004	0.000	0.003	Negligible
Selby_AQMA	13.50	26.99	0.002	0.004	0.002	0.014	0.000	0.010	Negligible
Goole	13.30	26.60	0.004	0.021	0.005	0.039	0.001	0.017	Negligible
Hemingbrough	13.22	26.45	0.004	0.014	0.005	0.029	0.001	0.017	Negligible
Rawcliffe	14.51	29.02	0.002	0.003	0.002	0.013	0.000	0.010	Negligible
Snaith	13.45	26.90	0.002	0.001	0.002	0.006	0.000	0.005	Negligible
Hensall	13.54	27.08	0.003	0.013	0.004	0.026	0.001	0.013	Negligible
Cliffe	13.99	27.99	0.002	0.009	0.003	0.019	0.001	0.010	Negligible
Breighton	13.44	26.89	0.009	0.048	0.010	0.057	0.001	0.016	Negligible
Wressle	14.15	28.30	0.008	0.038	0.009	0.060	0.001	0.023	Negligible
Eastrington	14.43	28.85	0.010	0.064	0.011	0.069	0.001	0.007	Negligible
Ellerton	13.74	27.48	0.007	0.045	0.007	0.050	0.001	0.007	Negligible
Fogathorpe	13.81	27.62	0.011	0.067	0.012	0.069	0.001	0.006	Negligible
Barlby	14.41	28.82	0.002	0.006	0.003	0.017	0.000	0.012	Negligible
Riccall	13.98	27.97	0.003	0.015	0.003	0.021	0.000	0.011	Negligible
Thorpe Willoughby	13.93	27.87	0.002	0.003	0.002	0.007	0.000	0.005	Negligible
Kellingley	14.18	28.36	0.004	0.012	0.004	0.012	0.000	0.005	Negligible

Receptor	PM_{10} Concentration (µg/m^3) (Annual & Daily mean)								
	Background		Max Baseline PC		Max Proposed Scheme PC		Max PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	
Moorends	13.45	26.89	0.003	0.012	0.004	0.015	0.000	0.007	Negligible
Thorne	13.27	26.53	0.003	0.008	0.003	0.012	0.000	0.004	Negligible
SwineFleet	14.18	28.37	0.005	0.033	0.005	0.039	0.001	0.009	Negligible
Balne	14.77	29.54	0.004	0.020	0.005	0.028	0.001	0.009	Negligible
Whitley	13.83	27.66	0.004	0.025	0.005	0.029	0.001	0.006	Negligible
Barlow	13.14	26.29	0.000	0.000	0.000	0.000	0.000	0.000	Negligible
Long Drax	13.92	27.84	0.001	0.006	0.002	0.018	0.000	0.012	Negligible
Drax	12.50	25.00	0.000	0.000	0.000	0.002	0.000	0.002	Negligible
Newland	13.98	27.95	0.001	0.002	0.001	0.008	0.000	0.007	Negligible
Carlton	13.95	27.89	0.001	0.000	0.001	0.003	0.000	0.002	Negligible
Camblesforth	13.60	27.20	0.000	0.000	0.000	0.001	0.000	0.000	Negligible
Burn	14.08	28.17	0.001	0.001	0.002	0.006	0.000	0.005	Negligible
Temple Hirst	14.31	28.61	0.003	0.005	0.004	0.017	0.001	0.013	Negligible
Cawood	13.24	26.48	0.004	0.026	0.005	0.027	0.000	0.002	Negligible
Biggin	12.93	25.87	0.003	0.007	0.003	0.011	0.000	0.003	Negligible
Howden	14.93	29.86	0.007	0.048	0.009	0.058	0.001	0.017	Negligible
Brind	14.37	28.73	0.009	0.061	0.010	0.068	0.001	0.014	Negligible
South Duffield	14.55	29.11	0.005	0.022	0.006	0.033	0.001	0.017	Negligible
Highfield	13.98	27.95	0.009	0.056	0.010	0.063	0.001	0.008	Negligible
Willitoft	14.12	28.23	0.010	0.059	0.012	0.065	0.001	0.012	Negligible
Receptor Grid Max	17.56	35.11	0.012	0.079	0.012	0.082	0.002	0.035	Negligible
AQ Objective	**40**	**50**	**40**	**50**	**40**	**50**	**40**	**50**	

Table 1.36 - Modelled Maximum Operational Impacts at Human Receptors – NH_3 Concentrations (Worst Case Emissions Profile)

Receptor	NH_3 Concentration (µg/m^3) (Annual & Hourly mean)								
	Background		Max Baseline PC		Max Proposed Scheme PC		Max PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	
Foreman's Cottage	1.6	3.2	0.000	0.051	0.000	0.126	0.000	0.079	Negligible
East Yorkshire Carav	1.6	3.2	0.000	0.060	0.000	0.141	0.000	0.086	Negligible
Drax S&C Club	1.6	3.2	0.000	0.111	0.000	0.072	0.000	0.034	Negligible
Wren Hall	1.6	3.2	0.000	0.084	0.000	0.109	0.000	0.078	Negligible
3 Pear Tree Ave	1.6	3.2	0.000	0.171	0.001	0.295	0.000	0.138	Negligible
Crange Cottages	1.6	3.2	0.000	0.119	0.000	0.169	0.000	0.144	Negligible
Drax Abbey Farm	1.6	3.2	0.000	0.046	0.000	0.133	0.000	0.096	Negligible
Read School	1.6	3.2	0.000	0.098	0.000	0.285	0.000	0.190	Negligible
Old Lodge	1.6	3.2	0.000	0.119	0.000	0.196	0.000	0.116	Negligible
Selby_AQMA	1.6	3.2	0.002	0.542	0.002	0.679	0.000	0.402	Negligible
Goole	1.6	3.2	0.004	0.810	0.005	0.795	0.001	0.130	Negligible
Hemingbrough	1.6	3.2	0.004	0.741	0.005	0.737	0.001	0.037	Negligible
Rawcliffe	1.6	3.2	0.002	0.607	0.002	0.700	0.000	0.302	Negligible
Snaith	1.6	3.2	0.002	0.580	0.002	0.626	0.000	0.115	Negligible
Hensall	1.6	3.2	0.003	0.789	0.004	0.816	0.001	0.205	Negligible
Cliffe	1.6	3.2	0.002	0.687	0.003	0.677	0.001	0.133	Negligible
Breighton	1.6	3.2	0.009	1.203	0.010	1.165	0.001	0.322	Negligible
Wressle	1.6	3.2	0.008	0.798	0.009	0.806	0.001	0.039	Negligible
Eastrington	1.6	3.2	0.010	1.034	0.011	0.960	0.001	0.096	Negligible
Ellerton	1.6	3.2	0.007	0.995	0.007	0.961	0.001	0.066	Negligible
Fogathorpe	1.6	3.2	0.011	1.017	0.012	0.932	0.001	-0.035	Negligible

Receptor	NH_3 Concentration (µg/m^3) (Annual & Hourly mean)								
	Background		Max Baseline PC		Max Proposed Scheme PC		Max PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	
Barlby	1.6	3.2	0.002	0.943	0.003	0.985	0.000	0.269	Negligible
Riccall	1.6	3.2	0.003	1.144	0.003	1.104	0.000	-0.038	Negligible
Thorpe Willoughby	1.6	3.2	0.002	1.165	0.002	1.117	0.000	0.148	Negligible
Kellingley	1.6	3.2	0.004	0.954	0.004	0.919	0.000	0.104	Negligible
Moorends	1.6	3.2	0.003	0.811	0.004	0.760	0.000	0.208	Negligible
Thorne	1.6	3.2	0.003	0.756	0.003	0.801	0.000	0.159	Negligible
SwineFleet	1.6	3.2	0.005	1.023	0.005	1.004	0.001	0.185	Negligible
Balne	1.6	3.2	0.004	1.026	0.005	0.996	0.001	0.016	Negligible
Whitley	1.6	3.2	0.004	0.980	0.005	1.013	0.001	0.079	Negligible
Barlow	1.6	3.2	0.000	0.151	0.000	0.243	0.000	0.189	Negligible
Long Drax	1.6	3.2	0.001	0.267	0.002	0.428	0.000	0.193	Negligible
Drax	1.6	3.2	0.000	0.210	0.000	0.273	0.000	0.116	Negligible
Newland	1.6	3.2	0.001	0.632	0.001	0.678	0.000	0.344	Negligible
Carlton	1.6	3.2	0.001	0.628	0.001	0.682	0.000	0.224	Negligible
Camblesforth	1.6	3.2	0.000	0.156	0.000	0.304	0.000	0.204	Negligible
Burn	1.6	3.2	0.001	0.594	0.002	0.710	0.000	0.272	Negligible
Temple Hirst	1.6	3.2	0.003	0.633	0.004	0.821	0.001	0.294	Negligible
Cawood	1.6	3.2	0.004	0.765	0.005	0.773	0.000	0.200	Negligible
Biggin	1.6	3.2	0.003	0.688	0.003	0.768	0.000	0.111	Negligible
Howden	1.6	3.2	0.007	1.220	0.009	1.205	0.001	0.099	Negligible
Brind	1.6	3.2	0.009	1.376	0.010	1.291	0.001	0.043	Negligible
South Duffield	1.6	3.2	0.005	0.664	0.006	0.795	0.001	0.154	Negligible

Receptor	NH_3 Concentration (µg/m^3) (Annual & Hourly mean)								
	Background		Max Baseline PC		Max Proposed Scheme PC		Max PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	
Highfield	1.6	3.2	0.009	1.191	0.010	1.137	0.001	0.029	Negligible
Willitoft	1.6	3.2	0.010	1.245	0.012	1.214	0.001	0.038	Negligible
Receptor Grid Max	1.6	3.2	0.012	1.402	0.012	1.349	0.002	0.645	Negligible
Env. Agency EAL	**180**	**2,500**	**180**	**2,500**	**180**	**2,500**	**180**	**2,500**	

Table 1.37 - Modelled Maximum Operational Impacts at Human Receptors – Hourly Mean HCl Concentrations (Worst Case Emissions Profile)

Receptor	HCl Concentration (µg/m^3)				
	Background	Max Baseline PC	Max Proposed Scheme PC	Max PC Impact	IAQM Impact Descriptor
Foreman's Cottage	4.86	0.06	0.32	0.26	Negligible
East Yorkshire Carav	4.86	0.07	0.35	0.29	Negligible
Drax S&C Club	4.86	0.13	0.18	0.13	Negligible
Wren Hall	4.86	0.10	0.27	0.24	Negligible
3 Pear Tree Ave	4.86	0.20	0.74	0.55	Negligible
Crange Cottages	4.86	0.14	0.42	0.39	Negligible
Drax Abbey Farm	4.86	0.06	0.33	0.29	Negligible
Read School	4.86	0.12	0.71	0.60	Negligible
Old Lodge	4.86	0.14	0.49	0.39	Negligible
Selby_AQMA	4.86	0.65	1.70	1.32	Negligible
Goole	4.86	0.97	1.68	0.99	Negligible
Hemingbrough	4.86	0.89	1.48	0.77	Negligible
Rawcliffe	4.86	0.73	1.75	1.22	Negligible
Snaith	4.86	0.70	1.54	0.94	Negligible

Receptor	HCl Concentration (µg/m^3)				
	Background	Max Baseline PC	Max Proposed Scheme PC	Max PC Impact	IAQM Impact Descriptor
Hensall	4.86	0.95	1.72	1.14	Negligible
Cliffe	4.86	0.82	1.58	0.98	Negligible
Breighton	4.86	1.44	2.13	1.50	Negligible
Wressle	4.86	0.96	1.75	0.96	Negligible
Eastrington	4.86	1.24	1.70	0.73	Negligible
Ellerton	4.86	1.19	1.70	0.65	Negligible
Fogathorpe	4.86	1.22	1.65	0.47	Negligible
Barlby	4.86	1.13	2.01	1.15	Negligible
Riccall	4.86	1.37	1.95	0.58	Negligible
Thorpe Willoughby	4.86	1.40	1.97	0.97	Negligible
Kellingley	4.86	1.14	1.63	0.65	Negligible
Moorends	4.86	0.97	1.81	1.14	Negligible
Thorne	4.86	0.91	1.57	0.80	Negligible
SwineFleet	4.86	1.23	1.78	0.71	Negligible
Balne	4.86	1.23	1.76	0.61	Negligible
Whitley	4.86	1.18	1.87	1.07	Negligible
Barlow	4.86	0.18	0.61	0.54	Negligible
Long Drax	4.86	0.32	1.07	0.79	Negligible
Drax	4.86	0.25	0.68	0.48	Negligible
Newland	4.86	0.76	1.66	1.28	Negligible
Carlton	4.86	0.75	1.46	0.98	Negligible
Camblesforth	4.86	0.19	0.76	0.59	Negligible
Burn	4.86	0.71	1.77	1.23	Negligible

Receptor	HCl Concentration (µg/m^3)				
	Background	Max Baseline PC	Max Proposed Scheme PC	Max PC Impact	IAQM Impact Descriptor
Temple Hirst	4.86	0.76	2.05	1.32	Negligible
Cawood	4.86	0.92	1.52	0.76	Negligible
Biggin	4.86	0.83	1.60	0.85	Negligible
Howden	4.86	1.46	2.13	1.04	Negligible
Brind	4.86	1.65	2.28	0.68	Negligible
South Duffield	4.86	0.80	1.99	1.22	Negligible
Highfield	4.86	1.43	2.01	0.86	Negligible
Willitoft	4.86	1.49	2.15	0.74	Negligible
Receptor Grid Max	4.86	1.68	2.50	1.99	Negligible
EAL	**750**				

Table 1.38 - Modelled Maximum Operational Impacts at Human Receptors – Annual and Hourly Mean Aldehyde Concentrations (Worst Case Emissions Profile)

Receptor	Aldehyde Concentration (µg/m^3) (Annual & Hourly Mean)		
	Max Proposed Scheme PC (1)		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Hourly	
Foreman's Cottage	0.000	0.13	Negligible
East Yorkshire Carav	0.000	0.14	Negligible
Drax S&C Club	0.000	0.07	Negligible
Wren Hall	0.000	0.11	Negligible
3 Pear Tree Ave	0.000	0.29	Negligible
Crange Cottages	0.000	0.17	Negligible
Drax Abbey Farm	0.000	0.13	Negligible
Read School	0.000	0.28	Negligible
Old Lodge	0.000	0.20	Negligible

Receptor	Aldehyde Concentration (µg/m^3) (Annual & Hourly Mean)		
	Max Proposed Scheme PC [(1)]		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Hourly	
Selby_AQMA	0.001	0.68	Negligible
Goole	0.001	0.67	Negligible
Hemingbrough	0.001	0.59	Negligible
Rawcliffe	0.001	0.70	Negligible
Snaith	0.001	0.62	Negligible
Hensall	0.001	0.69	Negligible
Cliffe	0.001	0.63	Negligible
Breighton	0.003	0.85	Negligible
Wressle	0.003	0.70	Negligible
Eastrington	0.003	0.59	Negligible
Ellerton	0.002	0.56	Negligible
Fogathorpe	0.004	0.61	Negligible
Barlby	0.001	0.80	Negligible
Riccall	0.001	0.67	Negligible
Thorpe Willoughby	0.001	0.69	Negligible
Kellingley	0.001	0.63	Negligible
Moorends	0.001	0.72	Negligible
Thorne	0.001	0.63	Negligible
SwineFleet	0.002	0.60	Negligible
Balne	0.001	0.65	Negligible
Whitley	0.001	0.75	Negligible
Barlow	0.000	0.24	Negligible

Receptor	Aldehyde Concentration (µg/m^3) (Annual & Hourly Mean)		
	Max Proposed Scheme PC [(1)]		IAQM Impact Descriptor (applicable to all averaging periods)
	Annual	Hourly	
Long Drax	0.000	0.43	Negligible
Drax	0.000	0.27	Negligible
Newland	0.000	0.66	Negligible
Carlton	0.000	0.59	Negligible
Camblesforth	0.000	0.30	Negligible
Burn	0.000	0.71	Negligible
Temple Hirst	0.001	0.82	Negligible
Cawood	0.001	0.61	Negligible
Biggin	0.001	0.64	Negligible
Howden	0.003	0.79	Negligible
Brind	0.003	0.75	Negligible
South Duffield	0.002	0.80	Negligible
Highfield	0.003	0.71	Negligible
Willitoft	0.004	0.69	Negligible
Receptor Grid Max	0.004	1.00	Negligible
EAL	**5**	**87**	

Notes:

[(1)] Aldehyde emissions associated with operation of BECCS units only.

Table 1.39 - Modelled Maximum Operational Impacts at Human Receptors – Amines Concentrations (Worst Case Emissions Profile)

Receptor	Amines Concentration (µg/m^3) (Hourly & Daily mean) – Results presented to 3 d.p.		
	Max Proposed Scheme PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Hourly	Daily	
Foreman's Cottage	0.035	0.002	Negligible
East Yorkshire Carav	0.039	0.002	Negligible
Drax S&C Club	0.020	0.002	Negligible
Wren Hall	0.030	0.002	Negligible
3 Pear Tree Ave	0.079	0.011	Negligible
Crange Cottages	0.041	0.003	Negligible
Drax Abbey Farm	0.029	0.003	Negligible
Read School	0.080	0.007	Negligible
Old Lodge	0.054	0.007	Negligible
Selby_AQMA	0.150	0.024	Negligible
Goole	0.155	0.020	Negligible
Hemingbrough	0.142	0.039	Negligible
Rawcliffe	0.153	0.028	Negligible
Snaith	0.116	0.042	Negligible
Hensall	0.198	0.027	Negligible
Cliffe	0.123	0.031	Negligible
Breighton	0.254	0.034	Negligible
Wressle	0.198	0.035	Negligible
Eastrington	0.153	0.024	Negligible
Ellerton	0.157	0.019	Negligible
Fogathorpe	0.157	0.022	Negligible
Barlby	0.235	0.029	Negligible

Receptor	Amines Concentration (µg/m^3) (Hourly & Daily mean) – Results presented to 3 d.p.		
	Max Proposed Scheme PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Hourly	Daily	
Riccall	0.187	0.020	Negligible
Thorpe Willoughby	0.204	0.018	Negligible
Kellingley	0.160	0.034	Negligible
Moorends	0.168	0.019	Negligible
Thorne	0.119	0.014	Negligible
SwineFleet	0.160	0.015	Negligible
Balne	0.177	0.017	Negligible
Whitley	0.170	0.017	Negligible
Barlow	0.056	0.008	Negligible
Long Drax	0.117	0.024	Negligible
Drax	0.076	0.010	Negligible
Newland	0.148	0.017	Negligible
Carlton	0.150	0.034	Negligible
Camblesforth	0.078	0.006	Negligible
Burn	0.200	0.020	Negligible
Temple Hirst	0.130	0.040	Negligible
Cawood	0.116	0.016	Negligible
Biggin	0.163	0.015	Negligible
Howden	0.224	0.028	Negligible
Brind	0.223	0.028	Negligible
South Duffield	0.188	0.033	Negligible
Highfield	0.180	0.031	Negligible

Receptor	Amines Concentration (µg/m^3) (Hourly & Daily mean) – Results presented to 3 d.p.		
	Max Proposed Scheme PC Impact		IAQM Impact Descriptor (applicable to all averaging periods)
	Hourly	Daily	
Willitoft	0.201	0.028	Negligible
Receptor Grid Max	0.258	0.063	Negligible
EAL	**53**	**13**	

Table 1.40 - Modelled Maximum Operational Impacts at Human Receptors – Annual Mean Nitrosamine (as NDMA) Concentrations (Worst Case Emissions Profile)

Receptor	NDMA Concentration (ng/m^3)				
	Max Proposed Scheme PC			Max PC Impact	IAQM Impact Descriptor
	Direct (1)	Indirect (2)	Total (3)		
Foreman's Cottage	0.0000	0.000	0.000	0.000	Negligible
East Yorkshire Carav	0.0000	0.000	0.000	0.000	Negligible
Drax S&C Club	0.0000	0.000	0.000	0.000	Negligible
Wren Hall	0.0000	0.000	0.000	0.000	Negligible
3 Pear Tree Ave	0.0000	0.000	0.000	0.000	Negligible
Crange Cottages	0.0000	0.000	0.000	0.000	Negligible
Drax Abbey Farm	0.0000	0.000	0.000	0.000	Negligible
Read School	0.0000	0.000	0.000	0.000	Negligible
Old Lodge	0.0000	0.000	0.000	0.000	Negligible
Selby_AQMA	0.0001	0.002	0.002	0.002	Negligible
Goole	0.0001	0.004	0.005	0.005	Negligible
Hemingbrough	0.0001	0.001	0.001	0.001	Negligible
Rawcliffe	0.0001	0.001	0.001	0.001	Negligible
Snaith	0.0001	0.001	0.001	0.001	Negligible
Hensall	0.0001	0.003	0.003	0.003	Negligible

Receptor	NDMA Concentration (ng/m^3)				
	Max Proposed Scheme PC			Max PC Impact	IAQM Impact Descriptor
	Direct [1]	Indirect [2]	Total [3]		
Cliffe	0.0001	0.001	0.001	0.001	Negligible
Breighton	0.0001	0.005	0.005	0.005	Negligible
Wressle	0.0002	0.003	0.004	0.004	Negligible
Eastrington	0.0001	0.013	0.013	0.013	Slight adverse (6.5% of EAL)
Ellerton	0.0001	0.005	0.005	0.005	Negligible
Fogathorpe	0.0001	0.010	0.010	0.010	Negligible
Barlby	0.0000	0.001	0.001	0.001	Negligible
Riccall	0.0000	0.003	0.003	0.003	Negligible
Thorpe Willoughby	0.0000	0.003	0.003	0.003	Negligible
Kellingley	0.0001	0.006	0.006	0.006	Negligible
Moorends	0.0000	0.004	0.004	0.004	Negligible
Thorne	0.0000	0.004	0.004	0.004	Negligible
SwineFleet	0.0001	0.007	0.007	0.007	Negligible
Balne	0.0001	0.005	0.005	0.005	Negligible
Whitley	0.0001	0.005	0.005	0.005	Negligible
Barlow	0.0000	0.000	0.000	0.000	Negligible
Long Drax	0.0000	0.000	0.000	0.000	Negligible
Drax	0.0000	0.000	0.000	0.000	Negligible
Newland	0.0000	0.000	0.000	0.000	Negligible
Carlton	0.0000	0.000	0.000	0.000	Negligible
Camblesforth	0.0000	0.000	0.000	0.000	Negligible
Burn	0.0000	0.002	0.002	0.002	Negligible

Receptor	NDMA Concentration (ng/m^3)				
	Max Proposed Scheme PC			Max PC Impact	IAQM Impact Descriptor
	Direct [1]	Indirect [2]	Total [3]		
Temple Hirst	0.0001	0.002	0.002	0.002	Negligible
Cawood	0.0001	0.008	0.008	0.008	Negligible
Biggin	0.0000	0.005	0.005	0.005	Negligible
Howden	0.0001	0.008	0.008	0.008	Negligible
Brind	0.0002	0.008	0.008	0.008	Negligible
South Duffield	0.0001	0.002	0.002	0.002	Negligible
Highfield	0.0001	0.007	0.007	0.007	Negligible
Willitoft	0.0002	0.008	0.009	0.009	Negligible
Receptor Grid Max	0.0002	0.015	0.015	0.015	Slight adverse (7.4% of EAL)
EAL	**0.2**				

[1] Based on direct mass emissions of 'Nitrosamine 1' and 'Nitrosamine 2' from Main Stack only. PC to ground level is insignificant (<0.1% of the EAL for NDMA). There is no requirement to propose an annual average ELV for direct nitrosamine emissions.

[2] Accounts for application of ADMS Amine Chemistry Module and relates to indirect formation of nitrosamines and nitramines through atmospheric reactions.

[3] Equal to sum of modelled direct and indirect nitrosamine + nitramine concentrations.

1.43 Parameters relating to the ADMS Amine Chemistry Module applicable to the With Proposed Scheme Scenario

Parameter	Units	Notes	Core Scenario Modelling	Amine sensitivity Modelling	
Amine emission	g/s	Emission rate for amine compounds	Table 8 Supplemental Information submission V22	Stack emissions based on proxy compounds and initial design mass emission data to provide conservative assessment (2): 'Amine 1' – MEA; 1.27 g/s 'Amine 2' – DMA; 0.25 g/s	
Direct nitrosamine emission	g/s	Emission rate for nitrosamine compounds	Table 8 Supplemental Information submission V22	Stack mass emission as per core scenario modelling, but as proxy compounds: 'Nitrosamine 1' – NDMA (Direct emission only)[5] 'Nitrosamine 2' – NDMA	
NO_x emission	g/s	Emission rate for NOx, based on BAT-AEL	Table 8 Supplemental Information submission V22	As per general modelling	
Amine compound and molar mass	g/mol	Name of amine compounds included in ADMS Amine Chemistry Module	Amine and nitrosamine compounds relating to proprietary solvent provided by MHI and are confidential. Proxy amine compounds used in sensitivity testing to align with Environment Agency's EAL compounds.	Proxy compounds: 'Amine 1' – MEA 'Amine 2' – DMA 'Nitrosamine 1' – from MEA (3) 'Nitrosamine 2' – from NDMA 'Nitramine 1' – From MEA 'Nitramine 2' – From DMA	Molar mass: 61 45 90 74 106 90
Amine / OH reaction rate constant, k1	/ppb/s	Relating to the reaction of the emitted amine with the OH radical	Proprietary amine data	MEA ('Amine 1') Low: 1.72 Mid: 1.90 High: 2.07	DMA ('Amine 2') Low: 1.41 Mid: 1.46 High: 1.50
Amino radical / O_2 reaction rate constant. k2	/ppb/s	Relating to the reaction of the amino radical with oxygen (forming imine)	Proprietary amine data	MEA ('Amine 1')(4) Low: 8.63×10^{-8} Mid: 4.44×10^{-8} High: 2.96×10^{-9}	DMA ('Amine 2')(4) Low: 8.13×10^{-8} Mid: 4.19×10^{-8} High: 2.96×10^{-8}
Rate constant for formation of nitrosamine, k3	/ppb/s	Relating to the formation of the nitrosamine from the reaction of the amino radical with NO	Proprietary amine data	MEA ('Amine 1')(3) Low: 0.00128 Mid: 0.00345 High: 0.00542	DMA ('Amine 2') Low: 0.00182 Mid: 0.00192 High: 0.00192

Rate constant for formation of nitramine, k4a	/ppb/s	Relating to the formation of nitramine from the reaction of the amino radical with NO_2	Proprietary amine data	MEA (‘Amine 1’) Low: 0.00019 Mid: 0.00370 High: 0.00715	DMA (‘Amine 2’) Low: 0.00715 Mid: 0.00715 High: 0.00715
Amino radical / NO_2 reaction rate constant. k4	/ppb/s	Relating to the reaction of the amino radical with NO_2 (forming imine or nitramine)	Proprietary amine data	MEA (‘Amine 1’) Low: 0.0005 Mid: 0.0079 High: 0.0150	DMA (‘Amine 2’) Low: 0.0145 Mid: 0.0153 High: 0.0160
Branching ration for amine / OH reaction	Dimensionless	The ratio of H atom abstraction from amino group (N-H) to the methyl group (C-H)	Proprietary amine data	MEA (‘Amine 1’) Low: 0.05 Mid: 0.10 High: 0.15	DMA (‘Amine 2’) Low: 0.38 Mid: 0.40 High: 0.42
Ratio of $j_{(nitrosamine)}$ / jNO_2	Dimensionless	Ratio of photolysis rate constants for the nitrosamine and NO_2	jNO_2 ranges between 1.25 x 10^{-3} s^{-1} and 1.31 x 10^{-3} s^{-1} dependent on met year $j_{(nitrosamine)}$ based on proprietary amine data	JNO_2; As per general modelling $j_{(nitrosamine)}$ Not applicable to MEA (‘Amine 1’) because primary amines do not form stable nitrosamines (CERC, 2012). (2)	DMA (‘Amine 2’) Low: 7.00 x 10^{-4} s^{-1} Mid: 5.15 x 10^{-4} s^{-1} High: 3.3 x 10^{-4} s^{-1}
Constant, c, for OH concentration calculations	s	Constant for calculating hourly varying OH concentrations, based on relationship between annual average jNO_2, O_3 and OH concentrations	Value of c ranges between 2.45 x 10^{-3} s^{-1} and 3.01 x 10^{-3} s^{-1} dependent on met year (modelling completed across five years of met data)	As per general modelling	
Atmospheric O_2 concentration	ppb	Concentration of oxygen in air (equivalent to 21% mixing ratio)	209,406,000 ppb	As per general modelling	
Background NOx / NO_2 concentrations	µg/m^3		Defra AURN urban background monitoring site at Hull Freetown	As per general modelling	
Background O_3 concentrations	µg/m^3	Ambient hourly concentrations for	Aligning with met data years (2016-		

		each species sourced from representative monitoring location	2021)	

Notes:

(1) Data relating to model variables included in amine sensitivity modelling based on the following sources: (CERC, 2012), (Manzoor, 2015), (Nielsen, 2011). MEA and DMA represent two of the most studied amine compounds relating to emissions from carbon capture plants, thus resulting in greater data availability relating to their respective reaction schemes. Specifically, DMA is a secondary amine from which the nitrosamine, NDMA, is formed. Therefore, testing was carried out whereby all amine emissions were as MEA ('Amine 1') and DMA ('Amine 2'), with results assessed within the context of the Environment Agency EALs for MEA (amines) and NDMA (nitrosamines and nitramines). The assumption that all modelled direct and indirect nitrosamine parameters associated with the Proposed Scheme will be equivalent to NDMA represents a worst-case approach in terms of assessment versus the EAL, given that NDMA is considered to be one of the most toxic nitrosamines.

(2) Amine sensitivity modelling was based on initial design mass emission data provided by MHI that is no longer representative of the proposed BECCS plant. However, the initial design emissions represent higher mass emissions of the amine compounds relative to the proposed permit ELVs used in the core scenario modelling. As such, the initial design emission rates were used and also applied to the proprietary solvent (confidential) data as part of the sensitivity testing to allow a direct comparison with the proxy compound modelling results, whilst also providing a conservative assessment of amine mass emissions from the Main Stack. Therefore, the results of the amine sensitivity modelling are self-contained and should not be compared to the core scenario modelling results.

(3) For the purposes of representing amine chemistry using the ADMS module, the molar mass relating to the nitrosamine formed from MEA ('Amine 1') was included along with a value for k3 above zero. This ensures that there is still a sink for the amino radical and that not all amino radicals react with NO2 to form nitramine, which would not be realistic. After reacting with NO to form nitrosamine, the amino radical is not regenerated, but instead rapidly isomerises to form the imine. The photolysis rate of the nitrosamine, j(nitrosamine), is set to zero for this reason. Given that, based on current understanding, a stable nitrosamine is not formed from MEA in the atmosphere, the concentration output is not reported (CERC, 2012). However, in terms of direct nitrosamine emissions, all 'Nitrosamine 1' emissions are conservatively treated as NDMA.

(4) For the sensitivity testing, the 'low' range reaction rate values for k2 (formation of imine) are higher than the corresponding 'high' range values. This is because a higher k2 value means that a higher proportion of the amino radicals are removed from the atmosphere to form imine and thus reducing the number of radicals available to react with NO / NO2 to form a corresponding nitrosamine / nitramine. Whereas a lower k2 value means that there is a greater proportion of amino radicals available to form nitrosamine / nitramine, thereby increasing ground level concentrations.