KEADBY
NEXT GENERATION
POWER STATION
Hydrogen-enabled flexible power

A collaboration between SSE Thermal and Equinor

The Keadby Next Generation Power Station Project

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The Keadby Next Generation Power Station Development Consent Order [year]

Environmental Statement (ES)

Volume II – Appendix 9A Construction Noise and Vibration Assumptions

The Planning Act 2008

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

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Glossary

Abbreviation/	Description
AGI	Above Ground Installation
AAWT	Annual Average Weekday Traffic
BNL	Basic Noise Level
BS	British Standard
HGV	Heavy Goods Vehicle
PPV	Peak Particle Velocity
SPL	Sound Power Level

Contents

Tables

9A. Construction Noise and Vibration Assumptions

9A.1. Construction plant assumptions

9A.1.1. This section provides the construction activity assumptions that form the basis for the prediction of construction noise and vibration in accordance with BS 5228.

9A.1.2. The construction activities are based on the information provided by the design team and are presented in **ES Volume I Chapter 5**: Construction Programme and Management **(Application Document Ref. 6.2).** The following have been assessed:

- Activity A - Site enabling and preparation;
- Activity B - Main civil works (including piling and foundations);
- Activity C - Plant installation;
- Activity D - Electrical connection construction; and
- Activity E - Canal water abstraction;

9A.1.3. Activities with their corresponding sound power levels and usage assumptions are shown in Table 9A.1 and Table 9A.2.

Table 9A.1: Construction assumptions of activities and their SPL, number and % of on-time

Activity name	Source	Sound power dBL_{WA}	Number	On-time (%)
Site enabling and preparation				
Compressor ($4m^3$/min)	BS5228 Table D 7	108	3	80
Hand-held Pneumatic Breaker	BS5228 Table C 1-6	111	3	40
Wheeled Mobile Telescopic Crane	BS5228 Table C 4-38	106	2	100
Tower Crane	BS5228 Table C 4-49	105	1	100
Lorry with Lifting Boom	BS5228 Table C 4-53	105	1	100
Diesel Generator	BS5228 Table C 4-78	94	2	100
Diesel Generator	BS5228 Table C 4-86	93	1	100
Angle Grinder (Grinding Steel)	BS5228 Table C 4-93	108	1	40
Main civil works (including piling and foundations)				
Compressor ($4m^3$/min)	BS5228 Table D 7	108	6	80
Hydraulic Hammer Rig	BS5228 Table C 3-1	117	4	40
Hand-Held Welder (Welding Piles)	BS5228 Table C 3-31	101	1	40

Activity name	Source	Sound power dBL_{WA}	Number	On-time (%)
Generator for Welding	BS5228 Table C 3-32	101	1	100
Wheeled Mobile Telescopic Crane	BS5228 Table C 4-38	106	4	100
Tower Crane	BS5228 Table C 4-49	105	2	100
Diesel Generator	BS5228 Table C 4-78	94	4	100
Diesel Generator	BS5228 Table C 4-86	93	2	100
Angle Grinder (Grinding Steel)	BS5228 Table C 4-93	108	1	100
Plant installation				
Compressor (4m^3/min)	BS5228 Table D 7	108	6	80
Wheeled Mobile Telescopic Crane	BS5228 Table C 4-38	106	4	100
Tower Crane	BS5228 Table C 4-49	105	2	100
Lorry with Lifting Boom	BS5228 Table C 4-53	105	1	100
Lifting Platform	BS5228 Table C 4-57	95	1	100
Core Drill (Electric)	BS5228 Table C 4-69	113	1	100
Petrol Hand-held Circular Saw	BS5228 Table C 4-70	119	1	40
Hand-held Circular Saw (Cutting Paving Slabs)	BS5228 Table C 4-73	112	1	40
Diesel Generator	BS5228 Table C 4-78	94	4	100
Diesel Generator	BS5228 Table C 4-86	93	2	100
Angle Grinder (Grinding Steel)	BS5228 Table C 4-93	108	1	40
Handheld Cordless Nail Gun	BS5228 Table C 4-95	101	1	50
Electrical connection construction				
Compressor (4m^3/min)	BS5228 Table D 7	108	1	100
Diesel Generator	BS5228 Table C 4-86	93	1	100
Lorry with Lifting Boom	BS5228 Table C 4-53	105	5	100
Vibratory Roller	BS5228 Table C 2-40	101	1	100
Canal water abstraction				
Vibratory Piling Rig	BS5228 Table C 3-8	116	1	100

Table 9A.2: Construction assumptions of haul routes and their SPL, number and speed

Equipment	Source	L_W (dB(A))	Number	Speed (km/h)
Dump Truck (Empty)	BS5228 Table C 2-31	115	10	20

9A.2. Construction Traffic Noise Flows

9A.2.1. For the daytime construction noise assessment, traffic flows have been provided by the Transport Consultant for the daytime. Traffic flows of the current situation and the estimated increase of traffic due to construction traffic are shown in Table 9A.3 where:

- Traffic flows: Average traffic volume as an Annual Average Weekday Traffic for 18hr;
- HGV: Heavy goods vehicle
- BNL: Basic Noise Level as defined in the Calculation of Road Traffic Noise (CRTN).

9A.2.2. The table also presents the results of the predicted noise impact.

9A.2.3. For details on the methodology of assessment for construction traffic noise including assumptions and limitations, see **ES Volume I Chapter 10**: Traffic and Transport (**Application Document Ref. 6.2**).

Table 9A.3 Construction traffic flows assumptions

Link Ref	Link Name	From	To	Link Name	Vehicle Speed (km/h)	DM Baseline Year (2036)				DM Baseline Year (2036) + Construction				Construction noise impacts
						18-hr AAWT	No of HGV (No)	HGV (no%)	BNL (dBA)	18-hr AAWT	No of HGV (No)	HGV (no%)	BNL (dBA)	
1	A18	Construction site entrance	A161	A18 (west of construction site access)	86	9970	773	7.8	70.3	10715	893	8.3	70.6	0.3
2	A161	M180 Junction 2	A18	A161 (between M180 Jct 2 and the A18)	71	7536	796	10.6	67.5	8143	916	11.2	67.9	0.3
3	A18 Station Road	Construction site entrance	King George V Bridge	A18 Station Road (immediately to the west of King George V Bridge)	50	15366	913	5.9	68.2	15643	913	5.8	68.3	0.1
4	A18 High Levels Bank	J/O A161	Tudworth Roundabout	A18 High Levels Bank (east of Tudworth Roundabout)	86	8777	1042	11.9	69.8	8916	1042	11.7	69.8	0.1
5	A18 Doncaster Road	Station Road	Frodingham Grange Roundabout	A18 Doncaster Road (between Station Road and Frodingham Grange Roundabout)	61	14927	850	5.70	69.3	15.194	850	5.6	69.4	0.1

9A.3. Construction vibration assumptions

9A.3.1. This section provides the construction activity assumptions that form the basis for the prediction of construction vibration in accordance with BS 5228-2.

9A.3.2. The formula used for the prediction of vibratory piling is $V_{res} = \frac{K_v}{x^{\delta}}$ where:

V_{res} = Resultant PPV, in millimeters per second (mm/s)

K_v = 126 (the scaling factor, based on a probability of the predicted value being exceeded of 33.3%)

x = The distance measured along the ground surface, in metres, between the piling and the receptor

δ = 1.3 (the scaling factor of an average of all vibratory piling operations)