Kintore Hydrogen Plant

Environmental Impact Assessment Report
Appendix 10.2: Construction Noise Assessment Methodology and Results

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Kintore Hydrogen
A STATERA COMPANY

Environmental Impact Assessment Report

Volume 3

Appendix 10.2

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https://www.kintorehydrogen.co.uk/

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1 Construction Noise

1.1 Calculations and Modelling

1.1.1 Information on the construction phasing is presented in Volume 2, Chapter 2: Project Description. Construction will likely be split into at least two phases, with the first phase anticipated to be around 36–48 months in duration. Therefore, for the purpose of this assessment, unless specifically stated, each activity is considered to be of longer than one month duration.

1.1.2 The following four general construction phases have been modelled in the assessment of construction noise impact:

- site clearance works;
- earthworks and foundations;
- installation of plant items; and
- use of concrete batching plant.

1.1.3 For the first three scenarios above, activities have been modelled in multiple positions across the construction area in order to determine the greatest noise impact upon the surrounding receptors. For the fourth scenario, use of concrete batching plant, plant has been modelled in a fixed location towards the north of the main site.

1.1.4 At this early planning stage the exact location of construction activity and the equipment/plant that would be used cannot be determined precisely. For each general phase of works it has therefore been assumed that activity would take place right up to the site boundary, i.e. closest to noise-sensitive receptors (NSRs), and a mix of typical construction plant items have been assumed. On this the prediction of construction noise takes into account a reasonable maximum case scenario.

1.1.5 Details on the assumed plant items used within the noise model for each activity are presented in Table 1.1 to Table 1.34.

Table 1.1: Site clearance – assumed plant list

Plant	Source	#	On-time (%)	Height (m)	SWL (dBA L_W)
Portable generators	BS 5228-1 Table C.4 #85 Diesel Generator (4 kW, 18 kg)	1	100	1	94
JCB	BS 5228-1 Table C.2 #8 Backhoe Loader (62 kW, 8 t)	2	50	1.5	96
Dumper trucks (empty)	BS 5228-1 Table C.2 #33 Articulated Dump Truck (187 kW, 23 t)	3	50	1.5	109
Dumper trucks (filling)	BS 5228-1 Table C.2 #32 Articulated Dump Truck (187 kW, 23 t)	1	50	1.5	102
Compactor	BS 5228-1 Table C.2 #37/38 Roller (145 kW, 18 t)	2	25	1	107

Table 1.2: Earthworks and foundations – assumed plant list

Plant	Source	#	On-time (%)	Height (m)	SWL (dBA L_W)
360 excavator idling	BS 5228-1 Table C.2 #6 Tracked Excavator (72 kW, 16 t)	2	50	1.5	91
Ready mix delivery (discharging)	BS 5228-1 Table C.4 #18 Cement Mixer Truck	2	25	1.5	103
Dumper trucks (idling)	BS 5228-1 Table C.4 #5 Dumper (75 kW, 9 t)	2	50	1.5	91
Ready mix delivery (idling)	BS 5228-1 Table C.4 #19 Cement Mixer Truck	2	25	1.5	99
Telehandler	BS 5228-1 Table C.4 #54 Telescopic Handler (76 kW, 4 t)	2	50	1.5	107

Table 1.3: Installation of plant items – assumed plant list

Plant	Source	#	On-time (%)	Height (m)	SWL (dBA L_W)
Telehandler	BS 5228-1 Table C.4 #54 Telescopic Handler (76 kW, 4 t)	2	50	1.5	107
Crane	BS 5228-1 Table C.3 #28 Tracked mobile crane (184 kW, 110 t)	1	50	1.5	95
Scissor lift	BS 5228-1 Table C.4 #59 Diesel scissor lift	2	50	1.5	106
360 excavator	BS 5228-1 Table C.2 #6 Tracked Excavator (72 kW, 16 t)	1	50	1.5	91

Table 1.4: Concrete batching – assumed plant list

Plant	Source	#	On-time (%)	Height (m)	SWL (dBA L_W)
Concrete Mixer	BS 5228-1 Table D.5	1	100%	1.8	91
Plant Mixer	BS 5228-1 Table D.5	1	100%	1.8	112
Batching Plant	BS 5228-1 Table D.5	1	100%	6	106

1.2 Results

1.2.1 The predicted noise levels from the proposed construction activities are presented in Table 1.55. The highest predicted noise level at the most affected receptor for each activity is presented.

Table 1.5: Construction noise levels at most-affected sensitive receptor

Construction activity	NVSR	Predicted noise level (dB $L_{Aeq,T}$)
Site clearance works	Dewsford	54
Earthworks and foundations	Dewsford	43
Installation of plant items	Dewsford	47
Use of concrete batching plant	Dewsford	47

1.2.2 During the construction phase, predicted noise levels at the most affected receptors during all proposed construction activities will be below the lower cut-off values during both the daytime and weekend afternoon periods, as given in BS 5228:2009+A1:2014 [1], i.e. 65 and 55 dB $L_{Aeq,T}$ respectively. Predictions have shown that the highest noise levels are 54 dB $L_{Aeq,T,}$ predicted at the two Dewsford properties in close proximity to the main electrolysis plant construction site, due to the site clearance phase of works.

1.2.3 The sensitivity of receptors and significance of effects from the predicted construction noise levels are assessed in Volume 2, Chapter 10: Noise and Vibration.

2 Construction Traffic

2.1 Calculations and modelling

2.1.1 The construction works will result in additional vehicle movements on the existing road network. A proportion of these additional vehicles will be heavy goods vehicles (HGVs) and other heavy duty vehicles (HDVs). The temporary impact of increased vehicles on the existing road network associated with construction works may affect receptors sensitive to noise.

2.1.2 Road traffic on the public highway has been modelled using a noise change procedure based on the methodology in the 'Calculation of Road Traffic Noise' (CRTN) [2]. This considers the increase in noise from individual road links, based on the change in flow, speed and HGV composition. Within the assessment, HGVs and other HDVs are regarded as having comparable noise emissions.

2.1.3 The noise change assessment has been based on a comparison between the base year without construction and the base year with peak construction flows. An additional assessment of peak construction flows with cumulative traffic flows from other proposed developments has also been undertaken.

2.1.4 Traffic data has been provided for 11 links around the proposed development, as detailed in Table 2.1. The calculations consider total 18-hour average flows. The study area has been limited to those receptors for whom traffic on those links is, or could become, the dominant noise source. For receptors for which this is not the case, any change in noise arising from these road links will not have any significant change in their noise environment. The location and characteristics of the road links that have been assessed are described in Volume 2, Chapter 10: Traffic and Transport.

Table 2.1: Road links considered within construction traffic noise assessment

ID	Description
1	B987 to the south of the B994 junction
2	B994 to the west of the B987 junction
3	B977 to the north of Leylodge
4	Hawthorne Cottage to the east of Heathland Park junction
5	Kirkton Cottages to the north of Old Turnpyke Road junction
6	B979 to the north of Blackburn
7	B979 to the south of Hatton of Fintray to B977 at the A90
8	The Rushlach to the west of Wood Cottage
9	Unclassified road between the B977 and Bogfold
10	A96 to the north of Kintore
11	A96 to the south of Kintore

2.2 Results

2.2.1 The noise changes forecast in Table 2.2 represent the expected noise change at any NSR for which that traffic link is already the dominant noise source. For NSRs where a link contributes only a portion towards their overall existing noise environment, the noise change reported for that link forms an upper limit to the noise change which an NSR might experience due to the increased traffic flows.

2.2.2 The greatest noise change predicted is at link 3, the B977 north of Leylodge, with a +1.1 dB change. At all other road links assessed, the change is predicted to be <1 dB. The sensitivity of receptors and significance of effects from the predicted construction noise levels are assessed in Volume 2, Chapter 10: Noise and Vibration.

Table 2.2: Predicted noise change – base year with no construction against base year with peak construction flows

ID	Base year without construction ($L_{A10, 18hr}$)	Base year with peak construction flows ($L_{A10, 18hr}$)	Noise change (dB)
1	70.8	71.0	+0.2
2	68.6	69.0	+0.3
3	66.9	68.0	+1.1
4	64.9	64.9	+0.1
5	57.3	57.7	+0.4
6	64.1	64.1	0.0
7	59.8	59.8	0.0
8	54.4	55.0	+0.6
9	56.7	56.7	0.0
10	78.3	78.4	+0.1
11	78.2	78.2	+0.1

References

[1] British Standards Institution (BSI) BS 5228-1:2009+A1:2014. Code of practice for noise and vibration control on construction and open sites. Noise. London, BSI.

[2] Department for Transport (1988) Calculation of Road Traffic Noise (CRTN). London, The Stationery Office.