NNB GENERATION COMPANY (HPC) LTD
Company Document

HPC COMBUSTION ACTIVITY PERMIT VARIATION – NOISE IMPACT ASSESSMENT

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Author	Emma Haymer – Associate Director, Bureau Veritas

Approval:

Prepared by:	Name: Emma Haymer Title: Associate Director, Bureau Veritas	Date: See EDRMS
Reviewed by:	Name: Emily Brough Title: Environmental Specialist	Date: See EDRMS
Approved by:	Name: Ross Pettigrew Title: Conventional Environment Technical Manager	Date: See EDRMS

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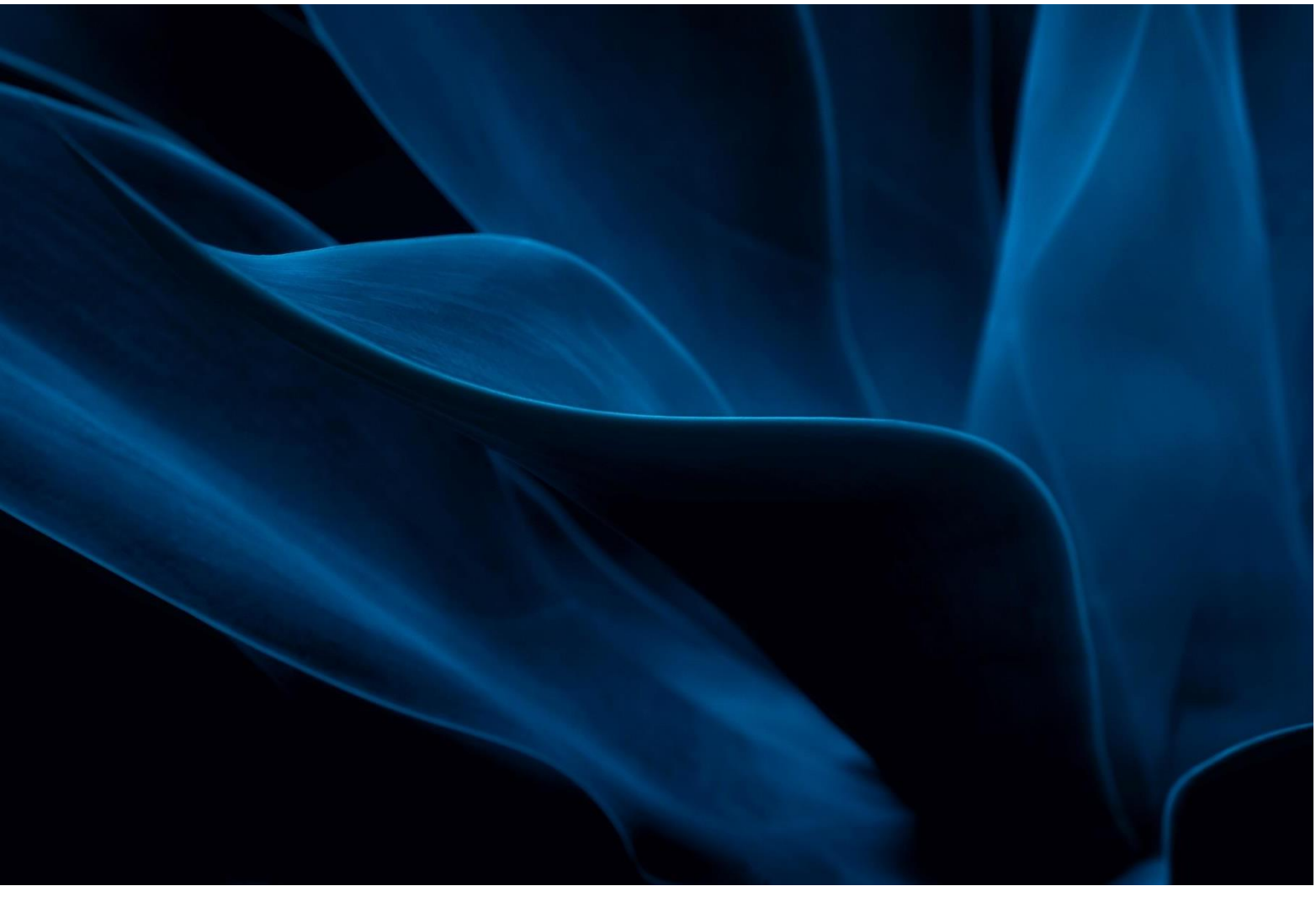
Shaping a World of Trust

NNB Generation Company Ltd
Hinkley Point C

Combustion Activity Environmental Permit Variation

Ecological Noise Impact Assessment

September 2025



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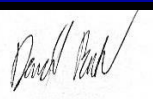
Company Name	Bureau Veritas UK Ltd	Nuclear New Build Generation Company
Contact Name	David Fink	Ross Pettigrew
Position	Senior Consultant	Conventional Environmental Technical Manager

	Name	Job Title	Signature
Prepared By	D Fink	Senior Consultant	
Approved By	Y Hao	Principal Consultant	

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1.0	24th September 2025	David Fink	First Issue	Draft

Table of Contents

1. Introduction

This report has been compiled in order to support NNB Generation Company Limited (NNB GenCo) with a Combustion Activity (CA) Environmental Permit (EP) variation application associated with the proposed UK European Pressurised Water Reactors (EPR)™ at the Hinkley Point C (HPC) site (the Site), as required under the Environmental Permitting (EP) (England and Wales) Regulation (EPR) 2018[1]. The combustion activity is associated with the provision of back-up power to the Site, comprising several diesel generators.

In relation to combustion activity, the Site currently operates under Environmental Permit reference EPR/WP3200PJ and will continue to operate under this permit during the construction phase of the Site. A separate Environmental Permit has been obtained to cover combustion activities during the operational phase of the site (reference EPR/ZP3238FH). Due to a number of design changes that have taken place since the previous application, the Site wishes to vary this operational Environmental Permit. The variation notice number is EPR/ZP3238FH/V005.

The Environment Agency has requested that noise impacts associated with the proposed permit variation are assessed at sensitive ecological receptors in proximity to the site. The purpose of this report is to detail the methodology and results from this noise impact assessment at ecological receptors.

[1] https://www.legislation.gov.uk/ukdsi/2018/9780111163023/contents

2. Criteria for Assessment and Receptor Locations

Assessment Criteria

2.1. The Environment Agency has requested that noise impacts associated with the proposed permit variation are assessed at sensitive ecological receptors in proximity to the site. As the species considered within the assessment are therefore non-human, the typical environmental permitting assessment methodology based upon guidance presented within BS 4142 is not applicable.

2.2. As such, alternative guidance has been employed in accordance with the Environment Agency guidance document '*Noise and Vibration Management: Environmental Permits*'. The criteria utilised within the assessment has been derived from the TIDE Toolbox *'Waterbird Disturbance & Mitigation Toolkit'* and is summarised within Table 2.1 below.

Table 2.1 TIDE Toolbox Waterbird Disturbance Criteria

Noise Emission Type	Risk Level		
	Low Risk	Medium Risk	High Risk
Regular Noise	< 60dB(A)	60 – 72dB(A)	72dB(A) <
Irregular Noise Events	< 55dB(A)	55 – 60dB(A)	60dB(A) <

2.3. It should be noted that the TIDE Toolbox criteria does not specifically address what constitutes 'regular' and 'irregular' noise and indicates that consideration should be afforded to context in which noise events occur.

2.4. The criteria also do not establish a time period over which assessments should be undertaken, however given the continuous nature of the noise emissions when active, this is not considered to materially affect the assessment methodology (see Paragraph 3.7).

2.5. Based upon the nature of the noise sources considered within this assessment (i.e. diesel generators intended for continuous use on an intermittent testing & maintenance basis), this assessment adopts the 'Regular' noise event criteria as the primary criteria. However, this approach transcends mere quantitative analysis, incorporating a broader contextual evaluation that examines not just acoustic emission levels, but the nuanced environmental and operational circumstances in which these noise events occur.

Receptor Locations

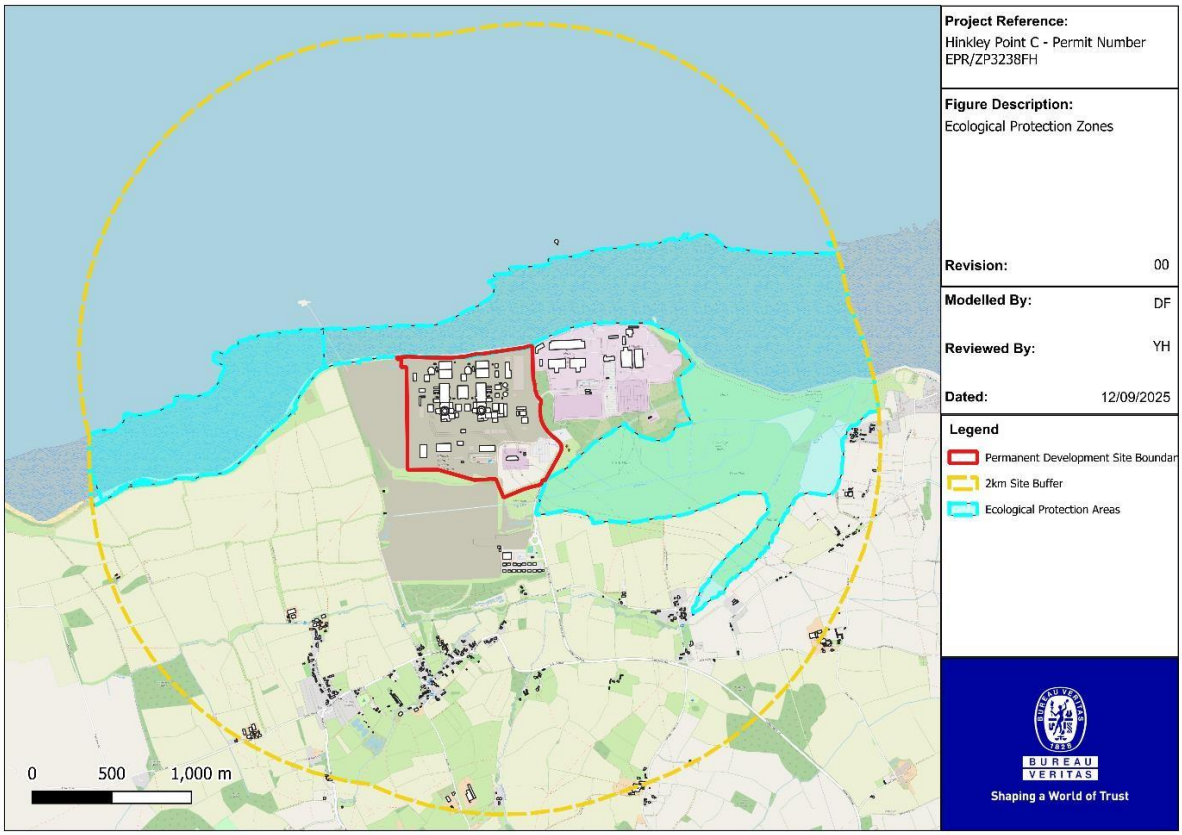
2.6. The location of HPC is such that it is in proximity to areas of environmental protection, which have been considered within this assessment. The ecologically designated sites within the 2 km study area are as follows:

- Severn Estuary (Ramsar, SPA, SAC);
- Bridgewater Bay (SSSI, NNR); and
- Somerset Wetlands (NNR).

2.7. Whilst the Blue Anchor to Lilstock Coast SSSI is within 2 km of the Site boundary, it is designated in relation to geological features rather than ecological features and is therefore not sensitive to noise pollution impacts. Consequently, it has been scoped out from further consideration within this assessment.

2.8. The locations of environmental protection areas within the 2 km study area are presented illustratively within Figure 2.1.

Figure 2.1 Environmental Protection Areas



3. Site Description and Proposed Operations

Site Location and Description

3.1. The site is located adjacent to the Hinkley Point A (HPA) and Hinkley Point B (HPB) power stations near Bridgwater, Somerset. The site address is:

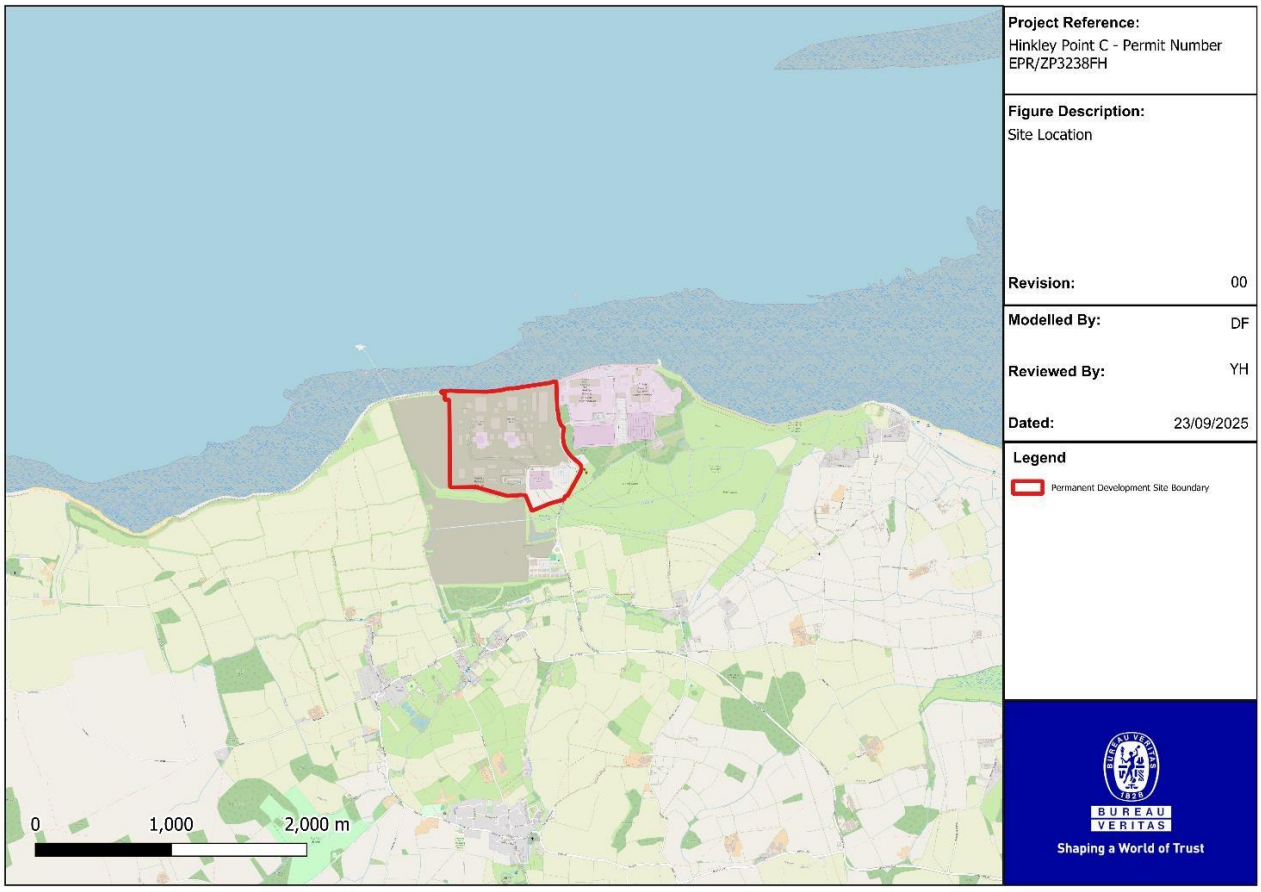
NNB Generation Company Limited
Hinkley Point C Power Station
Wick Moor Drove
Bridgwater
Somerset
TA5 1UD

National Grid Reference
ST 20300 45800

3.2. The installation is located in a coastal area, to the west to the Hinkley Point A (HPA) power station Nuclear Licensed Site Boundary. For the purpose of the EP regulations, the installation will lie within the Nuclear Licensed Site Boundary.

3.3. Figure 3.1 presents a location map of the site.

Figure 3.1 Site Location



Proposed Operations

3.4. Each of the two reactors will have separate, standalone emergency power supply. This will be provided by several diesel generators, as listed In Table 3.1 and presented illustratively within Figure 3.2. Generators are described as either 'fixed' (i.e. static within buildings), or 'mobile' (also referred to as 'Plug-in-Point', i.e. they are designed to be able to be moved and connected to the appropriate facility needing power). The primary sources from the backup diesel generator buildings are as follows:

- Emissions from the discharge stacks;
- Running of diesel generators and pumps; and
- Maintenance.

3.5. In addition to direct noise emissions from diesel generators themselves, hoppers used to cool generators during operations are included within the assessment. HDA Hoppers are individually located within each of the 22 allocated bays indicated within the four HDA building layouts (88 total units).

3.6. This permit variation application does not seek to alter the permitted activity described above, only to amend the EP to add several diesel generators that were not included in the previous application. The changes to the number of diesel generators required are as a result of design changes that have occurred since the previous permit application, to make the site more resilient in a loss of off-site power (LOOP) scenario.

3.7. Test run frequency and duration is a requirement of the nuclear safety case. Operational hours will be less than 500 hours a year for any of the scenarios. Although wherever possible test runs will be scheduled during the daytime, the diesel generators may operate at night during LOOP conditions.

3.8. Only in event of the loss of electricity supplied by either the HPC reactors or from National Grid would the back-up diesel generators be operated continuously until the connection was restored. This could be several days (the diesel storage tanks are sized to provide 72 hours continuous operation); and though the associated noise would thus be continuous over this period, it would not accumulate or increase with time (i.e. the noise levels from a 1-hour run are the same at a receptor as a 72-hour run).

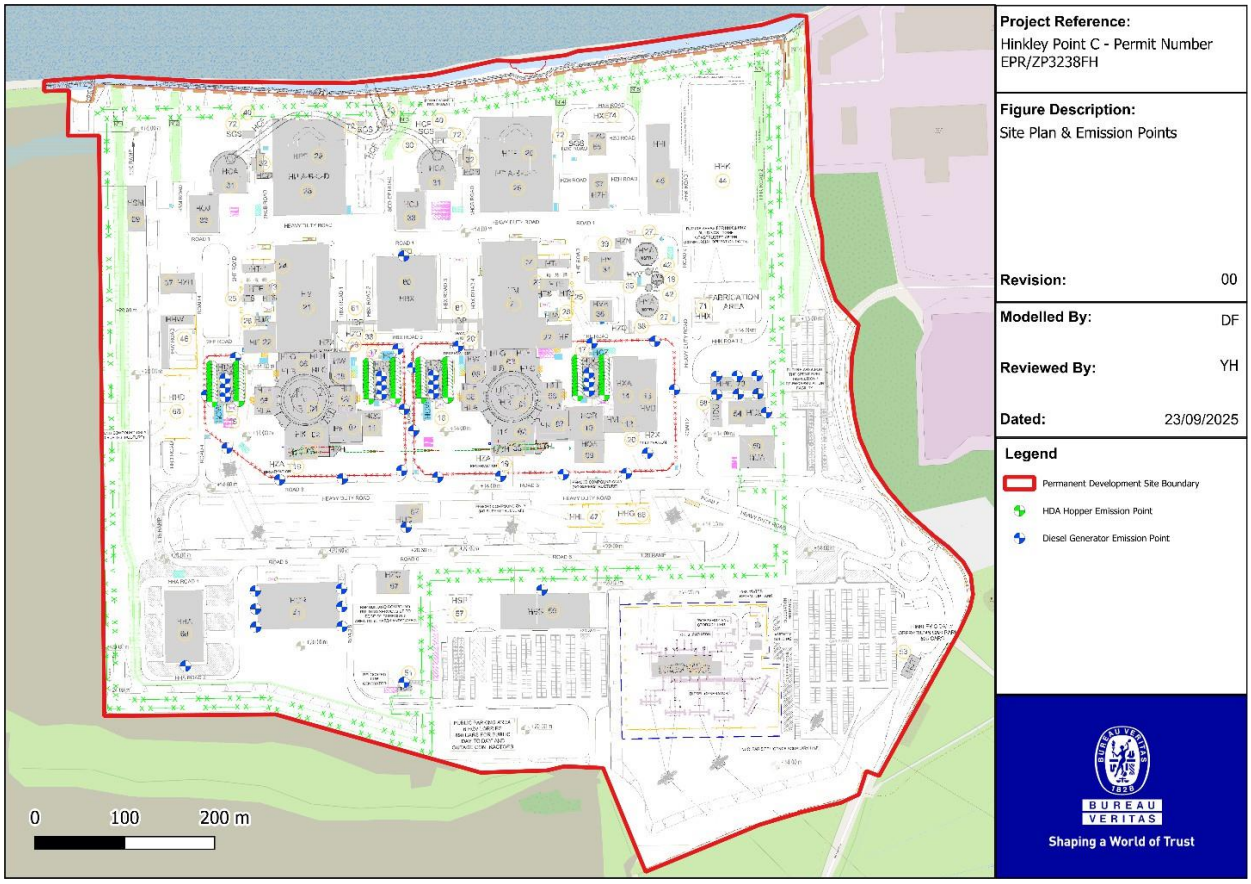
3.9. As such, the assessment has been undertaken under LOOP conditions, whereby all sources are operating simultaneously and continuously. This is considered to represent a robustly worst-case scenario.

3.10. The mobile generators currently operated on the HPC Site are discrete, individual pieces of plant that are by their nature located away from each other and rarely in clusters. In the event of a noise complaint at the HPC Site, NNB GenCo will follow its established complaints procedure. When following the procedure, the complaint will be investigated and appropriate further action taken as necessary.

Table 3.1 Emission Point Data

Emission Point Reference	Plant Type	Grid Reference (X, Y)	Stack Height (m)
EDG 1 – Unit 1	Back-up power - U1	320285, 145817	27.2
EDG 2 – Unit 1	Back-up power - U1	320285, 145827	27.2
EDG 3 – Unit 1	Back-up power - U1	320458, 145817	27.2
EDG 4 – Unit 1	Back-up power - U1	320458, 145827	27.2
UDG 1 – Unit 1	Back-up power - U1	320285, 145837	27.2
UDG 2 – Unit 1	Back-up power - U1	320458, 145837	27.2
SEG 1 – Unit 1	Back-up power - U1	320179, 145602	13.9
SEG 2 – Unit 1	Back-up power - U1	320179, 145582	13.9
SEG 3 – Unit 1	Back-up power - U1	320179, 145560	13.9
EDG 1 – Unit 2	Back-up power - U2	320053, 145817	27.2
EDG 2 – Unit 2	Back-up power - U2	320053, 145827	27.2
EDG 3 – Unit 2	Back-up power - U2	320227, 145817	27.2
EDG 4 – Unit 2	Back-up power - U2	320227, 145827	27.2
UDG 1 – Unit 2	Back-up power - U2	320053, 145837	27.2
UDG 2 – Unit 2	Back-up power - U2	320227, 145837	27.2
SEG 1 – Unit 2	Back-up power - U2	320083, 145601	13.9
SEG 2 – Unit 2	Back-up power - U2	320083, 145581	13.9
SEG 3 – Unit 2	Back-up power - U2	320083, 145561	13.9
HDU	Back-up power	320655, 145790	23.7
SMDG 1	Back-up power	320600, 145831	1.5
SMDG 2	Back-up power	320623, 145831	1.5
SMDG 3	Back-up power	320645, 145831	1.5
CWI Pump 1	Back-up power	320600, 145811	1.5
CWI Pump 2	Back-up power	320624, 145811	1.5
BDB Spare	Back-up power	320646, 145811	1.5
LLV	Back-up power for administration building	320254, 145970	44.1
ESS	Back-up power for site systems (19 Units)	320065, 145860	13.9
		320032, 145819	13.9
		320054, 145760	13.9
		320112, 145724	13.9
		320182, 145724	13.9
		320248, 145732	13.9
		320252, 145800	13.9
		320246, 145867	13.9
		320313, 145869	13.9
		320262, 145846	13.9
		320262, 145776	13.9
		320288, 145724	13.9
		320358, 145724	13.9
		320428, 145725	13.9
		320498, 145725	13.9
		320522, 145747	13.9
		320553, 145817	13.9
		320532, 145871	13.9
		320462, 145870	13.9
LLW	Back-up power	320247, 145497	13.9
HBS	Back-up power for training centre	320402, 145597	16.9
HHA	Back-up power for Framatome warehouse	320004, 145519	19.9
HZG	Back-up power for oil and grease store	320252, 145669	25.9

Figure 3.2 Site Plan & Emission Points



4. Noise Model Inputs

4.1. The operational noise propagation model for the HPC site has been updated to the latest design layout, including the back-up diesel generator related noise sources as detailed in Section 3. CadnaA noise prediction modelling software (Version 2025) has been used for the purposes of this study.

4.2. ISO 9613-2:2024, as embedded with the CadnaA noise prediction modelling software, specifies methods for the description of sound outdoors in community environments. ISO 9613 can be applied to a wide variety of sound sources and includes methods to determine most of the major mechanisms of sound attenuation.

4.3. The noise model configuration inputs are presented within Table 4.1.

Table 4.1 Noise Model Configuration Inputs

Noise Model Parameter	Input Value
Order of Reflections	3
Building Reflections	α = 0.21 (reflection loss 1.0dB)
Ground Absorption	Hard Ground G = 0 (Asphalt, Concrete, Roads, Open Water)
	Soft Ground G = 1 (Grass, Soft Ground, Porous Vegetation)
Terrain Data	DEFRA 1m 2022 Digital Terrain Model

4.4. The sources considered within the noise model and their relative estimations of Sound Power Level are presented within Table 4.2.

Table 4.2 Sources and Estimates of Noise Emissions

Noise Source	Sound Power of Equipment (dB L_{WA})	Total Number of Sources
EDGs	80	8
UDGs	80	4
HDA Hoppers	84	88
SEGs	97	6
HDU	100	1
BDB SMDG	108	3
BDB CWI Pumps	60	2
BDB Spare	108	1
LLV / HBX	100	1
ESS	97	19
LLW / HBS / HHA / HZG	97	4

4.5. As the specific details of diesel generators are not yet known, octave-band emissions have been implemented into the model based upon diesel generator information contained within BS 5228-1: '*Code of practice for noise and vibration control on construction and open sites – Part 1: Noise*', whereby the spectra has been adjusted to match the specified A-Weighted sound power level for each item.

4.6. The estimated octave-band spectrum for noise sources within the noise model is presented within Table 4.3.

Table 4.3 Noise Source Octave-Band Emission Spectra

Source	Octave Band Sound Power Level (dB, L_W)							
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
EDGs	78.5	81.5	82.5	79.5	72.5	68.5	63.5	56.5
UDGs	78.5	81.5	82.5	79.5	72.5	68.5	63.5	56.5
HDA Hoppers	82.5	85.5	86.5	83.5	76.5	72.5	67.5	60.5
SEGs	95.5	98.5	99.5	96.5	89.5	85.5	80.5	73.5
HDU	98.5	101.5	102.5	99.5	92.5	88.5	83.5	76.5
BDB SMDG	106.5	109.5	110.5	107.5	100.5	96.5	91.5	84.5
BDB CWI Pumps	58.5	61.5	62.5	59.5	52.5	48.5	43.5	36.5
BDB Spare	106.5	109.5	110.5	107.5	100.5	96.5	91.5	84.5
LLV / HBX	98.5	101.5	102.5	99.5	92.5	88.5	83.5	76.5
ESS	95.5	98.5	99.5	96.5	89.5	85.5	80.5	73.5
LLW / HBS / HHA / HZG	95.5	98.5	99.5	96.5	89.5	85.5	80.5	73.5

4.7. The assessment has been undertaken under LOOP conditions, whereby all sources are operating simultaneously and continuously.

5. Noise Assessment Results

5.1. Based upon the modelling parameters described within Section 4, noise emission contours for the site have been produced at a height of 1.0 m above relative ground level (considered to represent waterbirds roosting or wading).

5.2. Noise emission contours for the 2 km study area assuming a LOOP scenario are presented within Figure 5.1 (with emissions below 30 dB omitted for clarity of presentation), and noise emission contours within the site assuming a LOOP scenario boundary are presented within Figure 5.2.

Figure 5.1 LOOP Noise Emission Contours

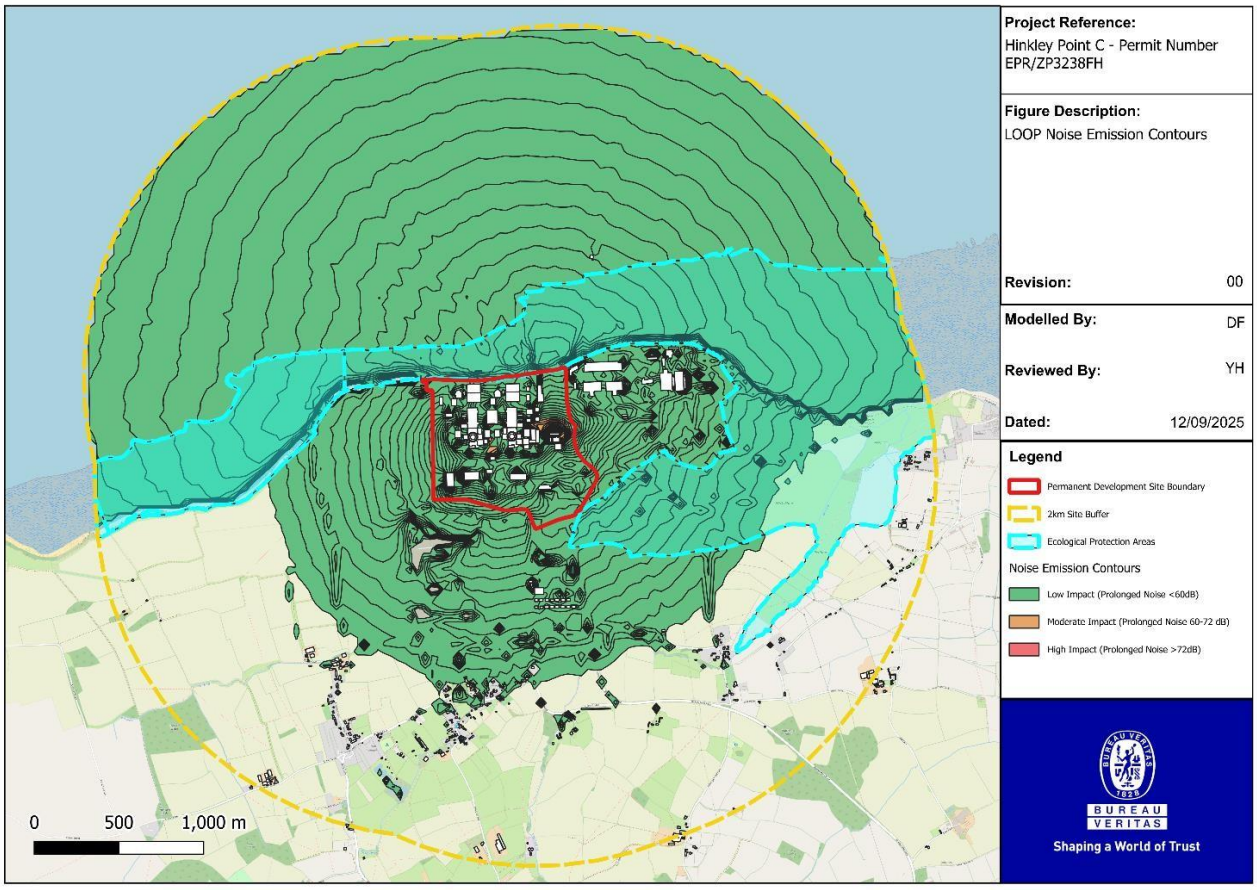
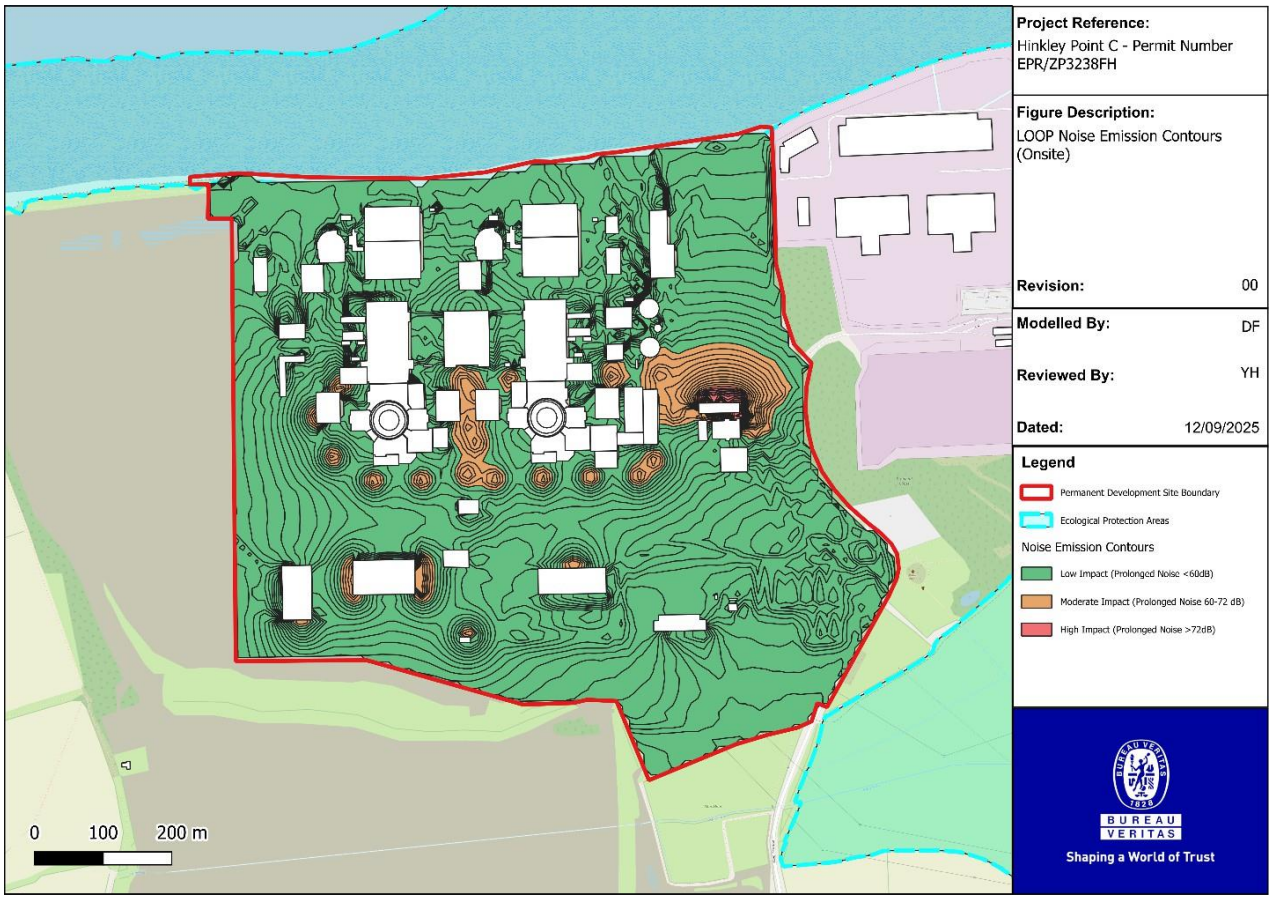


Figure 5.2 LOOP Noise Emission Contours (Onsite)



5.3. As demonstrated within Figures 5.1 and 5.2, noise emissions from emergency generators are significantly below the TIDE Toolbox 'Moderate' risk level and assessed as "Low Impact" within Ecological Protection Areas.

Contextual Basis

5.4. As discussed within Section 3, the above results represent an absolute worst-case scenario assuming LOOP conditions, with all generators operating simultaneously and continuously. Operation of the noise sources attributed to only a single EPR unit (which would be typical during Commissioning and Maintenance conditions) would give rise to a reduction of approximately 3 dB as a minimum, relative to the predicted noise levels presented within Figures 5.1 & 5.2.

5.5. As noted within Section 3, the site is located adjacent to the Hinkley Point A (HPA) and Hinkley Point B (HPB) power stations. As such, it is considered that incumbent waterfowl within ecological protection areas adjacent to the site are likely to be naturalised to the existing reactor and diesel generator operations associated with adjacent sites.

5.6. It is therefore considered that the worst-case operation of diesel generators at the site shall not be a source of significant disturbance either in isolation or when considered in context of the existing scenario, and noise emissions shall generally be a minimum of 3 dB lower than those predicted.

Discussion of Impacts at Residential Receptors

5.7. In order to demonstrate that the permit variation does not alter the significantly alter the predicted noise impacts when compared to the existing permit, specific noise levels have been predicted at the three residential receptor locations included within the previous permit application. These locations are as follows:

- Knighton Farm (319380, 144548)
- Doggets (nearest residential dwelling in Shurton) (320590, 144666)
- Wick House (321578, 144620)

5.8. Table 5.1 presents the predicted noise levels due to emergency generators at the three identified residential receptors. For ease of comparison, the noise levels predicted within the existing permit application are also presented.

Table 5.1 Assessment of Specific Noise Levels against Lowest Measured Background Sound Levels at Residential Receptor Locations

Receptor	Sound Pressure Level (dB, Free-Field)			Difference Between Specific and Background Noise Level (dB)		Predicted Noise Level Less than 5dB above Background?
	Predicted Specific Noise Level ($L_{Aeq,T}$, Neutral Wind)	Lowest Measured Background Sound Level (LA90,T)				
		Day	Night	Day	Night	
Existing Permit Application (2023)						
Knighton Farm	31	30*	30*	+1	+1	Yes
Doggets	33	32	30*	+1	+3	Yes
Wick House	32	37	36	-5	-4	Yes
Updated Assessment (2025)						
Knighton Farm	33	30*	30*	+3	+3	Yes
Doggets	34	32	30*	+2	+4	Yes
Wick House	33	37	36	-4	-4	Yes
*Minimum value of 30 dB $L_{A90,T}$ due to limitations of BS4142 methodology.						

5.9. As demonstrated within Table 5.1, predicted specific noise levels at residential receptor locations have increased by up to 2dB at residential receptors (2dB at Knighton Farm, 1dB at Doggets and Wick House), however the magnitude of impact not significantly increased when compared to the previous permit application. Due to the low absolute specific noise levels at receptor locations, no acoustic feature corrections have been applied.

5.10. As noted previously, the above results represent an absolute worst-case scenario assuming LOOP conditions, with all generators operating simultaneously and continuously. Operation of the noise sources attributed to only a single EPR unit (which would be typical during Commissioning and Maintenance conditions) would give rise to a reduction of approximately 3 dB as a minimum, relative to the predicted noise levels presented within Table 5.1.

6. Conclusions

6.1. The Environment Agency has requested that noise impacts associated with the proposed permit variation for additional backup diesel generators at Hinkley Point C are assessed at sensitive ecological receptors in proximity to the site. As the species considered within the assessment are therefore non-human, the typical environmental permitting assessment methodology based upon guidance presented within BS 4142 is not applicable.

6.2. As such, alternative guidance has been employed in accordance with the Environment Agency guidance document '*Noise and Vibration Management: Environmental Permits*'. The criteria utilised within the assessment has been derived from the TIDE Toolbox *'Waterbird Disturbance & Mitigation Toolkit.*

6.3. The operational noise propagation model for the HPC site has been updated to the latest design layout, including the back-up diesel generator related noise sources. CadnaA noise prediction modelling software (Version 2025) has been used for the purposes of this study.

6.4. Based upon the modelling parameters described within this report, noise emission contours for the site have been produced at a height of 1.0m above relative ground level (considered to represent waterbirds roosting or wading), which demonstrate that noise emissions from emergency generators are significantly below the TIDE Toolbox 'Moderate' risk level within Ecological Protection Areas.

6.5. In order to demonstrate that the permit variation does not alter the significantly alter the predicted noise impacts when compared to the existing permit, specific noise levels have been predicted at the three residential receptor locations included within the previous permit application. This assessment demonstrates that predicted impacts at residential receptor locations have not significantly increased since the previous permit application

6.6. The assessments contained within this report represent an absolute worst-case scenario assuming LOOP conditions, with all generators operating simultaneously and continuously. Operation of the noise sources attributed to only a single EPR unit (which would be typical during Commissioning and Maintenance conditions) would give rise to a reduction of approximately 3 dB as a minimum, relative to the predicted noise levels.

6.7. Generators will be normally run intermittently during the respective commissioning phase for each EPR unit, and during short-term routine testing scheduled and conducted annually. During these activities, operation will predominantly be restricted to daytime only.

6.8. In conclusion, the modelling and assessment indicate that the predicted noise levels associated with operation of the generators at HPC will not result in an adverse impact at the nearest ecological or residential sensitive receptors.

Appendix 1 – Glossary of Acoustic Terminology

"A" Weighting (dB(A))	The human ear does not respond uniformly to different frequencies. "A" weighting is commonly used to simulate the frequency response of the ear. It is used in the assessment of the risk of damage to hearing due to noise.
Decibel (dB)	The range of audible sound pressures is approximately 2 x 10^{-5} Pa to 200 Pa. Using decibel notation presents this range in a more manageable form, 0 dB to 140 dB.
Frequency (Hz)	The number of cycles per second, for sound this is subjectively perceived as pitch.
Frequency Spectrum	Analysis of the relative contributions of different frequencies that make up a noise.
$L_{eq}(T)$	The equivalent continuous sound level. It is that steady sound level which would produce the same energy over a given time period T as a specified time varying sound.
$L_{90}(T)$	The noise level which is exceeded for 90% a given measurement time period T, i.e. the background noise level.
$L_{Amax}(T)$	The maximum RMS A-weighted sound pressure level occurring within a specified time period.
Noise	Unwanted sound.
Ambient Noise	Totally encompassing sound in a given situation at any given time composed of noise from many sources, near and far.
Residual Noise	The ambient noise remaining at a given position in a given situation when the specific noise source is suppressed to a degree such that it does not contribute to the ambient noise.