

APPENDIX 8E: NOISE MODELLING

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8E.0.1 The following settings were used during the noise modelling.

8E.1 Modelling Assumptions

8E.1.1 The predicted operational noise levels have taken into account the worst-case scenario and have included the following assumptions:

- An internal level of 85 dB LAeq has been assumed within all buildings.
- External cladding to the EfW building will provide a low attenuation of 27 dB Rw;
- It has been assumed that louvres will be located at a high level and provide a low level of attenuation (11 dB Rw).
- 3 No. air inlets/outlets have been assumed on the top of the boiler house, emitting a sound power level of 97 dB Lw. Data has been sourced from similar facilities.
- 2 No. air inlet/outlet has been assumed on top of the turbine house, emitting a sound power level of 97 dB Lw. Data has been sourced from similar facilities.
- The final site ground levels will be 2 m AOD.
- Ramps will lead into and out of the fuel reception building, with the doors located at 5.5 m AOD.
- During all operational scenarios, doors into and doors out of the RDF reception building are assumed to be open at all times.
- The proposed 2 m high fence around the Site boundary has not been included in the noise model.

8E.2 Parameters

8E.2.1 Ground Absorption:

- Hard ground (0) for Site, Estuary, surrounding industrial areas
- Surrounding area: Soft ground (1) for all other areas

(Note: Acoustically Soft = 1, Acoustically Hard = 0)

8E.2.2 Proposed ground level:

- assumed to be 2 m AOD (the current ground level, assuming no land raising)

Receptor heights:

- 1.5 m for ground floor height, 4 m for first floor height.

Order of Reflections = 3

8E.2.3 Prediction methodology:

- ISO 9613 (1996) Acoustics - Attenuation of sound during propagation outdoors

- Calculation of Road Traffic Noise (CRTN), 1988

8E.3 Data Sources

8E.3.1 OS mapping: OS StreetView Raster 495030_657129. Purchased from Emapsite 15.08.2018.

8E.3.2 Scheme design: Fichtner Drawing , 2522-027-R6,

8E.3.3 Ground elevation data for wider area: environment.data.gov.uk/ds/survey#/

8E.3.4 Inputted Data

8E.3.5 Data on noise sources, cladding and louvres are given in Tables 8E.1 to 8E.3 and have been taken from similar schemes.

Table 8E.1: Internal reverberant noise levels

SPACE	WT.	SUM	OCTAVE BAND CENTRE FREQUENCY DB(A)							
			63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
Fuel Reception Hall	dB(A)	85.0	54.3	65.3	70.8	75.2	79.4	79.6	78.4	72.3
Fuel Bunker	dB(A)	85.0	28.8	46.9	64.4	74.8	81.0	81.2	73.0	65.9
Boiler Hall	dB(A)	85.0	32.2	56.3	66.8	79.2	80.4	79.6	73.4	68.3
Ash Bunker	dB(A)	85.0	28.8	46.9	64.4	74.8	81.0	81.2	73.0	65.9
Flue Gas Treatment	dB(A)	85.0	51.5	65.7	70.1	75.5	80.8	80.0	75.8	69.7
Turbine Hall	dB(A)	85.0	25.8	50.9	62.4	72.8	77.0	82.2	78.0	71.9
Compressed Air	dB(A)	85.0	52.7	62.8	70.3	75.7	78.9	78.1	77.9	77.8
Water Treatment	dB(A)	85.0	61.4	73.5	76.0	81.4	78.6	74.8	69.6	60.5

Table 8E.2: External plant Sound Power Levels

PLANT ITEM	WT.	SOUND POWER LEVEL DB(A)	NO. OF UNITS IN NOISE MODEL	OCTAVE BAND CENTRE FREQUENCY DB(A)							
				63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
ACC (per unit)	dB(A)	81.5	32 (16 lower fans, 16 upper fans)	56.6	61.6	68.1	80.4	71.9	68.6	62.1	52.0
Stack (per unit)	dB(A)	117.8	2	89.8	100.9	103.4	107.8	114.0	107.2	112.0	106.9
Air Inlet to boiler hall (per unit)	dB(A)	97.1	3	38.4	47.6	50.6	55.4	62.8	85.2	94.8	92.6
Air outlet from Turbine Hall (per unit)	dB(A)	97.1	2	38.4	47.6	50.6	55.4	62.8	85.2	94.8	92.6
One HGV Pass-By	dB(A)	104.3	-	87.8	90.9	96.4	98.8	98.0	97.2	91.0	84.9
34 HGV Pass-bys	dB(A)	119.6	-	103.1	106.2	111.7	114.1	113.3	112.5	106.3	100.2
36 HGV Pass-bys	dB(A)	119.8	-	103.3	106.4	111.9	114.3	113.5	112.7	106.5	100.4
43 HGV Pass-bys	dB(A)	120.6	-	104.1	107.2	112.7	115.1	114.3	113.5	107.3	101.2
44 HGV Pass-bys	dB(A)	120.7	-	104.2	107.3	112.8	115.2	114.4	113.6	107.4	101.3

Table 8E.3: Façade elements sound reduction index data

PLANT ITEM	WT.	RW	C	CTR	OCTAVE BAND CENTRE FREQUENCY								
					31Hz	63Hz	125H z	250H z	500H z	1kHz	2kHz	4kHz	8kHz
Kingspan KS1000	dB	27	-1	-3	6	13	17	21	26	26	26	42	52
Roller Shutter Door (open)	dB	0	-1	-1	0	0	0	0	0	0	0	0	0
Louvres	dB	11	-1	-1	-	4	5	8	9	12	9	7	6

8E.4 Construction and Operational Road Traffic Data

8E.4.1 Road traffic data, including flow, speed and % HGV for both the construction and operational phases were provided from the transport assessment (refer to Chapter 9: Traffic and Transport), and are given in Tables 8E.4 and 8E.5.

Table 8E.4: Construction road traffic data

LINK REF.	LINK NAME	2021 BASE (WITH LINK ROAD) + COMMITTED NO CONSTRUCTION TRAFFIC		2021 BASE (WITH LINK ROAD) + COMMITTED WITH CONSTRUCTION TRAFFIC		WITH AND WITHOUT CONSTRUCTION TRAFFIC
		18 Hour AAWT	% HGV	18 Hour AAWT	% HGV	Speed (km/h)
1	South Marsh Road (East of Hobson Way)	977	28	1843	21	56
2	South Marsh Road (West of Hobson Way)	966	8	1011	8	55
3	Hobson Way	4851	7	6113	17	72
4	Kiln Lane	5377	23	7481	36	68
4	A1173 (West of North Moss Lane)	5515	42	7244	48	64
5	A1173 (North of A180)	13074	25	15951	35	97
6	A180 North of A1173	22601	29	24708	33	105
7	A180 South of A1173	24889	27	26718	32	108

Table 8E.5: Operational road traffic data

LINK REF.	LINK NAME	2023 BASE (WITH LINK ROAD) + COMMITTED NO OPERATIONAL TRAFFIC		2023 BASE (WITH LINK ROAD) + COMMITTED WITH OPERATIONAL TRAFFIC		WITH AND WITHOUT OPERATIONAL TRAFFIC
		18 Hour AAWT	%H GV	18 Hour AAWT	%H GV	Speed (km/h)
1	South Marsh Road (East of Hobson Way)	1003	28	1689	52	56
2	South Marsh Road (West of Hobson Way)	991	8	1014	8	55
3	Hobson Way	5631	11	6238	20	72
4	Kiln Lane	7079	26	7764	31	68
4	A1173 (West of North Moss Lane)	7041	44	7648	48	64
5	A1173 (North of A180)	16409	27	17014	29	97
6	A180 North of A1173	25151	30	25459	30	105
7	A180 South of A1173	27581	26	27875	27	108