



Wylfa Newydd Project

6.6.2 ES Volume F – Park and Ride F2 – 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 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 Park and Ride and describes how design considerations and environmental constraints have influenced the decision-making process.
- 2.1.3 This chapter should be read in conjunction with chapter A4 (strategic alternatives) (Application Reference Number: 6.1.4) of the Environmental Statement, (which outlines the need for the Wylfa Newydd Project, and the strategic alternative locations considered), volume 5 (Park and Ride) of the Site Selection Report (Application Reference Numbers: 8.24.5), and volume 3 of Design and Access Statement (Associated Development and Off-Site Power Station Facilities) (Application Reference Number: 8.2.3).

2.2 Alternatives considered

Alternative solutions

- 2.2.1 The provision of a Park and Ride is a fundamental aspect of Horizon's Integrated Traffic and Transport Strategy (Application Reference Number: 6.3.20), which has been developed in order to limit transport related environmental effects during the construction phase and to safely and efficiently transport workers to the Wylfa Newydd Development Area.
- 2.2.2 The 'do nothing' alternative to the Park and Ride proposed at Dalar Hir would be not to provide any Park and Ride for construction workers working at the Wylfa Newydd Development Area. Workers not being accommodated in the Site Campus would then have to make their own way to, and from, the Wylfa Newydd Development Area from wherever they were staying.
- 2.2.3 The construction workforce is anticipated to peak at around 8,500 workers. However, to ensure that the Wylfa Newydd Project can be flexible to the pressures of unforeseen increased demand, the assessment is based on a peak of 9,000 workers. Coincident with this peak in worker numbers it is estimated that the Park and Ride would provide parking for some 1,900

vehicles. Under the 'do nothing' scenario, these vehicles would access the Wylfa Newydd Development Area via the A5025 directly, resulting in significant traffic and transport effects on the road network and on local communities. For these reasons the 'do nothing' scenario was not considered any further.

- 2.2.4 Only sites on Anglesey were considered for a Park and Ride. Responses to Pre-Application Consultation, from Welsh Government in particular, questioned whether an additional Park and Ride on the mainland would be required. However, given the principle that the Park and Ride should be located in the best possible location to intercept journeys, one on the mainland would only be required to address capacity issues elsewhere on the road network, for example on the Britannia Bridge. Transport modelling has informed Horizon's response to this, and the conclusion is that there is no capacity or highway safety reason why a Park and Ride would be required on the mainland, in addition to on Anglesey. Further information is provided in the Transport Assessment submitted with the application for development consent (Application Reference Number: 6.3.14).

Alternative locations

- 2.2.5 A site option assessment process was undertaken to identify the preferred site for the Park and Ride. This is described in detail in volume 5 of the Site Selection Report (Application Reference Number: 8.24.5), 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 Park and Ride have been informed by an ongoing process of consultation, including the outcomes of Pre-Application Consultation Stage One undertaken by Horizon at the end of 2014, the Project Update Pre-Application Consultation in January 2016, Pre-Application Consultation Stage Two between August and October 2016, and Pre-Application Consultation Stage Three in May and June 2017.
- 2.2.8 Horizon undertook a four-stage site identification, screening and assessment process to identify potentially suitable sites for the Park and Ride. This process is described in volume 5 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 (SAC); Special Protection Area (SPA); Ramsar Site; Site of Special Scientific Interest (SSSI), World Heritage Site; and Flood Risk Zone C2;
- Stage 3 of the assessment determined whether the remaining sites met Horizon's operational prerequisites (stage 3a), as well as minimal size, and compatibility prerequisites (stage 3b), and resulted in the identification of 3 'short-listed' sites for further assessment; and
- Stage 4 comprised a detailed assessment of the 'short-listed' sites.

Stage 4 – Detailed assessment

- 2.2.9 Stage 4 comprised a detailed assessment of the three 'short-listed' sites, based on a number of planning and environmental criteria, as described further in volume 5 of the Site Selection Report (Application Reference Number: 8.24.5).
- 2.2.10 In addition, the stage 4 assessment included consideration of commercial matters, most notably the availability of land for lease/purchase and viability considerations (e.g. commercial viability). It should be noted that, whilst such commercial matters may not comprise overriding reasons for choosing a preferred site in all circumstances, where sites perform similarly in relation to other planning and environmental considerations, commercial factors were taken into account in the final choice of site. This is consistent with paragraph 4.4.3 of EN-1, which states that alternative proposals that are not commercially viable can be excluded from consideration.
- 2.2.11 The features of the three sites short-listed for detailed assessment are summarised in table F2-1 below. The Site Selection Report provides detail on how each site scored in this assessment.

Table F2-1 Summary of short-listed sites

SP301	Land adjacent Dalar Hir
	<ul style="list-style-type: none"> • The site comprises a total of 28.1ha of land located to the north of the A55 and A5, accessed directly from the A5 and adjacent to Junction 4 of the A55 with a small section of land to the south of the A55. The site is outside of a recognised settlement. The village of Llanfihangel-yn-Nhywyn is approximately 400m to the south and Bodedern is 1km to the north. • The site is bounded to the south by the A5, to the west by a road leading to Bodedern with a pull-over area for Heavy Goods Vehicles beyond to the southwest. To the east, the site is partially bounded by a road and partially agricultural land. Adjacent land to the north is in agricultural use. • The site comprises predominantly previously undeveloped agricultural land with a number of agricultural buildings. The eastern section of the site includes a go-kart track with associated buildings and a residential care home. • Parts of the site lie within low, medium and high surface water flood risk zones (pluvial) but not within fluvial flood risk zones i.e. Flood Zone C1.
SP48	Tir Ty Mawr land
	<ul style="list-style-type: none"> • The site comprises a total of 13ha of land located to the north of the A55 and southwest of the A5, accessed directly from the A5 and adjacent to Junction 3 of the A55. The site lies outside of a recognised settlement but is adjacent to the south-eastern extent of Valley's Settlement Boundary, some 200m at its nearest point. The site is bounded to the south by the A55 and the Junction 3 slipway, to the northeast by the A5. • A railway line forms the western boundary and undeveloped agricultural land is to the north. • The site comprises previously undeveloped agricultural land and is subject to risk of flooding (Flood Zone C1).
SP755	Land near Ynys Wen
	<ul style="list-style-type: none"> • The site comprises a total of 4.5ha of land located to the south of the A5 and accessed from this road. Junction 3 of the A55 is some 300m to the east. The site lies outside a recognised settlement but abuts the Settlement Boundary of Valley to the northwest. • The site is bounded to the north by the A5, to the southeast and southwest by railway lines and properties in Valley to the northwest. • The site comprises previously undeveloped agricultural land and is within Flood Risk Zone C1.

Preferred location

- 2.2.12 For the reasons summarised below, Horizon considers Site SP301 Land adjacent to Dalar Hir to be the most appropriate site for the location of the Park and Ride, and it has therefore been selected as the location for this facility for the purposes of the Development Consent Order application. Table F2-2 provides a summary of the stage 4 assessment findings for each site.
- 2.2.13 SP301 is located within Flood Zone A although part of the site lies within a low, medium and high surface water flood risk zone (pluvial). Detailed flood risk modelling undertaken for the site has indicated that design solutions for pluvial events up to and including the 10,000-year flood event are possible.
- 2.2.14 In contrast sites SP48 and SP755 are located partially or entirely within areas of fluvial flood risk (Flood Zone C1), and on this basis are rated high for flood risk. JLDP Policy PS 6 states that sites within such areas should only be considered for development where there are no alternatives in areas of lower or no flood risk. For the reasons set out above, since SP301 is a suitable alternative in this respect, the conflict with TAN15 [RD5] guidance on development and flood risk weighs significantly against the selection of SP48 and SP755.
- 2.2.15 SP301 provides a larger overall area than either SP755 or SP48 within which to fit the required parking, taking into account environmental constraints.
- 2.2.16 SP301 and SP755 are both in close proximity to residential receptors, which could potentially lead to noise and vibration and visual effects, although in either case it is likely that effects during construction could be mitigated. However, whilst SP301 is close to only two receptors (the Gwyddfor Residential Home and the Cartio Môn go-karting centre), SP755, on the outskirts of the Valley, is close to many.
- 2.2.17 SP755 is suboptimal in terms of access, since it requires travelling a short distance (approximately 500m) on the A5 to the junction with the A55. SP48 is located directly adjacent to Junction 3 of the A55. SP301 is adjacent to Junction 4 of the A55, limiting the need for significant new access works and associated highway disruption; vehicles would not be required to travel along a single carriage highway for any significant distance and neither buses nor private vehicles would need to pass through a settlement, other than on a main road.
- 2.2.18 Although the site has good access, the development of SP48 would be difficult to achieve without notable effects upon the aquatic environment, particularly the geomorphology of the watercourse, which has hydraulic connectivity to the SSSI. These potential impacts on a SSSI would need to be considered further.
- 2.2.19 In summary, SP301 is located on the strategic road network at an appropriate point in order to intercept construction workers travelling from the mainland and the south of the island and more remote areas. This site is along the A55/A5 corridor, in proximity to Valley. The two other short-listed sites lie closer to Valley but were considered less favourable on the basis of environmental considerations primarily related to noise and disturbance during operation, as well as flood risk. The site is therefore considered to comply with the spatial strategy in the JLDP.

Table F2-2 Summary of final assessment considerations

SP301	Land adjacent to Dalar Hir
	<p>This site lies on the A55/A5 corridor and therefore complies with Policy PS 11 of the JLDP. Whilst it is further from Valley than the other sites being considered, it does lie on the A55/A5 corridor, in proximity to Valley, and therefore in principle meets the broad locational guidance in the Wylfa SPG. However, it is recognised that sites closer to Valley would be preferred in terms of the locational guidance alone. Part of the site lies within low, medium and high surface water flood risk zones (pluvial) but not within fluvial flood risk zones i.e. Flood Zone C1. There is a residential property on the site and a residential care home in close proximity; however, the site is larger than required and so in principle it should be possible to mitigate some of these impacts through design. There is good access to the site, direct from the A55. It should be noted that this site is hydraulically connected with the Llyn Traffwll SSSI; and potential impacts on this would need to be considered further.</p>
SP48	Tir Ty Mawr
	<p>The site lies within close proximity to Valley and therefore meets the broad locational guidance in the Wylfa SPG. The site lies partially within Flood Zone C1 which JLDP Policy PS 6 states should only be considered where there are no alternatives in areas of lower flood risk. As there is a potential alternative (Dalar Hir) there is conflict with TAN15 which weighs significantly against the selection of this site. Potential for hydrological impacts on a SSSI would need to be considered further. There is good access to the site, direct from A55.</p>
SP755	Land near Yns Wen
	<p>The site lies within Flood Zone C1 which JLDP Policy PS 6 states should only be considered where there are no alternatives in areas of lower flood risk. As there is a potential alternative (Dalar Hir) there is conflict with TAN15 which weighs significantly against the selection of this site. Potential effects on residential amenity may be difficult to mitigate given immediate proximity and size of site. There is access to the A55 via A5.</p>

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. Figure F1-3 (Application Reference Number: 6.6.38) shows the proposed site layout.

Evolution of layout alternatives

- 2.3.2 The primary factors influencing the design layout have been the existing field boundary hedges and drainage ditches, and the Nant Dalar Hir. The Nant Dalar Hir is hydraulically connected with the Llyn Traffwl SSSI, and preventing an effect on this SSSI was a major environmental consideration in the Park and Ride design. These considerations resulted in the decision, early in the design process, to arrange the vehicle parking areas in a number of distinct zones on the site, separated by existing field boundary features in order to reduce potential effects on the hedges, ditches, and their ecological value.
- 2.3.3 Rationalisation of vehicle parking requirements resulted in a decrease in the number of parking spaces needed (see below). This allowed parking areas to be moved away from the nearest sensitive receptors such as residential and commercial properties in order to reduce potential noise and visual effects.
- 2.3.4 The main entrance area to the Park and Ride was improved by the addition of a new roundabout. This was done in order to minimise congestion on the access road from the A55, thereby reducing the potential for noise and air quality effects, and for road safety reasons.

Development of preferred design

- 2.3.5 The design for the Park and Ride has been subject to a number of design iterations to satisfy the operational requirements of the facility, to take account of the various stakeholders consulted and to mitigate environmental effects. The main design evolution is summarised below, with the studies described in chronological order.

Capacity study 01

- 2.3.6 First, the Dalar Hir site was identified and an initial capacity study undertaken to accommodate up to 3,000 vehicles (as required prior to refinement of the operational requirements of the site). The capacity study included:
- up to 3,000 total vehicle parking and staff parking zones;
 - site access/exit road locations proposed, with main access road entering the site and running along its northern boundary;
 - bus transport facility building located centrally within the site area to minimise pedestrian travel distance from parking zones;
 - bus waiting pick-up and drop-off zone proposed to consider general worker transportation efficiency; and
 - an on-site bus maintenance depot.

Design development 01

- 2.3.7 The initial layout, based on the initial capacity study was refined as follows:
- vehicle parking numbers reduced to 2,000 total; the reduced numbers liberated the eastern site area for the possibility of other facilities;

- site access/exit road locations proposed, with the main road access within the site being retained along its northern boundary;
- parking arrangement layout amended to suit reduced numbers; and
- bus depot relocated to centre of the site in order to move it further away from sensitive receptors, thereby reducing noise and visual effects.

Capacity study 02

2.3.8 In January 2016, detailed environmental constraints for the site were identified and a response developed to protect and incorporate, where appropriate, key areas of ecological value. These include Nant Dalar Hir and other watercourses on site, buffer zones for a badger sett to the north of the site, and existing hedgerows, trees and stone walls both within the site and along its boundary. The study allowed for:

- 2,000 total vehicle parking spaces;
- environmental and landscape constraints and buffer zones;
- bus transport facility building location centred within the scheme;
- car park circulation via a central 'spine road' aligned to maximise retention of the existing hedgerows within the site and maximise distances of vehicle circulation from nearby receptors, therefore reducing noise and disturbance effects;
- bus waiting, pick-up and drop-off zone and arrangement amended to suit revised site layout; and
- bus maintenance depot deleted due to the site constraints.

Design development 02

2.3.9 The capacity study was further refined to incorporate:

- 2,240 total vehicle parking spaces;
- bus transport facility building located in a central position;
- bus waiting, pick-up and drop-off zone arrangement rationalised in order to improve the overall experience of the Park and Ride users;
- environmental buffer zones for badger, drainage channels and the Nant Dalar Hir, and hedgerows integrated into the layout to reduce environmental effects and to provide separation between parking zones;
- ancillary services buildings and cycle store added;
- site drainage philosophy that recognised the value of the Nant Dalar Hir identified; and
- site fencing/walls identified and added.

Design development 03

2.3.10 A further refinement of the design included the following:

- parking zones identified for a total of 2,713 vehicle parking spaces;
- vehicle and pedestrian circulation identified;
- clarification of access points;
- removal of substation;
- new roundabout position altered with bus exit lane removed; and
- the incorporation of topographical information.

Current proposals

2.3.11 The current design (assessed within this Environmental Statement) is based upon:

- total of 1,900 vehicle parking spaces;
- arrangement of parking zones nearest to sensitive receptors revised in order to maximise buffer distance from vehicles to receptors, thereby further reducing noise and visual effects;
- rationalisation of the requirements for the bus transport facility building and its relocation further from the nearest sensitive receptors, again in order to reduce noise and visual effects;
- clarification of access points;
- removal of substation; and
- new roundabout position altered with bus exit lane removed.

2.3.12 As described in sections 2.3.6 – 2.3.11 (above), the design of the Park and Ride has developed as more information, and detail, on its precise operational requirements has become available.

2.3.13 This resulted in a decrease in parking allocation on the site, a decrease in the building footprint on site, and an increased buffer area separating car parking areas from nearest sensitive receptors to the east.

2.3.14 The preferred design, assessed in this Environmental Statement, has thus attempted to reduce, as far as practicable, the potential for significant environmental effects (particularly in relation to ecology, landscape and visual, hydrology, and noise and vibration), whilst maintaining operational effectiveness.

2.4 References

Table F2-3 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. 2017. <i>Anglesey and Gwynedd Joint Local Development Plan 2011 - 2026 - Written Statement (2017)</i> . [Online]. [Accessed: 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 (Wylfa SPG)</i> . [Online]. [Accessed 10 July 2017]. Available from: http://www.anglesey.gov.uk/Journals/2014/08/11/q/k/h/Wylfa-NNB-SPG-Adopted-July-2014.pdf .
RD5	Welsh Assembly Government. 2004. Technical Advice Note 15: Development and Flood Risk. (TAN 15). [Online]. [Accessed: 16 May 2017]. Available from: http://gov.wales/docs/desh/publications/040701tan15en.pdf .