



Wylfa Newydd Project

6.5.2 ES Volume E - Off-Site Power Station

Facilities: AECC, ESL and MEEG E2 -
Alternatives and design evolution

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2 Alternatives and design evolution

2.1 Introduction

- 2.1.1 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 require the main alternatives studied by Horizon to be outlined in the Environmental Statement, together with an indication of the main reasons for Horizon's choice, taking into account the environmental effects. Although the 2009 Regulations apply to the Wylfa Newydd Development Consent Order Project (see chapter A5, overarching environmental legislation, policy and guidance, Application Reference Number: 6.1.5), Horizon has also had regard to the requirements on alternatives in the 2017 Regulations, i.e.: *"A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the applicant or appellant which are relevant to the proposed development and its specific characteristics and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects."*
- 2.1.2 This chapter outlines the site selection process and design evolution for the Off-Site Power Station Facilities required as part of the Wylfa Newydd Project, and describes how design considerations and environmental constraints have influenced the decision-making process.
- 2.1.3 The chapter should be read in conjunction with chapter A4 (strategic alternatives) (Application Reference Number: 6.1.4) (which outlines the need for the Wylfa Newydd Project and the strategic alternative locations considered), volume 3 (Off-Site Power Station Facilities) of the Site Selection Report (Application Reference Number: 8.24.3), and volume 3 (Associated Developments and Off-Site Power Station Facilities) appendix 1-1 of the Design and Access Statement (Application Reference Number: 8.2.3).

2.2 Alternatives considered

- 2.2.1 The Off-Site Power Station Facilities comprise the Mobile Emergency Equipment Garage (MEEG), Alternative Emergency Control Centre (AECC) and the Environmental Survey Laboratory (ESL). The need for the Off-Site Power Station Facilities, particularly the MEEG and AECC is a requirement of the Office for Nuclear Regulation (ONR) to provide resilience against extreme events with very low probabilities.
- 2.2.2 At Pre-Application Consultation Stage Two, Horizon's preferred sites for the AECC and ESL included a greenfield site at Cefn Coch, and a bus garage site at Llanfaethlu for the MEEG. Following a review of requirements for the Off-Site Power Station Facilities, and consultation comments received following Pre-Application Consultation Stage Two, Horizon considered the potential for combining the AECC, ESL and MEEG on a single site. The consolidation of all Off-Site Power Station Facilities onto one site would reduce overall land take, thereby potentially reducing environmental impacts on the natural environment.

Alternative solutions

- 2.2.3 It is a requirement of the Nuclear Site Licence that there are adequate emergency arrangements, which are approved by the ONR. These arrangements include suitable off-site emergency facilities, which are required to be in place prior to bringing fuel to the Power Station Site.
- 2.2.4 As these Off-Site Power Station Facilities are required by the ONR, there is no possible 'do-nothing' alternative to consider.

Alternative locations

- 2.2.5 A site option assessment process was undertaken to identify the preferred site for the Off-Site Power Station Facilities. This is described in more detail in the Off-Site Power Station Facilities volume of the Site Selection Report (Application Reference Number: 8.24.3) and summarised in this chapter.
- 2.2.6 The site selection process provides an objective assessment of alternative sites against a range of planning and environmental criteria. The site selection process has therefore taken into account guidance in the relevant local and national planning policies, as follows.
- *Overarching National Policy Statement for Energy (EN-1) [RD1]*
 - *National Policy Statement for Nuclear Power Generation (EN-6) [RD2]*
 - The Joint Local Development Plan for Anglesey and Gwynedd [RD3] sets out a spatial strategy to inform the location of development associated with the Wylfa Newydd Project.
 - *The New Nuclear Build at Wylfa: Supplementary Planning Guidance [RD4]* provides locational guidance on Associated Developments, including freight logistics.
- 2.2.7 The principles of the site selection process for the Off-Site Power Station Facilities have been informed by the outcomes of an ongoing process of consultation including Pre-Application Consultation Stage One undertaken by Horizon at the end of 2014, the January Project Update consultation carried out by Horizon in 2016, Pre-Application Consultation Stage Two undertaken between August and October 2016, and Pre-Application Consultation Stage Three in May and June 2017. Horizon undertook a four-stage site identification, screening and assessment process to identify potentially suitable sites for the Off-Site Power Station Facilities. This process is described in the volume 3 of the Site Selection Report (Application Reference Number: 8.24.3), and summarised below.
- Stage 1 comprised a desk-based exercise to generate a 'long-list' of sites using a number of data sources to ensure that Horizon was aware of as many potentially available sites as possible.
 - Stage 2 comprised initial screening of the long-list to discount any sites within/covered by one or more of the following constraints: Special Area of Conservation, Special Protection Area, Ramsar Site, Site of Special Scientific Interest, World Heritage Site and Flood Risk Zone C2.

- Stage 3 of the assessment determined whether the remaining sites met Horizon's operational pre-requisites (stage 3a), as well as minimal size and compatibility pre-requisites (stage 3b).
 - Stage 4 comprised a detailed assessment of the 'short-listed' sites.
- 2.2.8 It should be noted that up to stage 3 of the assessment, separate sites were being assessed for the AECC/ESL and the MEEG. However, as described in section 2.2.2 above, following consultation feedback during Pre-Application Consultation Stage Two, and a project optimisation process, the decision was taken to combine the AECC, ESL and MEEG on a single site.
- 2.2.9 One of the sites (at Llanfaethlu) was initially discounted as a suitable site for the AECC and ESL as it did not fall within the specified 1.5km to 5km distance from the Power Station Site (a stage 3a locational criteria). Subsequently, however, Horizon was able to satisfy itself that the Llanfaethlu site would meet relevant ONR requirements. As such, Horizon has considered how better use can be made of the Llanfaethlu site to accommodate all Off-Site Power Station Facilities in one location.

Stage 4 – Detailed assessment

- 2.2.10 Stage 4 comprised a detailed assessment of five sites: J31, J22, J3, J7 and J24, based on a number of planning and environmental criteria, as described further in the volume 3 of the Site Selection Report (Application Reference Number: 8.24.3).
- 2.2.11 This stage also included a consideration of commercial matters, most notably the availability of land for lease/purchase.
- 2.2.12 Of these five sites, two (J31 and J22) were discounted.
- J31 (A5025 Site – Cefn Coch) received negative feedback during consultation due to its greenfield status, its proximity to a Site of Special Scientific Interest, and potential visual impacts with views into, and out of, the Anglesey Area of Outstanding Natural Beauty (AONB). In addition, this site would not be large enough to be considered as a combined Off-Site Power Station Facilities site and the site's narrow shape could lead to difficulties in accommodating development.
 - Site J22 (A5025 Site – land between Llanrhuddlad and Tregele) is an undeveloped greenfield site. Its close proximity to a residential property, suboptimal highways access, and potential visual impacts all raised concerns. In addition, this site would not be large enough for it to be considered as a combined Off-Site Power Station Facilities site.
- 2.2.13 The final shortlisted sites following stage 4 were therefore J3, J7 and J24, as described further in table E2-1.

Table E2-1 Summary of short-listed sites

J3	A5025 Site – Garage at Llanrhuddlad
	<ul style="list-style-type: none"> This site comprises 1.2 hectares of land located to the east of the existing A5025 between Llanfaethlu and Llanrhuddlad. It is located approximately 7.5km from the Power Station Site. The site comprises a commercial garage, a dwelling and an agricultural field. The front part of the site is hard standing with a building and external storage area (old vehicles and equipment). The area behind the site is semi-improved or improved fields with hedgerow and wall boundary features similar to the surrounding area. The buildings are located on the north-western side of the site, immediately adjacent to the A5025. The overall area is predominantly sparsely populated and surrounded by agricultural land together with one dwelling to the south-west of the site and two dwellings to the north-east of the site (all on the A5025).
J7	A5025 Site – Bus garage at Llanfaethlu
	<ul style="list-style-type: none"> J7 is approximately two hectares of land located to the east of the existing A5025 at Llanfaethlu. It is approximately 6.7km from the Power Station Site. The site itself comprises existing commercial garages and workshops together with associated hard standing which are used as a bus depot and associated motor maintenance facilities. The site is predominately hard standing with the exception of two large industrial style buildings and sits within an area that is at a lower elevation than the surrounding area. In terms of screening, the site benefits from scattered planting to its northern boundary together with bunding (mounds) around the eastern and southern sides of the site boundaries. The site is surrounded by agricultural land to the east and residential development to either side along the A5025 frontage. Proposals were in place for a new primary school to be located 120m to the south-west, on the northern periphery of Llanfaethlu village. Construction went ahead in 2017 and the school opened in autumn 2017. The school is located on the western side of the existing A5025. The section of the road between the school and the J7 site is subject to proposals for road improvements as part of the application for development consent (see chapter G1, proposed development, Application Reference Number: 6.7.1).
J24	A5025 Site – Llanfaethlu
	<ul style="list-style-type: none"> J24 comprises 1.05 hectares of land and is located to the east of the existing A5025 at Llanfaethlu. It is approximately 6.9km from Power Station Site.

- The site itself comprises part of an agricultural field, set back from the A5025 and is bounded by agricultural land to the east and south. To the north of the site is ribbon residential development on the A5025 frontage before reaching the above J7 site. At present, there is no dedicated vehicular access to the site.
- The land within this immediate area is subject to additional proposals for Off-line Highway Improvements to the A5025 as noted under J7 above.

Preferred location

- 2.2.14 For the reasons summarised below, Horizon considers J7 A5025 Site – Bus garage at Llanfaethlu to be the most appropriate site for the location of the Off-Site Power Station Facilities, and it has therefore been selected as the location for these facilities for the purposes of the application for development consent. Table E2–2 provides a summary of the stage 4 assessment findings for each site.
- 2.2.15 J7 is a predominantly brownfield site and is afforded significant weight particularly in light of the alternative sites which are mostly greenfield in nature. This site also has the significant advantage over J3 and J24 in that all of the Off-Site Power Station Facilities could be consolidated onto one site. In contrast, neither J3 nor J24 are large enough, and would require the development of two sites, with potentially increased environmental effects (such as visual, noise, air quality). Effective use of a single site would also make better use of the available land. There was general support during consultation for the redevelopment of this brownfield site, and concern regarding the alternative greenfield sites.
- 2.2.16 In addition to the operational, planning and environmental considerations outlined in this chapter; Horizon has also considered matters of commercial viability, most notably the availability of land for lease or purchase.
- 2.2.17 Although part of J7 lies within a low, medium and high surface water flood risk zone, its status as brownfield land weighs significantly in its favour and it is considered that the flood risk can be mitigated through design. Detailed flood risk modelling has been undertaken for the site to better inform the baseline understanding of pluvial flood risk mechanisms for a range of return periods but also to provide the evidence base required to show that the pluvial flood risks can be managed appropriately. To that effect, baseline flood extents and mechanisms for a critical duration storm have been used to develop a solution that will capture and pass flow around the south of the site through a grass swale. The aim is for this solution to be effective for pluvial events up to and including the 10,000-year flood event with no flooding of the buildings or their immediate vicinity; this is a nuclear safety case requirement. Modelling of the potential flood events shows that the proposed solutions would mitigate the impact of flooding.
- 2.2.18 Site J3 contains an existing commercial garage; however, this element of previously developed land only constitutes a small part of the overall site which is predominantly greenfield. The site has direct access from the A5025; however it is constrained by ground conditions, potential impacts on residential properties and also potential landscape impacts due to proximity to

the AONB. This site is not large enough to be considered as a combined Off-Site Power Station Facilities site, and could only accommodate either the AECC/ESL or the MEEG.

2.2.19 Site J24 is an undeveloped greenfield site with limited surface water flood risk. These factors aside, it is broadly comparable to J7 in terms of other planning and environmental issues. However, the site is not large enough to be considered as a combined Off-Site Power Station Facilities site. Its greenfield status also weighs heavily against the selection of the site in comparison with J7, a predominantly brownfield site. The site is also subject to proposals for highway improvement works as part of the application for development consent.

Table E2-2 Summary of final assessment considerations

J3	A5025 Site – Garage at Llanrhuddlad
<ul style="list-style-type: none"> Predominantly greenfield. No environmental or landscape designations for the site itself that would restrict its use/development. The proposed development would be sited in close proximity to existing residential properties, which would need to be considered in terms of potential impacts. Direct unimpeded access from the A5025. 	
J7	A5025 Site – Bus garage at Llanfaethlu
<ul style="list-style-type: none"> Predominantly brownfield site with capacity to accommodate required facilities. No environmental or landscape designations that would restrict its use/development. The proposed development would be sited in close proximity to existing residential properties and a school, which would need to be considered in terms of potential impacts. Direct unimpeded access from the A5025. The Isle of Anglesey County Council and some members of the public expressed support for development of the MEEG on this site (pre-dating the decision to combine facilities onto one site). 	
J24	A5025 Site – Llanfaethlu
<ul style="list-style-type: none"> Greenfield site. No environmental or landscape designations that would restrict its use/development. Planning constraint due to other proposals within the application for development consent. Direct unimpeded access from the proposed re-alignment of the A5025. 	

2.3 Design evolution of preferred site

Environmental considerations

- 2.3.1 During the design evolution, a number of environmental design objectives were identified to address environmental constraints in and around the site. These objectives were identified following completion of desk- and field-based environmental surveys, and are described in volume 3 of the Design and Access Statement (Application Reference Number: 8.2.3). Corresponding actions in the form of embedded mitigation were identified in order to mitigate (where practicable) significant adverse environmental effects.

Evolution of layout alternatives

- 2.3.2 The design of the Off-Site Power Station Facilities has been subject to a number of design phases in order to satisfy the requirements of the facilities while aiming to mitigate environmental effects.
- 2.3.3 As noted above, in previous design iterations for the Off-Site Power Station Facilities, the proposals were for the MEEG to be located on the preferred site J7 at Llanfaethlu while the AECC and ESL were to be co-located on a separate site at Cefn Coch. Table E2-3 illustrates the evolution of the design at preferred site J7, initially with the MEEG on its own, and then subsequently combined with the AECC and ESL.

Table E2-3 Off-Site Power Station Facilities design evolution

Design evolution	MEEG	AECC and ESL
1	MEEG facility located on site at Llanfaethlu with the MEEG building located centrally on the site. Additional building added for vehicle storage on the north-west site boundary, adjacent to the A5025. Staff car parking located next to the MEEG building. Areas of planting to the eastern and southern boundaries to screen views into and out of the site.	AECC and ESL co-located in one building on a separate site at Cefn Coch.
2	The MEEG building and auxiliary building orientation were amended to reflect the arrangement of the surrounding farm buildings, and to enable better use of the existing contours of the site. Site security fencing position identified. Car park relocated to the north-east away from the main central working area of the site. Areas of proposed planting refined to reinforce the surrounding vegetation pattern and to help provide visual screening.	
3	MEEG building orientation amended to be less visible from the A5025, thereby reducing	

Design evolution	MEEG	AECC and ESL
	landscape and visual effects. Car park location adjusted to fit the revised site layout. Area identified for portable office pods and container storage added with additional planting to screen the site.	
4	Addition of a small fuel pump and underground fuel tank facility to the north of the MEEG building. Pedestrian access relocated to the north to provide better accessibility and avoid conflict with vehicles.	
5	Pedestrian entrance added between substation and vehicle storage building to provide safer access. Disabled car park spaces moved to the west of the MEEG building. Fuel pump and underground fuel tank facility moved to the north-east of the site for safer refuelling.	
6	All three facilities to be co-located on the site at Llanfaethlu. The MEEG building remains in the same position, and the AECC is added as a mezzanine level. The ESL is located in the same position as the previously proposed vehicle storage building. An additional overspill car park is located in the southern portion of the site. A drainage swale is located to the south of the existing hardstanding area. Parking arrangements are as per previous design evolutions.	

Development of preferred design

- 2.3.4 As described in this chapter, the design of the Off-Site Power Station Facilities has been developed based on a design optimisation process and review of consultation feedback. This has resulted in the decision to co-locate all three facilities on the Llanfaethlu bus garage site (J7). The preferred design is shown in figure A2-2 (Application Reference Number: 6.1.10) and described in detail in chapter E1 (proposed development) (Application Reference Number: 6.5.1).

2.4 References

Table E2-4 Schedule of references

ID	Reference
RD1	Department of Energy and Climate Change. 2011. <i>Overarching National Policy Statement for Energy (EN-1)</i> . London: The Stationery Office.
RD2	Department of Energy and Climate Change. 2011. <i>National Policy Statement for Nuclear Power Generation (EN-6)</i> . London: The Stationery Office.
RD3	Isle of Anglesey County Council and Gwynedd Council. <i>Joint Local Development Plan - Written Statement (2017)</i> . [Online]. [Accessed: August 2017]. Available from: http://www.anglesey.gov.uk/planning-and-waste/planning-policy/joint-local-development-plan-anglesey-and-gwynedd
RD4	Isle of Anglesey County Council. 2014. <i>New Nuclear Build at Wylfa: Supplementary Planning Guidance</i> . [Online]. [Accessed: 6 July 2017]. Available from: http://www.anglesey.gov.uk/Journals/2014/08/11/q/k/h/Wylfa-NNB-SPG-Adopted-July-2014.pdf

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