Nuclear Restoration Services

Trawsfynydd Site Ponds Complex Demolition and On-Site Disposal Project

Report to Inform Habitats Regulation Assessment

Executive summary

Habitats Regulations Assessment (HRA) is a requirement under the Conservation of Habitats and Species Regulations 2017 (as amended) [the Habitats Regulations] where a project could affect sites designated as part of the National Sites Network for their nature conservation importance.

This report is submitted with a planning application for the Ponds Complex Demolition and Disposal Project ('the Proposed Development') within the wider Trawsfynydd Nuclear Power Station site (the 'Trawsfynydd site').

The purpose of the report is to provide the Competent Authority (CA) with the information necessary to enable compliance with its duties under the Habitats Regulations i.e. it is a Report to Inform HRA (RIHRA). It describes the screening assessment to identify potential effects on European Sites associated with the Proposed Development individually, and in combination with other plans or projects (*Stage 1: Screening*). Where a Likely Significant Effect (LSE) cannot be ruled out at the screening stage, the report goes on to present an Appropriate Assessment (*Stage 2: Appropriate Assessment*).

The European Sites within 10km of the Proposed Development Site (the 'Application Site') are:

- Meirionnydd Oakwoods and Bat Sites Special Area of Conservation (SAC);
- Rhinog SAC;
- Migneint-Arenig-Dduallt SAC;
- Afon Eden – Cors Goch Trawsfynydd SAC;
- Lleyn Peninsula and the Sarnau SAC; and
- Migneint-Arenig-Dduallt Special Protection Area (SPA).

The conclusions set out within this Screening Report find that there are no LSEs of the Proposed Development on European Sites, either alone or in-combination with other plans and projects.

Contents

1. Introduction

1.1 Purpose of this Report

1.1.1 WSP UK Ltd (hereafter referred to as 'WSP') has, on behalf of NRS (the 'Applicant'), prepared this Report to Inform a Habitats Regulations Assessment (RIHRA) of the Ponds Complex Demolition and Disposal Project (hereafter referred to as the 'Proposed Development') at part of the wider Trawsfynydd Nuclear Power Station site (the 'Trawsfynydd site').

1.1.2 This report describes the screening assessment to identify any Likely Significant Effects (LSE) of the Proposed Development on the integrity of European Sites[1] that are protected for biodiversity conservation, including effects of the Proposed Development individually, and in combination with other plans or projects (Stage 1: Screening). **Figure 1.1** in **Appendix A** shows the location of designated sites (including European Sites) relative to the Proposed Development Site (the 'Application Site'). In the event LSE cannot be ruled out at the screening stage the RIHRA goes on to present an Appropriate Assessment (Stage 2: Appropriate Assessment).

1.1.3 The purpose of the RIHRA is to provide the Competent Authority (CA), in this case Eryri National Park Authority, with the information necessary to enable compliance

[1] The Conservation of Habitats and Species Regulations 2017 were amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 to reflect the UK's exit from the EU. These largely carried forward the provisions and terminology of the 2017 Regulations, and so the term 'European site' is currently retained and for all practical purposes the definition is essentially unchanged. European sites are therefore: any Special Area of Conservation (SAC) from the point at which the European Commission and the UK Government agreed the site as a 'Site of Community Importance' (SCI) (if this was before 31 Jan 2020); any classified Special Protection Area (SPA); and any candidate SAC (cSAC). However, the term is also commonly used when referring to potential SPAs (pSPAs), to which the provisions of Article 4(4) of Directive 2009/147/EC (the 'new wild birds directive') are applied; and to possible SACs (pSACs) and listed Ramsar sites, to which the provisions of the Habitats Regulations are applied a matter of Government policy (NPPF para. 181) when considering development proposals that may affect them. "European site" is therefore used in this document in its broadest sense, as an umbrella term for all of the above designated sites.

with its duties under the *Conservation of Habitats and Species Regulations 2017 (as amended)*[2] [the Habitats Regulations].

1.2 Habitats Regulations Assessment

1.2.1 Where a project has the potential to affect European Sites, the Applicant must provide details of the sites that may be impacted together with sufficient information to enable the Competent Authority to screen the project for LSE and carry out an Appropriate Assessment in the event LSE cannot be ruled out.

1.2.2 The Habitats Regulations provide a framework for the protection of European Sites on land and within 12 nautical miles (nm) of mean high-water springs. The Habitats Regulations define the process for the assessment of the effects of plans and projects on European Sites. This process is termed Habitats Regulations Assessment (HRA) and in exercising their duty, CA's must comply with Regulation 63:

1.2.3 "63 (1) A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for a plan or project which: a) is likely to have a significant effect on a European Site or a European offshore marine site (either alone or in combination with other plans or projects), and b) is not directly connected with or necessary to the management of that site, must make an appropriate assessment of the implications for that site in view of that site's conservation objectives."

1.2.4 Where required, in undertaking an Appropriate Assessment to determine whether there are LSEs on a European Site, the CA must consult the appropriate nature conservation body (in this instance Natural Resources Wales (NRW)) and have regard to any representations that it makes. NRW is also commonly consulted in the process of screening projects to establish whether an Appropriate Assessment is required.

1.2.5 HRA is a four-stage process (see **Box 1**). Stages 1 and 2 are covered by Regulation 63 and Stages 3 and 4 are covered by Regulation 64. At Stage 2, an adverse effect on the integrity of a European Site is interpreted as one that prevents the site from making the same contribution to the favourable conservation status of the relevant ecological feature as it did at the time of site designation.

[2] The Conservation of Habitats and Species Regulations 2017. [Online] Available at: https://www.legislation.gov.uk/uksi/2017/1012/contents [Accessed 19 July 2024].

1.2.6 The HRA screening process applies a threshold of LSE to determine whether effects on European Sites should be subject to further assessment. For the purposes of this assessment, based on best practice and relevant case law, an LSE is defined as any identified effect that could result in a change in the conservation status of one or more qualifying features of a European Site after all aspects of the Proposed Development have been considered alone and in-combination with other plans and projects.

1.2.7 A precautionary approach has been taken to screening the potential effects of the Proposed Development on European Sites. Only those qualifying features and European Sites where it can be demonstrated that there is no likelihood of a significant effect occurring have been screened-out. Mitigation and avoidance measures are not considered during HRA Stage 1 and instead are considered during Stage 2 (Appropriate Assessment).

1.2.8 Each potential effect is considered using information from published literature (where available), available baseline data and professional judgement, informed by the Chartered Institute of Ecology and Environmental Management (CIEEM) guidelines[3].

[3] Chartered Institute of Ecology and Environmental Management (CIEEM, 2018). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal*. CIEEM, Winchester.

Box 1 – HRA Stages

Stage 1 – Screening or 'Test of significance'

This stage identifies the likely effects of a project or plan on a European site, either alone or 'in combination' with other projects or plans and considers whether these effects are likely to be significant. The 'screening' test or 'test of significance' is a low bar, intended as a trigger rather than a threshold test: a plan should be considered 'likely' to have an effect if the competent authority is unable (on the basis of objective information) to exclude the possibility that the plan or project could have significant effects on any European site, either alone or in combination with other plans or projects; an effect will be 'significant' simply if it could undermine the site's conservation objectives. Note that mitigation measures should not be taken into account at the 'screening' stage, this reinforces the idea of screening as a 'low bar' and makes 'appropriate assessments' more common.

Stage 2 – Appropriate Assessment (including the 'Integrity test')

An 'appropriate assessment' involves a closer examination of the plan or project where the effects on relevant European sites are likely significant or uncertain, to determine whether any sites will be subject to 'adverse effects on integrity' if the plan or project is given effect. The scope of any 'appropriate assessment' stage is not set, and the assessments will not be extremely detailed in every case (particularly if mitigation is clearly available, achievable, and likely to be effective). The assessments must be 'appropriate' to the effects and proposal being considered, and sufficient to ensure that there is no reasonable doubt that adverse effects on site integrity will not occur (or sufficient for those effects to be appropriately quantified should Stages 3 and 4 be required).

Stage 3 – Assessment of Alternative Solutions

Where adverse effects remain after the inclusion of mitigation, Stage 3 examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of European sites. A plan or project that has adverse effects on the integrity of a European site cannot be permitted if alternative solutions are available, except for imperative reasons of overriding public interest (IROPI; see Stage 4).

Stage 4 – Assessment Where No Alternative Solutions Exist and Where Adverse Impacts Remain

This stage assesses compensatory measures where it is deemed that there are no alternatives that have no or lesser adverse effects on European sites, and the project or plan should proceed for imperative reasons of overriding public interest (IROPI). The EC guidance does not deal with the assessment of IROPI.

1.3 Screening Methodology

Screening process

1.3.1 HRA screening (Stage 1) determines whether or not a plan or project is capable of resulting in LSEs on one or more European Sites. Where an LSE is identified, an

Appropriate Assessment is required (Stage 2) to determine whether it can be concluded that the plan or project will not result in an adverse effect on the integrity of one or more European Sites.

1.3.2 The HRA screening stage has been characterised by the European Commission in the guidance document 'Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC' as a four-step process:

- Step 1: "*determining whether the project or plan is directly connected with or necessary to the management of the site*";
- Step 2: "*describing the project or plan and the description and characterisation of other projects or plans that in combination have the potential for having significant effects on the Natura 2000 site*";
- Step 3: "*identifying the potential effects on the Natura 2000 site*"; and
- Step 4: "*assessing the significance of any effects on the Natura 2000 site*".

1.3.3 When each of these steps has been worked through there are two potential outcomes:

- One or more LSEs on qualifying features of European Sites are identified and the project requires an Appropriate Assessment (Stage 2); and
- No LSEs on qualifying features of European Sites are identified either because there is no pathway by which such effects could occur, or the potential effect can be discounted due to project design and therefore there is no requirement for an Appropriate Assessment.

1.3.4 In order to determine whether a plan or project is capable of resulting in one or more LSEs on a European Site, it is necessary to understand the activities associated with the construction, operation or decommissioning (where relevant) of the project, the resulting environmental changes that may occur and the effects that this may have on qualifying features of European Sites (e.g. disturbance and displacement of fauna resulting in increased energy expenditure and reduced energy intake resulting in lower survival rates and/or lower rates of population recruitment). Through the use of this 'activity – change – effect' concept, it is possible to identify European Sites (and their qualifying features) that may be subject to LSE.

Identifying potential effects in-combination with other plans or projects

1.3.5 Effects on European Sites may result from a Proposed Development alone and/or in-conjunction with other plans or projects; these potential cumulative effects are described as 'in-combination effects' in the Habitats Regulations.

1.3.6 The identification of plans and projects to include within the in-combination assessment follows the same methodology as that outlined in **Section 2.3** for the identification of European sites relevant to the Proposed Development. Key to the inclusion of other plans and projects within the assessment are the spatial and temporal overlaps that may occur due to the scale of potential changes (for example overlaps in the zones of disturbance caused by simultaneous construction/operational activity) or the areas over which potential receptors may travel, for example a bat may pass through several areas where development is proposed when moving between roosting and foraging habitats.

1.3.7 Within a 10km search area, the types of projects included within the assessment are:

- projects that are under construction;
- permitted application(s) not yet implemented;
- submitted application(s) not yet determined (both at local and national levels); and
- projects identified in the relevant development plan, recognising that much information on any relevant proposals will be limited.

1.3.8 Following the identification of plans and projects within the search areas, an initial screening is undertaken to filter out minor proposals (e.g. extensions to existing dwellings) and those with no potential to overlap with the Proposed Development due to differing timescales.

1.3.9 Where a project is found to have no LSE on a European Site, the conclusion is reached that the project will have a *'de minimis'* effect both alone and in combination with other plans or projects.

2. Screening of Likely Significant Effects

2.1 The Proposed Development and Management of European Sites

2.1.1 **Step 1** seeks to determine whether or not the plan or project is directly connected to, or necessary for, the management of a European Site. The European Commission guidance states that to conclude that a plan or project is directly connected to or necessary for the management of a European Site, it must relate solely to conservation actions and not be a direct or indirect consequence of other actions.

2.1.2 The Proposed Development is a 'project', for the purpose of the Habitats Regulations and it is not directly connected with or necessary for the management of any European Site. An Appropriate Assessment may still be required and so it is necessary to proceed to **Step 2** of the screening process.

2.2 The Proposed Development and Potential Environmental Changes

2.2.1 **Step 2** requires an understanding of the elements of the Proposed Development and the associated environmental changes that could result in LSE on a European Site. The description of the development must identify the elements that may directly affect a European Site (e.g. land-take), those that may indirectly affect a European Site (e.g. emissions to air and water) and those that may act 'in combination' with other plans or projects.

Site location and boundaries

2.2.2 The Trawsfynydd site (see **Figure 1.1** in **Appendix A**) is at the northern edge of Llyn Trawsfynydd, approximately 2.5km north-west of Trawsfynydd in Gwynedd and Eryri National Park. The Proposed Development is within the south-western part of the wider Trawsfynydd site at approximate National Grid Reference (NGR) SH 6901 3812.

2.2.3 The Application Site is located mostly on hard standing, and the built structures of the ponds complex include active waste vaults, main sludge vault, resin vault, Fuel Element Debris (FED) vaults, acceptance bay and void, ponds lanes and a central bay.

2.2.4 The land surrounding the Trawsfynydd site includes Llyn Trawsfynydd, as well as semi-natural woodland (some of which is ancient woodland), broadleaved and coniferous plantation, watercourses, upland habitats, farmland/pasture and scattered residential properties and farmhouses.

Description of the Proposed Development

2.2.5 A detailed description of the Proposed Development is set out in **Appendix B**, with a summary provided below.

2.2.6 The Proposed Development is primarily the demolition, infilling, and capping of the ponds complex at the Trawsfynydd site. Ancillary to this will be the construction of associated revised drainage arrangements.

2.2.7 Detailed design is ongoing, and the proposed methodology details the options that may be implemented. This information has informed this RIHRA and has been used to define a precautionary Zone of Influence (ZoI) of the Proposed Development and the activities associated with it in **Table 2.1.**

2.2.8 The proposed works will entail on-site disposal of radioactive waste at the ponds complex, both by emplacement of suitable radioactive demolition arisings ('disposal for a purpose') i.e., infilling unwanted voids within the ponds complex; and by in-situ disposal of redundant below-ground radioactive structures.

2.2.9 The activities to deliver the demolition of the ponds complex will take place entirely within the Application Site boundary (see **Figure 2.1** in **Appendix A**).

2.2.10 Completion of the Proposed Development will require several regulatory permissions and/or regulatory or self-regulatory processes to be worked through. These include:

- Planning permission for development under the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017[4];
- The proposed on-site disposals of radioactive waste will require a variation to the site's permit under Environmental Permitting Regulations (EPR)[5]. The application to Natural Resources Wales (NRW) for this permit variation was made by the Applicant in accordance with the document Guidance on

[4] UK government (1990) Town and Country Planning (Environmental Impact Assessment (Wales) Regulations 2017 Act (online). Available at: https://www.legislation.gov.uk/wsi/2017/567/contents [Accessed 19 July 2024]
[5] Natural Resources Wales, The Environmental Permitting (England & Wales) Regulations 2016, Permit EPR/GB3835DE for the management of radioactive wastes.

Requirements for Release of Nuclear Sites from Radioactive Substances Regulation[6] (known informally as the “GRR”) and other permitting guidance.

- Other regulatory or self-regulatory requirements required are approval of the drainage proposals by the Sustainable Drainage Systems (SuDS) Approving Body (SAB) (approved in June 2022), and adherence to an appropriate quality protocol for recovery of non-radioactive demolition arisings for use on site, or a Deposit for Recovery (DfR) permit from NRW under EPR16 to achieve the same outcome.

Environmental changes and the Zone of Influence

2.2.11 The integrity of ecological features, including the features of European Sites, may be impacted by various environmental changes associated with the Proposed Development where the receptor is both exposed and sensitive to those changes. The ZoI of the Proposed Development will depend on a number of moderating factors, such as natural attenuation or barrier effects[7] for example, however it is possible to estimate precautionary areas where environmental changes due to the Proposed Development may be measurable and sufficient to affect an ecological feature.

2.2.12 **Table 2.1** summarises the main activities identified as part of the Proposed Development and the associated environmental changes that could occur as a result of these activities. The associated ZoI is estimated, taking into consideration available evidence and professional judgement.

2.2.13 Future on-site disposals and delivery of the Trawsfynydd site final end state are outside the scope of the Proposed Development and will be the subject of future applications and permit variations.

[6] NRW, Environment Agency and SEPA (2018) Management of Radioactive Waste from Decommissioning Nuclear Sites: Guidance on Requirements for Release from Radioactive Substances Regulation (online). Available at: https://www.sepa.org.uk/media/365893/2018-07-17-grr-publication-v1-0.pdf [Accessed 19 July 2024].

[7] Taking noise, for example, without any barriers construction noise of around 110dB would be expected to attenuate to less than 50dB within 500m due to distance alone.

Table 2.1 Potential environmental changes, effects, and ZoI

Activity	Potential change	Potential effect	Geographic extent (initial assessment)
Demolition of buildings and structures which make up the ponds complex.	Land cover change.	Loss of habitat. Reduction of resource available for fauna (e.g. for shelter, foraging and commuting). Severance of habitat linkages resulting in loss of further functional habitat (i.e. of importance to the integrity of a European site) and barrier effects on species' populations. Physical removal of habitat and features leading to injury and mortality of fauna.	Within Application Site boundary. Although the geographic extent of the habitat change is localised, mobile qualifying features of European sites may interact with it when remote from the relevant European sites.
Demolition of buildings and structures which make up the ponds complex and disposals, including crushing, infilling of underground voids	Increase in noise levels, vibrations and visual activity.	Disturbance to fauna, altering behaviour and affecting breeding/ foraging/ overwintering success.	Up to approximately 250m from the Application Site boundary, based on a precautionary approach and the likely disturbance distance of

Activity	Potential change	Potential effect	Geographic extent (initial assessment)
and capping and site monitoring.			breeding birds[8], also encompassing the distance (approximately 200m) over which breeding otters are likely to be disturbed[9]. Although the geographic extent of the habitat change is localised, mobile qualifying features of European sites may interact with it when remote from European sites.
Demolition of buildings and structures within the ponds complex and disposals, including crushing, infilling of	Dust deposition.	Changes to vegetation communities leading to habitat loss/degradation.	Within and up to ~50m from the Application Site boundary. Based on Institute of Air Quality Management10.

[8] Ruddock, M and Whitfield, D.P. (2007). A Review of Disturbance Distances in Selected Bird Species. A report from Natural Research (Projects) Ltd to Scottish Natural Heritage

[9] NatureScot. Standing advice for planning consultations – Otters. [Online]. Available at: https://www.nature.scot/doc/standing-advice-planning-consultations-otters [Accessed 19 July 2024].

[10] IAQM (2024). Guidance on the Assessment of Dust from Demolition and Construction (Version 2.2). [Online]. Available from: https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf [Accessed 19 July 2024].

Activity	Potential change	Potential effect	Geographic extent (initial assessment)
underground voids and capping.			

Activity	Potential change	Potential effect	Geographic extent (initial assessment)
Capping and drainage to interface with the existing site drainage system to manage and attenuate surface waters and direct water away from below ground voids. Any water extracted from the voids will be treated prior to discharge from site. If water is sufficiently radioactive it will be treated via the Trawsfynydd site's existing Active Effluent Treatment Plant prior to discharge.	Deterioration in water quality.	Changes to water quality leading to degradation of aquatic habitats and associated flora and fauna.	Downstream of the Application Site boundary, within Llyn Trawsfynydd and the catchment of Afon Tafarn-helyg and Afon Dwyryd. Surface water discharges (radioactive and non-radioactive) attenuated from the disposal area and discharged via the diversion culvert to Llyn Trawsfynydd will be treated to be of a similar composition to current discharges and will be within the limits and conditions of the current Trawsfynydd site permits.
Application Site run-off water from roads will drain through a water treatment system if necessary prior to discharge from site via the diversion culvert. Along the discharge route there will be pH control and the existing oil separator.			

Activity	Potential change	Potential effect	Geographic extent (initial assessment)
Void infill with (on-site disposal of) demolition arisings	Deterioration in water quality (Long term)	Radioactive and non-radioactive (pH, chromium-VI) changes to groundwater quality leading to degradation of aquatic habitats and associated flora and fauna in the long term, after release of the site from environmental permitting.	Downstream of the Application Site boundary, within the catchment of Afon Tafarn-helyg and Afon Dwyryd. Assessments undertaken in line with Environment Agency guidance (see **Chapter 9: Long-term radiological effects and non-radiological impacts**) have indicated there is negligible risk of unacceptable pollution of groundwater extending off site and hence reaching surface watercourses in the long term.
Artificial lighting for operational activities and security purposes.	Increase in artificial lighting levels.	Indirect habitat loss/degradation resulting in a reduction of resource available for fauna (i.e. for shelter, foraging, commuting). Severance of habitat linkages resulting in loss of further functional habitat (i.e. of	Within and up to ~100m from the Application Site boundary. This distance is highly precautionary. Within the Radiation Controlled Area (RCA) where the Proposed Development is located, there is illumination at night, as well

Activity	Potential change	Potential effect	Geographic extent (initial assessment)
		importance to the integrity of a European site) and barrier effects on species' populations.	as low level 'street' lights (roads and pathways). Substantive working outside normal work hours (08:00-18:00) is not anticipated, with the exception of end-of day activities in winter and time critical activities, such as manual surface finishing following concrete pours. These activities will involve a small number of operatives working under directional task lighting, using temporary low level directional mobile units. Although the geographic extent of the habitat change is localised, mobile qualifying features of European sites, such as bats and otter, may interact with it when remote from the relevant European sites.
Transportation of plant and materials via Heavy Goods vehicles (HGV) and increased staffing levels.	Increase in vehicle movements mainly during the works phase.	Increased vehicular collision leading to injury and mortality of fauna.	HGV access to the Trawsfynydd site is via a specific access road that meets the A470. The A470, links the Trawsfynydd site with the A5

Activity	Potential change	Potential effect	Geographic extent (initial assessment)
		Increase in air pollution caused by exhaust emissions resulting in degradation of habitat.	south of Betws-y-Coed and mid and south Wales and provides a connection to the A487 near Gellilydan and A494 near Dolgellau. Air quality effects are estimated at 100m radius based on reported effects of Nitrogen Oxide extending up to 100m from a road[11]. The Proposed Development will result in a slight temporary increase in vehicle (HGV) movements and a temporary limited increase of up to 20-25 staff per day. The increase in traffic is unlikely to be significant in traffic flow, safety, or vehicle emissions terms. Although the geographic extent of habitat change is localised, the mobile qualifying features of European sites may interact

[11] Bignal, K.L., Ashmore, M.R. Headley, A.D., Stewart, K. and Weigert, K. (2007). Ecological impacts of air pollution from road transport on local vegetation. Applied Geochemistry, 22:1265–1271.

Activity	Potential change	Potential effect	Geographic extent (initial assessment)
			with it when remote from the relevant European sites (such as bats and otter).

2.2.14 In general, developments can affect European Sites, or their qualifying features, through the following principal mechanisms[12] :

- Direct physical damage to habitats used by European Site interest features;
- Disturbance to fauna, altering behaviour and affecting breeding, foraging and/or overwintering survival, for example visual disturbance and/or disturbance due to noise/vibration and artificial lighting;
- Damage to habitats or species from site-derived materials or pollutants (e.g. dust and contaminated or silt-laden run-off or discharges) during the Works Phase; and
- Direct injury or mortality of species due to increased vehicle movements.

2.2.15 The Proposed Development has the potential to damage to habitats or species from long-term changes in groundwater quality deriving from the void infill materials eventually affecting surface water quality.

2.2.16 Based on the information summarised in **Table 2.1**, it is reasonable and precautionary to conclude that a European Site's interest features will only be exposed to the effects of the Proposed Development where: a European Site is within 0.5km of the Proposed Development or connected to it hydrologically; or where the interest features of the European Site are functionally dependent on habitats that are either within 0.5km of the Proposed Development or are hydraulically connected to it.

2.2.17 Based on the existing nature of the Trawsfynydd site and characteristics of the Proposed Development, a geographic extent of 10km has been selected as a precautionary ZoI for the purpose of HRA screening. This is the distance up to which LSEs on bats should be considered in accordance with good practice[13]. It is also precautionary in terms of encompassing potential hydraulic connections between the Trawsfynydd site and watercourses/catchments that support European Sites.

[12] It should be noted that this does not account for the presence (or not) of particular ecological features within or near the Proposed Development's ZoI for environmental changes.

[13] Collins, J. (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines*. Bat Conservation Trust; London, UK.

2.3 Potential Effects on European Sites

Screening Principles

2.3.1 In **Step 3**, the European Sites that could be affected by the Proposed Development, either alone or in-combination with other plans or projects, are identified. The outcome of this step is a list of SACs, SPAs and Ramsar sites and associated qualifying features for which the potential for LSEs to arise (as a result of activities associated with the Proposed Development) cannot be excluded.

2.3.2 In line with the ruling of the European Court of Justice in Waddenzee (c-127/02), an LSE is one which cannot be excluded on the basis of objective information, either individually or in-combination with other plans or projects.

European Sites subject to screening

2.3.3 A search for European Sites within 10km was undertaken using the Defra GIS mapping tool MAGIC[14]. Further details of these sites were obtained from the Joint Nature Conservation Committee (JNCC) website[15] and NRW[16].

2.3.4 The European Sites that fall within this 10km perimeter are shown on **Figure 1.1** in **Appendix A** and summarised in **Table 2.2**, including size/extent; proximity to the Proposed Development, qualifying features and references to sources of information on site character and standard data forms, which include links to management plans and conservation objectives.

[14] Defra (2022). *MAGIC maps*. [online] Available at: https://magic.defra.gov.uk/ [Accessed 19 July 2024].
[15] Joint Nature Conservation Committee (2022). *JNCC homepage*. [online] Available at: https://jncc.gov.uk/ [Accessed 19 July 2024].
[16] Natural Resources Wales (2022). Natural Resources Wales homepage. [online] Available at: https://naturalresources.wales/?lang=en [Accessed 19 July 2024].

Table 2.2 European Sites within 10km

European Site (proximity and area)	Qualifying features	Site details	Is there a source-pathway-receptor linkage to the Application Site, e.g. via surface water flows?	Is there a functional dependence on land within or immediately adjacent to the Application Site?
Meirionnydd Oakwoods and Bat Sites SAC [Site Code: UK0014789] ~0.9km south-west; 2,812.79 hectares (ha)	*Primary reasons for site selection:* ▪ Old sessile oak woodland with Ilex and Blechnum; ▪ Alluvial forest with alder and ash; and ▪ Lesser horseshoe bat. *Qualifying feature (not primary reasons for site selection):* ▪ Watercourses of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachio* vegetation; ▪ Northern Atlantic wet heaths with Cross-leaved heath;	Standard data form and management plan available [online] via JNCC website: https://sac.jncc.gov.uk/site/UK0014789	No	No

European Site (proximity and area)	Qualifying features	Site details	Is there a source-pathway-receptor linkage to the Application Site, e.g. via surface water flows?	Is there a functional dependence on land within or immediately adjacent to the Application Site?
	▪ European dry heaths; ▪ Tilio-Acerion forest of slopes, screes and ravines; and ▪ Bog woodland.			
Rhinog SAC [Site Code: UK0012945] ~4.1km south-west; 3,144.31ha	*Primary reasons for site selection:* ▪ European dry heaths; and ▪ Old sessile oak woodland with Ilex and Blechnum. *Qualifying feature (not primary reasons for site selection):* ▪ Oligotrophic to mesotrophic standing waters with vegetation of the *Litterelletea uniflorae* and/or of the *Isoëto-Nanojuncetea;*	Standard data form and management plan available [online] via JNCC website: https://sac.jncc.gov.uk/site/UK0012945	No	No

European Site (proximity and area)	Qualifying features	Site details	Is there a source-pathway-receptor linkage to the Application Site, e.g. via surface water flows?	Is there a functional dependence on land within or immediately adjacent to the Application Site?
	▪ Northern Atlantic wet heaths with Cross-leaved heath; ▪ Alpine and Boreal heaths; ▪ Blanket bogs; ▪ Depressions on peat substrates; and ▪ Floating water-plantain.			
Migneint-Arenig-Ddualllt SAC [Site Code: UK0030205] ~1km east; 19,966.12ha	*Primary reasons for site selection:* ▪ European dry heaths; and ▪ Blanket bogs. *Qualifying feature (not primary reasons for site selection):* ▪ Oligotrophic to mesotrophic standing waters with vegetation of	Standard data form and management plan available [online] via JNCC website: https://sac.jncc.gov.uk/site/UK0030205	No	No

European Site (proximity and area)	Qualifying features	Site details	Is there a source-pathway-receptor linkage to the Application Site, e.g. via surface water flows?	Is there a functional dependence on land within or immediately adjacent to the Application Site?
	the *Litterelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*; ▪ Natural dystrophic lakes and ponds; ▪ Northern Atlantic wet heaths with Cross-leaved heath; and ▪ Old sessile oak woods with Ilex and Blechnum.			
Afon Eden – Cors Goch Trawsfynydd SAC [Site Code: UK0030075] ~2.9km south; 284.65ha	*Primary reasons for site selection:* ▪ Freshwater pearl mussel; and ▪ Floating water-plantain. *Qualifying features (not primary reasons for site selection):* ▪ Active raised bogs; ▪ Atlantic salmon; and	Standard data form and management plan available [online] via JNCC website: https://sac.jncc.gov.uk/site/UK0030075	Yes	No

European Site (proximity and area)	Qualifying features	Site details	Is there a source-pathway-receptor linkage to the Application Site, e.g. via surface water flows?	Is there a functional dependence on land within or immediately adjacent to the Application Site?
	▪ Otter.			
Lleyn Peninsula and the Sarnau SAC [Site Code: UK0013117] ~3.2km north-west; 146,010.52ha	*Primary reasons for site selection:* ▪ Sandbanks which are slightly covered by sea water all the time; ▪ Estuaries; ▪ Coastal lagoons; ▪ Large shallow inlets and bays; and ▪ Reefs. *Qualifying feature (not primary reasons for site selection):* ▪ Mudflats and sandflats not covered by seawater at low tide; ▪ Salicornia and other annuals colonizing mud and sand;	Standard data form and management plan available [online] via JNCC website: https://sac.jncc.gov.uk/site/UK0013117	Yes	No

European Site (proximity and area)	Qualifying features	Site details	Is there a source-pathway-receptor linkage to the Application Site, e.g. via surface water flows?	Is there a functional dependence on land within or immediately adjacent to the Application Site?
	▪ Atlantic salt meadows; ▪ Submerged or partially submerged sea caves; ▪ Grey seal; ▪ Bottlenose dolphin; and ▪ Otter.			
Migneint-Arenig-Ddualllt SPA [Site Code: UK9013131] ~1km east; 19,968.31ha	During the breeding season the site regularly supports nationally important populations of (Annex I species): ▪ Hen harrier (10-12 pairs); ▪ Merlin (9-12 pairs); and ▪ Peregrine (12 pairs).	Standard data form and management plan available [online] via JNCC website: https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9013131.pdf	No	No

2.4 Screening of Likely Significant Effects

2.4.1 Based on the description of the Proposed Development, the potential associated activities and environmental effects and examination of the qualifying features of the European Sites that are scoped-in to this assessment (see **Section 2.3**), the following potential pathways for LSE on European Sites have been identified:

- Direct physical damage to habitats used by European Site interest features, such as otter or bats, when remote from the designated site;
- Disturbance to fauna, altering behaviour and affecting breeding, foraging and/or overwintering survival, for example visual disturbance and/or disturbance due to noise/vibration and artificial lighting;
- Damage to habitats or species from site-derived materials or pollutants (e.g. dust and contaminated or silt-laden run-off or discharges) during the Works Phase or, in the long term, from on-site disposal of construction waste;
- Direct injury or mortality of species due to increased vehicle movements; and
- Damage to habitats or species from changes in water quality.

2.4.2 **Table 2.2** lists the European Sites and the qualifying features potentially affected by activities associated with the Proposed Development, based on the geographic search parameters and potential ZoI set out in **Table 2.1**.

2.4.3 **Table 2.3** identifies the potential effects on each European Site as a result of the Proposed Development and outlines the results of the screening assessment of LSEs.

Table 2.3 Potential effects of the Proposed Development on European Sites

European Site (proximity to the Site)	Potential effects considered	Screening of LSE
Meirionnydd Oakwoods and Bat Sites SAC (~0.93km south-west).	Habitat loss. Habitat degradation. Severance of habitat linkages. Injury and mortality of fauna. Disturbance to fauna.	**No LSE identified.** Qualifying features with the potential to be affected by the Proposed Development include lesser horseshoe bats and, to a limited extent, wetland habitats (Alluvial forest with alder and ash; Northern Atlantic wet heaths with Cross-leaved heath; and Watercourses of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachio* vegetation): *Lesser horseshoe bats* • Land cover change during the Proposed Development has the potential to reduce the roosting, foraging and commuting resource available to lesser horseshoe bats. • Increased noise and vibration may lead to disturbance of any lesser horseshoe bats that utilise the area surrounding the ponds complex and/or perimeter areas for roosting (including maternity and hibernation roosts), which may affect breeding/recruitment or overwintering of the population.

		• Artificial lighting could reduce the suitability of, and may exclude bats from, woodland habitats around the perimeter of the Proposed Development. This has the potential to reduce the foraging resource available and may sever commuting routes such that bats are unable to access important habitats in the wider landscape. • Risk of injury and mortality of lesser horseshoe bats could arise if there was an increase in vehicular movements during the period between sunset and sunrise. Core Sustenance Zones (CSZ) of lesser horseshoe bats are within a 2km radius around the maternity roost[13], however, it is recommended that this is extended recognising the value of the wider landscape, outside of core sustenance zones, for the bat population. The SAC management plan does not identify lesser horseshoe bats as a 'Key Species' (roosts) within either of the component SSSIs that are within 3km: Coedydd De Dyffryn Maentwrog SSSI (inc. Coed Camlyn SSSI and Ceunant Llennyrch SSSI) and Coed y Rhygen SSSI[17]. Coedydd De Dyffryn Maentwrog SSSI citation

[17] Clark, J., Barber, P. & Evans, F. (2008). *Core Management Plan including Conservation Objectives for Meirionnydd Oakwoods and Bat Sites SAC*. Countryside Council for Wales; UK.

		identifies a nursery roost at Pen-lan house, Maentwrog, which is over 3km from the Traawsfynydd site. Desk-based studies as part of the Preliminary Ecological Appraisal (PEA) identified 23 records of lesser horseshoe bat roosts within 5km, all of which are over 2km from the Trawsynydd site, the closest being 2.6km away, with most over 3km away. The record that relates to the largest roost (count of 188) is 3.7km away. Previously recorded lesser horseshoe roosts are therefore unlikely to be reliant on foraging habitats at the perimeter of the Proposed Development. Monthly bat activity surveys undertaken between June – October 2022 at the Trawsfynydd site perimeter recorded low levels of lesser horseshoe bat activity: peak count of 3 passes/contacts at a static detector deployed close to the west of the Trawsfynydd site and a peak of 13 at the detector deployed within woodland to the north [18]. The Trawsfynydd site is almost entirely hard standing, which is poor bat habitat. The built structures within the Application Site boundary are of negligible to very low suitability for roosting bats. Surveys of more suitable built structures (low or greater suitability for roosting bats) within the Trawsfynydd site did not record lesser horseshoe roosts. There is likely to be no loss or disturbance of potential lesser horseshoe roost habitat (built structures).

[18] Cartmel Ecology Ltd (2021). *Trawsfynydd Power Station Ecology Surveys 2021*.

		There is no woodland within the Application Site boundary. There is likely to be no loss or disturbance of lesser horseshoe roost habitat (trees). Monthly bat activity surveys of the Trawsfynydd site perimeter recorded low levels of lesser horseshoe bat activity. Mortality of lesser horseshoe bats due to the Proposed Development activities is likely to be negligible, especially with safe driving precautions in place and also recognising the relatively limited increase in Heavy Goods Vehicles (HGV) movements and Site staffing, and that there will be no additional traffic movements between sunrise and sunset during the period that the bats are active. The Trawsfynydd site is illuminated, including around the ponds complex. Additional task lighting for on-site construction and plant lay-down areas will be limited to end-of day activities during winter months and time-critical activities, mainly surface finishing of concrete. It will be provided by temporary, low-level directional mobile units. There will be no night-time illumination except for time critical activities outside normal working hours. Limited additional lighting directed into the Proposed Development is likely to have little if any effect on foraging/commuting lesser horseshoe bats and a negligible effect on the conservation status of bat populations.

		There is scope for the Proposed Development to result in effects on water quality downstream of the Application Site boundary, within the catchment of Afon Tafarn-helyg and Afon Dwyryd (the Afon Tafarn-helyg which flows northwards approximately 150m east of the Trawsfynydd site before joining the Afon Dwyryd, approximately 4.2km north of the Trawsfynydd site) as a result of surface water run-off and void infill. Surface water will continue to drain to Llyn Trawsfynydd via interface with the existing site drainage system, with excess water directed away from below ground voids and ponds complex disposals. Surface water discharges (radioactive and non-radioactive) attenuated from the disposal area and discharged via the diversion culvert to Llyn Trawsfynydd will be of a similar composition to current discharges and will be within the limits and conditions of the current site permits in the short and long term. Application Site run-off water from roads may contain increased levels of silt, therefore will pass through a water treatment system where necessary prior to discharge from site via the division culvert. There will be pH control and the existing oil separator on the discharge route. In addition, assessments undertaken in line with Environment Agency guidance (see **Chapter 9: Long-term radiological**

		effects and non-radiological impacts) have indicated there is negligible risk of unacceptable pollution of groundwater extending off site and hence reaching surface watercourses in the long term. In places the Afon Dwyryd traces the outside edge of the SAC (Coedydd Dyffryn Ffestiniog (Gogleddol) SSSI; and Coedydd De Dyffryn Maentwrog SSSI). However, the watercourse is downstream/downslope of the SAC and the Proposed Development is likely to have no effect on water quality within the qualifying features (wetland habitats) of the SAC.
Rhinog SAC (~4.1km south-west)	Not applicable.	**No LSE identified.** No LSEs on qualifying features are identified as there is no pathway by which such effects could occur.
Migneint-Arenig-Ddualllt SAC (~1km east)	Not applicable.	**No LSE identified.** No LSEs on qualifying features are identified as there is no pathway by which such effects could occur.
Afon Eden – Cors Goch Trawsfynydd SAC (~2.9km south)	Habitat loss. Habitat degradation.	**No LSE identified.** The ponds complex is within the surface water catchment of the Afon Tafarn-helyg which flows northwards, joining the Afon Dwyryd approximately 4.2km north of the Trawsfynydd site. The Afon Eden catchment and SAC is approximately 3km south of the Trawsfynydd site, south of Llyn Trawsfynydd and flows south.

	Severance of habitat linkages. Injury and mortality of fauna. Disturbance to fauna.	Otter is the only SAC feature that has the potential to be affected by the Proposed Development: • Land cover change during the Proposed Development has the potential to reduce the available refuge habitat for otter. • Increased noise and vibration may disturb any otters that utilise the area within which the Proposed Development is sited and/or perimeter areas for refuge (including holts, dens and resting sites). • Artificial lighting could reduce the suitability of, and may exclude otters from, woodland habitats around the perimeter of the Proposed Development. • Project activities could result in injury and mortality of otters, as a result of an increase in vehicular movements. The distance between the Proposed Development and the SAC is within the dispersal distance of otters. The habitats surrounding the Llyn Trawsfynydd include broadleaved woodland and scrub, providing suitable refuge habitat for otters. Otter activity (spraints) was recorded on the northern shore of the reservoir[18] and an otter holt and otter sightings have previously been reported at the Trawsfynydd site. Otters are likely to forage within/around the reservoir.

		The area within which the Proposed Development is cited is almost entirely hard standing and lacks otter habitat. No otter holts/dens were recorded during the surveys within the Application Site Boundary or the Trawsfynydd site and perimeter area. Otter holts/refuges are unlikely to be disturbed by the Proposed Development. Occurrence of otters close to the Proposed Development is likely to be infrequent and most likely to occur between dusk and dawn. Risk of mortality of otters due to Proposed Development activities, including limited increase in vehicle movements to/from the Trawsfynydd site, is likely to be very low, especially with standard safe driving precautions. The Trawsfynydd site is illuminated, including around the ponds complex. Additional task lighting for on-site construction and plant lay-down areas will be limited to end-of day activities during winter months, provided by temporary, low-level directional mobile units, operated during normal daytime working hours. There will be no night-time illumination except for time critical activities outside normal working hours. Limited additional lighting for the Proposed Development and noise/vibration during construction is likely to have a limited, infrequent effect if any on otters and a negligible effect on the conservation status of otter populations.

		There is no pathway for water quality effects on the Afon Eden, however there is limited scope for the Proposed Development to result in effects on water quality in the Afon Tafarn-helyg catchment, which may be used by otters from the Afon Eden. Any water extracted from voids being infilled will be treated as necessary prior to its discharge from site. Where water is considered sufficiently radioactive this will be discharged via the existing site AETP and main active discharge point into Llyn Trawsfynydd. If the water extracted does not require this treatment it will receive project-specific treatment prior to being discharged via the diversion culvert to Llyn Trawsfynydd. There will be pH control and the existing oil separator on the discharge route will remain in place. Surface water will continue to drain to Llyn Trawsfynydd via interface with the existing site drainage system, with excess water directed away from below ground voids and ponds complex disposals. Surface water discharges (radioactive and non-radioactive) attenuated from the disposal area and discharged via the diversion culvert to Llyn Trawsfynydd will be of a similar composition to current discharges and will be within the limits and conditions of the current site permits in the short and long term. Application Site run-off water from roads may contain increased levels of silt, therefore will pass through a silt management

		system where necessary prior to discharge from site via the division culvert. There will be pH control and the existing oil separator on the discharge route. Assessments undertaken in line with Environment Agency guidance have indicated there is negligible risk of unacceptable pollution of groundwater extending off site and hence reaching surface watercourses in the long term (see **Chapter 9: Long-term radiological effects and non-radiological impacts**). Therefore, there will be no direct effects on otters and no indirect effects due to changes in prey species abundance and the Proposed Development will have a negligible effect on the conservation status of otter populations and a negligible effect on the SAC.
Lleyn Peninsula and the Sarnau SAC (~3.2km north-west)	Habitat loss. Habitat degradation. Severance of habitat linkages. Injury and mortality of fauna.	**No LSE identified.** The Trawsfynydd site is within the surface water catchment of the Afon Tafarn-helyg which flows northwards, joining the Afon Dwyryd approximately 4.2km north of the Trawsfynydd site. With the exception of otter, the qualifying features of the SAC are marine and/or estuarine (Afon Dwyryd estuary) and are approximately 6km downstream of the Proposed Development. As explained below there is potential for limited, localised changes in water quality in proximity to the Trawsfynydd site,

	Disturbance to fauna.	however, attenuated surface water discharged to Llyn Trawsfynydd will be of a similar composition to current discharges and within the limits and conditions of the Trawsfynydd site permits and is likely to have negligible effect on marine and estuarine habitats in the SAC. Otter is the only SAC feature that has the potential to be affected by the Proposed Development: • land cover change has the potential to reduce the available refuge habitat for otter. • Increased noise and vibration may disturb any otter that utilise the area within which the Proposed Development is cited and/or perimeter areas for refuge (including holts, dens and resting sites). • Artificial lighting will reduce the suitability of, and may exclude otters from, woodland habitats around the perimeter of the Proposed Development. • Proposed Development activities could result in injury and mortality of otters, due to an increase in vehicular movements. The distance between the Proposed Development and the SAC is within the dispersal distance of otters. The habitats surrounding Llyn Trawsfynydd include broadleaved woodland and scrub, providing suitable refuge habitat for otters. Otter activity (spraints)

		was recorded on the northern shore of the reservoir[18] and an otter holt and sightings of this species have previously been reported at the Trawsfynydd site. Otters are likely to forage within/around the reservoir. The Proposed Development is almost entirely hard standing and lacks otter habitat. No otter holts/dens were recorded during the surveys of Trawsfynydd site and perimeter area. Otter holts/refuges are unlikely to be disturbed by the Proposed Development. Occurrence of otters near the Proposed Development is likely to be infrequent and most likely to occur between dusk and dawn. Risk of otter mortality due to Proposed Development activities, including a limited increase in vehicle movements to/from the Trawsfynydd site, is likely to be very low, especially with standard safe driving precautions in place as part of the Trawsfynydd site's Traffic Management Plan. The Trawsfynydd site is illuminated, including around the ponds complex. Additional task lighting for on-site construction and plant lay-down areas will be limited to end-of day activities during winter months, provided by temporary, low-level directional mobile units, operated during normal daytime working hours. There will be no night-time illumination except for time critical activities outside normal working hours. Limited additional lighting for the Proposed Development and noise/vibration during

		construction is likely to have a limited, infrequent effect if any on otters and a negligible effect on the conservation status of otter populations. There is scope for the Proposed Development to result in effects on water quality downstream of the Application Site boundary as a result of surface water run-off and void infill. Any water extracted from voids being infilled will be treated as necessary prior to its discharge from site. Where water is considered radiological this will be discharged via the existing site AETP and main active discharge point into Llyn Trawsfynydd. If the water extracted does not require this treatment it will receive project-specific treatment prior to being discharged via the diversion culvert to Llyn Trawsfynydd. There will be pH control and the existing oil separator on the discharge route will remain in place. Surface water will continue to drain to Llyn Trawsfynydd via interface with the existing site drainage system, with excess water directed away from below ground voids and ponds complex disposals. Surface water discharges (radiological and non-radiological) attenuated from the disposal area and discharged via the diversion culvert to Llyn Trawsfynydd will be of a similar composition to current discharges and will be within the limits and conditions of the current site permits in the short and long term.

		Application Site run-off water from roads may contain increased levels of silt, therefore will pass through a water treatment system where necessary prior to discharge from site via the division culvert. There will be pH control and the existing oil separator on the discharge route. Assessments undertaken in line with Environment Agency guidance (see **Chapter 9: Long-term radiological effects and non-radiological impacts**) have indicated there is negligible risk of unacceptable pollution of groundwater extending off site and hence reaching surface watercourses in the long term. Therefore, there will be no direct effects on otters and no indirect effects due to changes in prey species abundance and the Proposed Development will have a negligible effect on the conservation status of otter populations and a negligible effect on the SAC.
Migneint-Arenig-Ddualllt SPA (~1km east)	Habitat loss. Habitat degradation. Severance of habitat linkages.	**No LSE identified.** Hen harriers inhabit open areas with low vegetation, breeding in areas of upland heather moorland and in winter moving to lowland farmland, heathland, coastal marshes, fenland and river valleys. Merlin also breed in upland moorland, moving to inland lowland and coastal areas in winter, occurring in open landscapes/habitats, often near coasts and roosting in reedbeds, bogs and on heaths. The Trawsfynydd site is surrounded by

	Injury and mortality of fauna. Disturbance to fauna.	broadleaved plantation and lacks suitable habitat for either of these species. Peregrine is the only one of the three qualifying bird species that has the potential to be affected by the Proposed Development. It is possible that peregrine could nest on the Trawsfynydd site in the future, with the most likely locations being on the taller buildings outside of the Proposed Development. There are no records of nesting/breeding on the Trawsfynydd site, including during raptor surveys in 2021[18]. Peregrine do however occasionally hunt from a perch on the reactor building. The reactor buildings are outside of the Application Site boundary, however demolition work and other Proposed Development activities could disturb (visual/noise) and displace peregrine from perches that are occasionally/irregularly used by peregrine. Displacement of a peregrine from an occasionally used perch is likely to have no effect on the conservation status of peregrine populations, including the SPA population.

2.5 Screening Outcome

2.5.1 There are no LSE on European Sites as summarised in the following paragraphs.

2.5.2 **Meirionnydd Oakwoods and Bat Sites SAC:** There is likely to be no disturbance of lesser horseshoe bat roosts. Limited additional lighting associated with the Proposed Development, is likely to have little if any effect on foraging/commuting lesser horseshoe bats and a negligible effect on the conservation status of the SAC population. There is no pathway for effects on other qualifying features of the SAC, including water quality effects on the qualifying wetland habitats, which are upstream/upslope of the Afon Dwyryd.

2.5.3 **Rhinog SAC:** The SAC is over 4km from the Proposed Development and no pathway via which an LSE on the SAC could occur has been identified.

2.5.4 **Migneint-Arenig-Dduallt SAC:** The SAC is over 1km from the Proposed Development and no pathway via which an LSE on the SAC could occur has been identified.

2.5.5 **Afon Eden - Cors Goch Trawsfynydd SAC:** The Afon Eden catchment and SAC is approximately 3km south of the Trawsfynydd site, south of Llyn Trawsfynydd and flows south. Therefore, otter is the only SAC feature that has the potential to be affected by the Proposed Development. No otter holts were recorded and otter activity in proximity to the Proposed Development is likely to be associated mainly with the shoreline of Llyn Trawsfynydd and connecting watercourses. The area within which the Proposed Development is cited is almost entirely hard standing and lacks otter habitat. Occurrence of otters in proximity to the Proposed Development is likely to be infrequent and most likely to occur between dusk and dawn. Disturbance of otters due to additional lighting and other activities is likely to be negligible. Risk of otter mortality due to Proposed Development activities, including a relatively small increase in vehicle movements to/from the Trawsfynydd site, is also low. However, storm drains water will continue to be pumped to Llyn Trawsfynydd via interface with the existing site drainage system, with excess water directed away from below ground voids and ponds complex disposals. Surface water discharges (radiological and non-radiological) attenuated from the disposal area and discharged via the diversion culvert to Llyn Trawsfynydd will be of a similar composition to current discharges and will be within the limits and conditions of the current site permits in the short and long term, with no direct effects on otters and no indirect effects due to changes in prey species abundance. Therefore, the Proposed Development will have a negligible effect on the conservation status of otter populations and a negligible effect on the SAC.

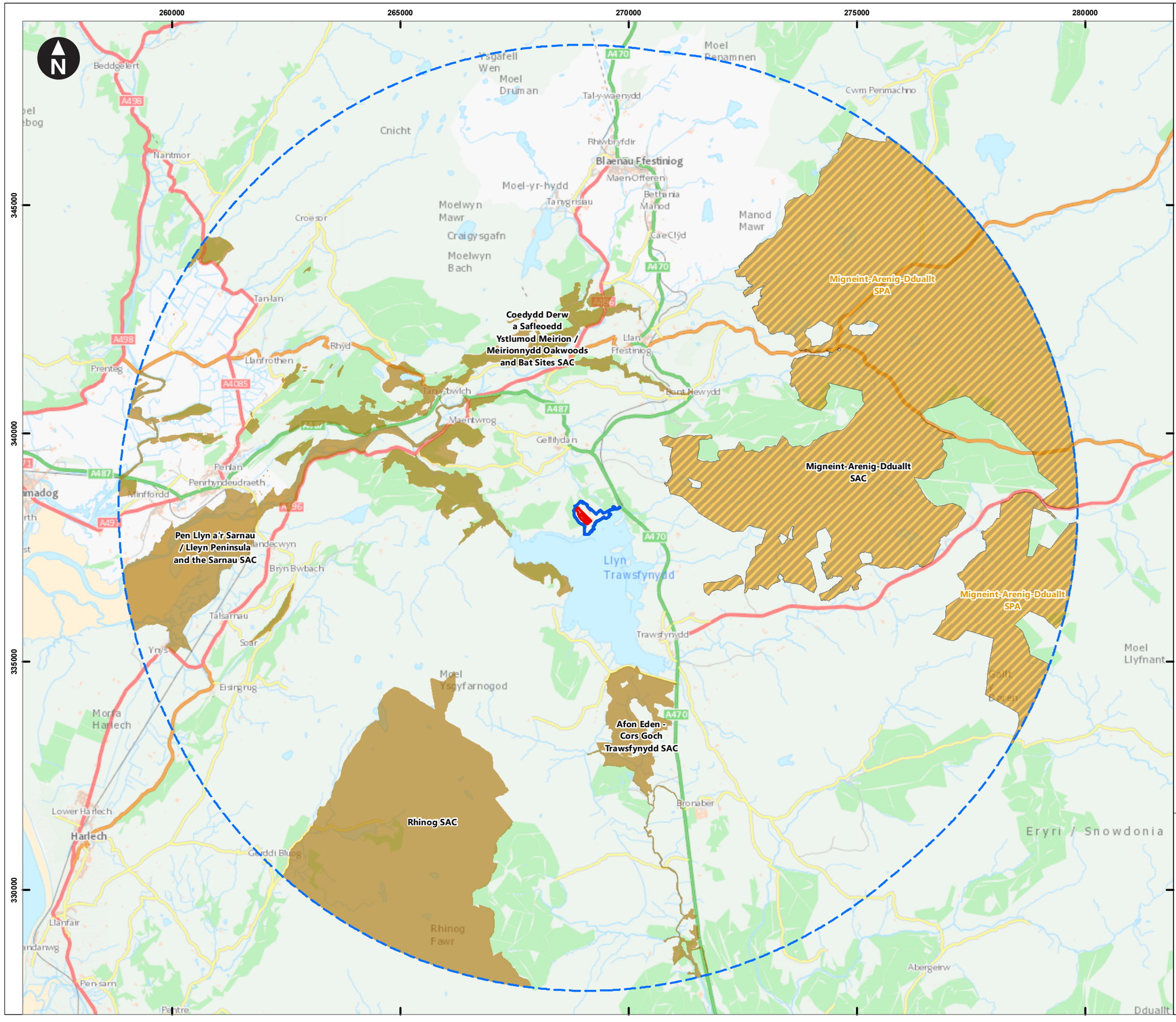
2.5.6 **Lleyn Peninsula and the Sarnau SAC:** With the exception of otter, the qualifying features of the SAC are marine and/or estuarine (Afon Dwyryd estuary) and are

approximately 6km downstream of the Proposed Development. Any limited, localised changes in water quality in proximity to the Trawsfynydd site are likely to have negligible effect on marine and estuarine habitats in the SAC. Otter is the only SAC feature that has the potential to be affected by the Proposed Development. No holts have been identified in proximity to the Proposed Development and otter activity in the vicinity is likely to be associated mainly with the shoreline of Llyn Trawsfynydd and connecting watercourses. The area within which the Proposed Development is cited is almost entirely hard standing and lacks otter habitat. Occurrence of otters close to the Proposed Development is likely to be infrequent and most likely to occur between dusk and dawn. Disturbance of otters due to additional lighting and other activities is likely to be negligible. Risk of otter mortality due to Proposed Development activities, including a relatively small increase in vehicle movements to/from the Trawsfynydd site, is also low. Any water extracted from voids being infilled will be treated as necessary prior to its discharge from site. Where water is considered radiological this will be discharged via the existing site AETP and main active discharge point into Llyn Trawsfynydd. If the water extracted does not require this treatment it will receive project-specific treatment prior to being discharged via the diversion culvert to Llyn Trawsfynydd. There will be pH control and the existing oil separator on the discharge route will remain in place. Surface water will continue to drain to Llyn Trawsfynydd via interface with the existing site drainage system, with excess water directed away from below ground voids and ponds complex disposals. Surface water discharges (radiological and non-radiological) attenuated from the disposal area and discharged via the diversion culvert to Llyn Trawsfynydd will be of a similar composition to current discharges and will be within the limits and conditions of the current site permits in the short and long term, with no direct effects on otters and no indirect effects due to changes in prey species abundance. On this basis, it is considered that the Proposed Development will have a negligible effect on the conservation status of otter populations and a negligible effect on the SAC.

2.5.7 **Migneint-Arenig-Ddualllt SPA:** Peregrine is the only qualifying bird species that has the potential to be affected by the Proposed Development. Peregrine could nest within the Trawsfynydd site in the future, the most likely locations being on the taller reactor buildings, which are outside the boundary of the Proposed Development. There are, however, no recent records of nesting/breeding on the Trawsfynydd site. Peregrine do occasionally hunt from a perch on the reactor building. Displacement of a peregrine (visual/noise disturbance) from an occasionally used perch is likely to have no effect on the conservation status of peregrine populations, including the SAC population.

2.5.8 **In-combination effects:** None of the potential effects of the Proposed Development are likely to affect the conservation status of qualifying features of European Sites or the wider populations of associated species. They are of a scale (spatially and temporally) that additive effects (i.e. in-combination) will not occur. Therefore, there are no LSE in-combination with other plans and projects.

Appendix A
Figures



Key

- Area of Land Leased by Magnox from the Nuclear Decommissioning Authority
- Proposed Development boundary
- 10km buffer
- Special Protection Area (SPA)
- Special Area of Conservation (SAC)

0 1,000 2,000 3,000 4,000 m

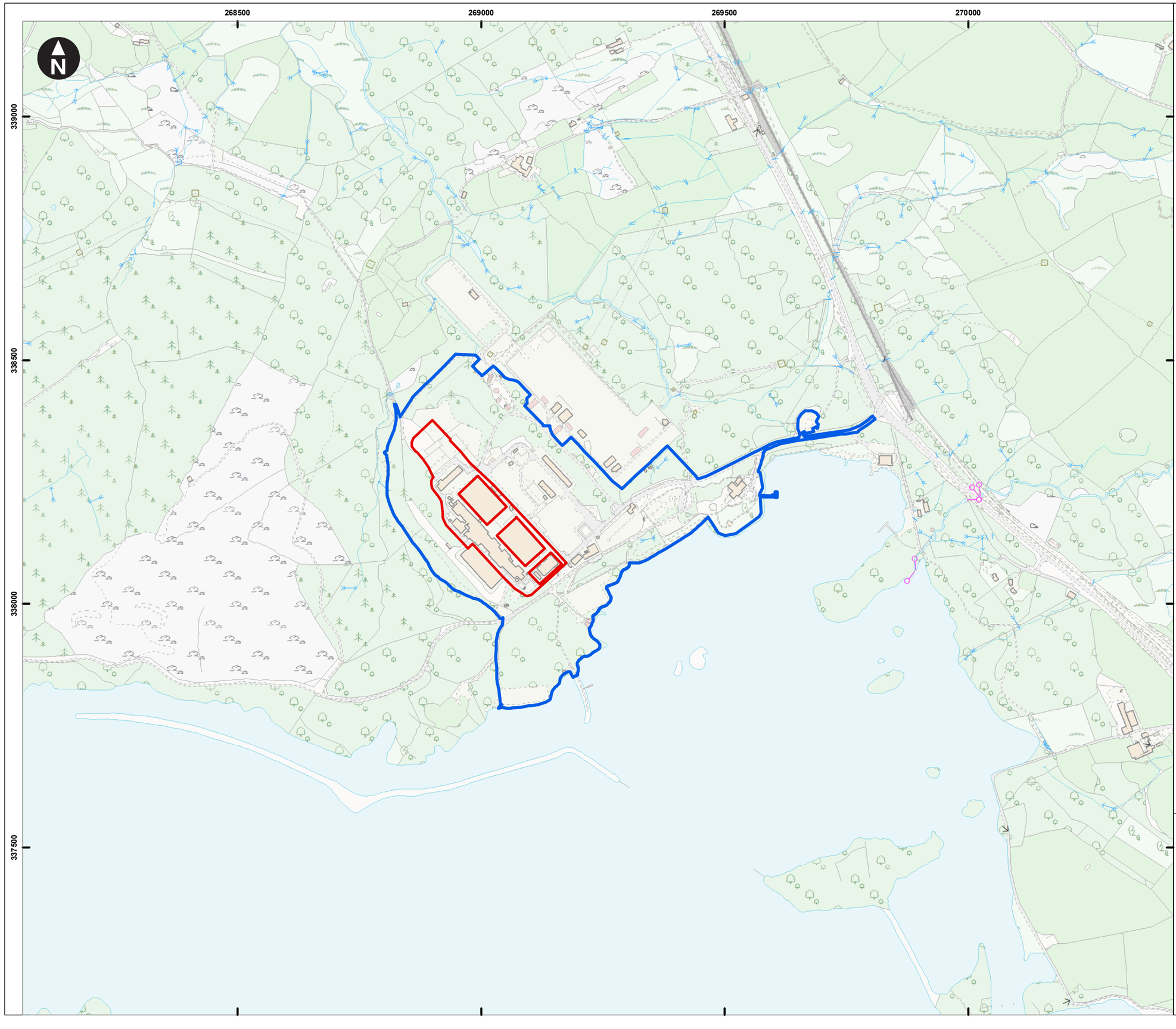
Scale at A3: 1:80,000

Nuclear Restoration Services
Decommissioning of Trawsfynydd Ponds Complex
Habitat Regulations Assessment

Figure 1.1
Statutory designated biodiversity sites of international importance within 10km of the Proposed Development

July 2024

X:\UK\GBSBR400-SAL\SAL-FS12-SHARED\Projects\807521 Trawsfynydd Site Ponds Complex Demolition and Disposal EIA\Deliver StageID Design_Technical\Drawings\GIS\852359-WSPE-XX-XX-FG-OE-00008_S2_P01.1.mxd Originator: UKJXP782



Key

Area of Land Leased by Magnox from the Nuclear Decommissioning Authority

Proposed Development boundary

0 100 200 300 400 m

Scale at A3: 1:7,500

Nuclear Restoration Services
Decommissioning of Trawsfynydd Ponds Complex
Habitat Regulations Assessment

Figure 2.1
The Trawsfynydd Site

July 2024

Appendix B
Project Description

Location of the Proposed Development

The Proposed Development is located near to Blaenau Ffestiniog, Gwynedd. The Proposed Development, and its Application Site boundary lies within the former Trawsfynydd Power Station site (the 'Trawsfynydd site'), and is located in Eryri National Park (formerly known as Snowdonia National Park), North Wales, on the northern side of Llyn Trawsfynydd.

The former Trawsfynydd Power Station is a twin nuclear reactor site. This station was operational from 1965 to 1991 and is now undergoing a programme of decommissioning and waste management operations. The main features on the Trawsfynydd site are shown in **Graphic 1** below. The ponds complex to be demolished can be seen located between the two reactor buildings and the Intermediate Level Waste (ILW) store[19].

Graphic 1 Main Features on the Trawsfynydd Site

[19] Radioactive waste is broken down into two main categories for management, Higher Activity Waste (HAW) and Lower Activity Waste (LAW). Intermediate level waste falls under the HAW category which is stored on-site until a geological disposal facility is operational and able to receive HAW.

The Surrounding Area

Natural Environment

The Trawsfynydd site is situated within a mountainous area of the Snowdonia National Park. North of the Trawsfynydd site is a lowland valley running westward from Ffestiniog to the coast at Penrhyndeudraeth. The Trawsfynydd site itself sits at the northern end of a wide valley occupied by Llyn Trawsfynydd.

The surrounding natural environment is made of semi-natural woodlands, agricultural land, and scattered residential properties and farmhouses.

There are six statutory biodiversity sites of international importance (European Sites) within 10km of Trawsfynydd site, including five Special Areas of Conservation (SACs) and one Special Protection Area (SPA). There are 15 statutory biodiversity sites of national or local importance within 5km, including nine SSSIs and six National Nature Reserves (NNRs). The nearest designated site is a component of the Meirionnydd Oakwoods and Bat Sites SAC, located 0.93km south-west from the Trawsfynydd site.

Built Environment

There are several residential properties and outbuildings close to the Trawsfynydd site with vehicular access provided by the A470 road. Most settlements are located along the valley through which the A470 trunk road passes. There are many small settlements located near the Trawsfynydd site - north at Gellilydan and south at Trawsfynydd.

There are two Grade II* registered historic park and garden elements, known as Dragon Garden and Dame Sylvia Crowe Garden located within the Trawsfynydd site.

The National Park

Snowdonia National Park is Wales' largest National Park and is a hub for culture, history and heritage. Snowdonia National Park has several special qualities[20] including:

- Diverse landscapes;
- Tranquility and solitude;
- Opportunities for recreation and leisure;
- Cultural and architectural heritage; and
- Varied biodiversity.

[20] Snowdonia National Park Authority (2020). *The Snowdonia National Park Partnership Plan 2020*. [Online] Available at: https://snowdonia.gov.wales/wp-content/uploads/2022/02/Cynllun-Eryri-Easy-Read_English_2020_30.04.20.pdf [Accessed 10 November 2023].

Description of the Proposed Development

Overview

The Proposed Development is part of the wider decommissioning works across the former Trawsfynydd Power Station. There are three phases proposed as part of the demolition and disposal of the ponds complex, these are:

- Preparatory Phase – these activities do not form part of this planning application and include internal works such as de-planting the buildings and structures and the removal of asbestos from within buildings that make up the ponds complex;
- Works Phase (expected duration about 24 months) - the main demolition activities, void infilling, construction of concrete cap and drainage installation; and
- Post-Works Phase - environmental monitoring and various maintenance activities

The Works Phase activities comprise:

- demolition, disposals, installation of a cap (capping) and drainage works. These activities are outlined below. The Post-Works Phase includes periodic inspections and repairs of the drainage system surrounding the cap and the concrete cap. This also includes long-term monitoring of boreholes.

The Trawsfynydd site final end-state will be reached towards the end of the century, details of this can only be determined once all other decommissioning activities on the site have been completed.

Table 2-4 Key elements of the Proposed Development

Key elements of the Proposed Development	Description
Disposal	Following the demolition of the buildings and structures forming the ponds complex, the materials arising from demolition will be used to backfill the below ground voids following demolition of the existing structures.
Capping	A capping slab is to be installed following the demolition and backfilling of the voids. The cap will be made from concrete and will ensure rainwater does not enter the voids.
Drainage	Once the cap for the void is in place, a new drainage system is to be installed around the cap. This will direct surface water away from the

	ponds complex disposals and link to the site's existing surface water drainage system.
Transport Movements	Heavy Goods Vehicles (HGVs) will be required to bring materials to site, for example ready mixed concrete. The busiest period for HGVs is expected to be during the construction of the capping slab.

Timescales and Working hours

The project Works Phase duration is expected to be approximately 24 months. Working hours are anticipated to be:

- 08:00-18:00 Monday to Friday during the Works Phase;
- Some works may be undertaken on Saturdays 08:00-13:00.

Physical external works are not expected to take place outside of these hours with the possible exception of limited time critical activities.

Alternatives Considered for the Demolition of the Ponds Complex

Chapter 3: The Project and Its Alternatives of the ES presents an overview of the alternatives considered for the demolition of the ponds complex. **Table B-1** presents a summary of the alternatives considered and resultant implications.

Table B-1 Summary of Alternatives

Topic	Alternatives Considered and Implications
The timing of demolition of the ponds complex	If demolition of the ponds complex were to be further delayed for any significant period, there would be the following consequences: • a new weatherproof overbuilding would have to be constructed over most of the ponds complex, resulting in additional construction works, additional materials use and additional costs, with long-term maintenance also being required; • there would be limited benefit from radioactive decay by deferring the demolition works; and • there would continue to be little space to the west of the reactor buildings, limited to that space between the reactor buildings and the ponds complex, and this space is needed to facilitate other site decommissioning works. For these reasons, demolition of the ponds complex in the near-term is proposed.
On-site versus off-site disposal	The complete clean-up of the Trawsfynydd site including the ponds complex structures, radioactively contaminated land, the reactor bioshields, and the previously authorised asbestos disposals, would be

of radioactively contaminated concrete and masonry	extremely challenging and would require significant expenditure and time with large excavations and increased off-site lorry movements. The on-site disposal of the radioactive components of the ponds complex and near-by sub-surface infrastructure (including leaving some structures permanently in place and infilling below-ground voids with radioactive demolition arisings) is preferred as: • reaching a "radiologically clean" end-state could only really be achieved after reactor dismantling, some decades from now, meaning that a new ponds complex overbuilding would be required (see above); • there is a significant engineering challenge in reaching a radiologically clean end-state, with very high costs and unnecessary use of off-site radioactive waste facility disposal capacity; • there will be no significant safety or environmental disadvantages associated with the proposed on-site disposals as; and • the on-site disposals are consistent with NDA strategy and emerging UK policy for decommissioning and radioactive waste management.
Radioactive inventory management	The buildings that make up the ponds complex are undergoing clean out activities where internal items are removed leaving rooms completely or largely empty (some pipework may remain). Based on the assumption that the radioactive inventories used for the radiological estimates are generally over-estimates, it is not currently proposed to seek to remove further radioactivity. Such an approach would result in unnecessary cost, additional effort and increased off-site waste disposal demands without resulting in a meaningful reduction in radiological consequences of the on-site disposals. The issue of radioactive inventory reduction will be kept under regular review.
Under-ponds drains	There is, at present, a series of drains that run underneath the main parts of the ponds complex (known as "sampling drains"). These are radioactively contaminated, and some are in contact with groundwater. Prior to the Proposed Development commencing, it is proposed to remove the contents of the wettest drains, and to backfill those with clean concrete. Some other under-ponds drains that are occasionally in contact with groundwater are likely to be grouted to fix the radioactivity and to exclude water, prior to this development commencing. No interventions as part of this Proposed Development are proposed for the remaining under-ponds drains because of the cost and worker dose and engineering complexities of doing so, without any significant long-term radiological benefit.
Demolition methods, processing	The demolition arisings for void infill are expected to be a combination of broken concrete and masonry, cut concrete blocks and intact precast concrete elements. There is expected to be some crushing of non-radioactive demolition arisings, but only where there is an engineering

and segregation	need, for example to form the base for the reinforced concrete cap. Crushing of the slightly radioactive demolition arisings would introduce more project complexity and a greater need for radiological and contamination controls; therefore this will be minimised or avoided. Freshly exposed concrete surfaces can interact with water creating leachate alkalinity. The option to emplace some or all the concrete demolition arisings as cut blocks or intact precast elements greatly reduces the surface area of freshly exposed concrete. However, this approach would likely require a much more "hands-on" work approach than conventional demolition and would be much more time consuming and costly. It may also have implications for how much waste can be accommodated in the below-ground voids. Steel rebar within demolition arisings will be removed as far practicable from concrete demolition arisings (by machines such as munchers), applying the waste hierarchy in relation to metals recycling. Some voids, specifically those that extend below the groundwater table, will not have demolition arisings left in a "loose" condition. They may be "solidified" using a cement grout, or else the demolition arisings will be emplaced above a clean concrete mass installed at the base of the void. This is to minimise the risk of direct discharges of pollutants from the infill to groundwater. The option of completely filling the below-ground voids in these ways has been ruled out due to the large amounts of cement or concrete that would be required.
Detailed capping design	The top of the ponds complex will be covered by a newly constructed, reinforced concrete cap. Concrete is needed because the area will be required for future decommissioning works and will need to be sufficiently load bearing. The concrete cap will be designed to minimise the risk of water getting into the former voids below. Additional improvements to the cap design that have been considered include the use of impermeable liners or similar; and a thicker cap, or the use of intrusion barriers such as large boulders, or the use of a visual warnings. However, most of these measures would introduce construction complexities and potentially reduce the cap long-term integrity. These will remain options that could be used as part of the works to achieve the final site end state.
Surface water drainage design	The proposal is that drainage from the cap over the ponds complex footprint will continue to discharge to the existing site drainage system, which as now will discharge to Llyn Trawsfynydd. There will be no increase in the volume or radioactivity of water discharging to the lake. Surface water runoff from the cap cannot be directed to infiltrate the ground at the present time. This is for a variety of reasons, including the presence of existing ground contamination in some locations and the presence of underground structures and services. Surface water runoff

	being collected for use on site is not an option as there is no demand for reuse of “grey water” within the site.