HORIZON NUCLEAR POWER

WYLFA NEWYDD

ENERGY WORKING FOR BRITAIN

Wylfa Newydd Project

6.4.52 ES Volume D - WNDA Development App D9-19 - Draft Water Vole Conservation Licence

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1 Introduction

1.1 Scheme background

1.1.1 The Wylfa Newydd Project involves the development of a new nuclear power station (the Wylfa Newydd Generating Station) on Anglesey by Horizon Nuclear Power Wylfa Ltd. (Horizon) as identified in the National Policy Statement for Nuclear Power Generation (EN-6). Start dates for construction would be confirmed prior to submission of this licence application, therefore terms for Year 1, Year 2 etc. are used, with Year 1 signalling the first year of construction for the Wylfa Newydd Project. The main area of land within which construction of the Power Station would occur is described as the Wylfa Newydd Development Area and is shown on figure 1 (Appendix A).

1.1.2 This licence application describes the potential impacts on water vole (*Arvicola amphibious*) caused by the Wylfa Newydd Project, and the protection measures and mitigation that would be put in place to ensure that the favourable conservation status of water vole is maintained.

1.1.3 This licence only includes impacts to water vole resident in the Nant Caerdegog Isaf[1] located in the south of the Wylfa Newydd Development Area, near to the property called Caerdegog Isaf. However, if further preconstruction surveys identify water vole in other watercourses to be directly affected by the Wylfa Newydd Project, then the mitigation principles described for Nant Caerdegog Isaf in this document would be adopted.

1.2 Applications for Natural Resources Wales conservation licence

1.2.1 As a nationally significant infrastructure project, the Wylfa Newydd Project would be authorised by a development consent order. The Wylfa Newydd Project comprises the proposed new nuclear power station (the Wylfa Newydd Generating Station), including the reactors, associated plant and ancillary structures and features, together with all of the development needed to support its delivery, such as highway improvements, worker accommodation and specialist training facilities. This licence covers the Site Preparation and Clearance Works of the Wylfa Newydd Project only, which comprises habitat removal from the majority of the Wylfa Newydd Development Area. These works include the channel realignment of Nant Caerdegog Isaf. The Site Preparation and Clearance Works would be completed prior to the Main Construction activities commencing. This draft licence is required to demonstrate the mitigation approach and conservation benefit of the Wylfa Newydd Project to Natural Resources Wales.

1.2.2 The licence is sought for the potential displacement and/or relocation of water vole from the Nant Caerdegog Isaf to allow for channel realignment as part of the Site Preparation and Clearance Works, should they be present at that time. This

[1] This stream has been described using the name ‘Watercourse 13’ in previous reports.

approach is intended to be undertaken following principles set out in the *Water Vole Conservation Handbook* (Strachan *et al.*, 2011) and the *Water Vole Mitigation Handbook* (Dean *et al.*, 2016). If no water voles are identified on watercourses to be directly impacted by the Site Preparation and Clearance Worksthen the need for a licence will be reviewed.

1.3 Aims and objectives

1.3.1 This document forms a method statement to accompany an application for a conservation licence (Natural Resources Wales) to undertake works for the purposes of conservation that would otherwise be an offence under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended), and outlines the actions which will be undertaken if water vole need to be displaced or relocated (via trapping and soft releasing).

1.3.2 The aim of this draft method statement is to:

- provide a robust rationale for the proposed water vole mitigation strategy in sufficient detail to provide confidence in a licence application to displace or exclude, trap and relocate water vole from suitable habitat within the working area of the Nant Caerdegog Isaf; and
- provide a method for the design, establishment, creation and management of the new Nant Caerdegog Isaf channel and enhancement of other suitable stretches of watercourses to provide a conservation benefit for water vole in the Wylfa Newydd Development Area.

2 Baseline information

2.1 Site context

2.1.1 The Wylfa Newydd Development Area comprises the indicative areas of land and sea, including the Power Station Site, the Wylfa National Policy Statement Site and the surrounding areas that would be used for the construction and operation of the Wylfa Newydd Generating Station. It is bounded to the north by coast and the existing Magnox power station (the Existing Power Station). To the east, it is separated from Cemaes by a narrow corridor of agricultural land. The A5025 and residential properties define part of the south-east boundary, with a small parcel of land spanning the road to the north-east of Tregele. To the south and west, the Wylfa Newydd Development Area abuts agricultural land, and to the west it adjoins the coastal hinterland. This Wylfa Newydd Development Area is approximately 380ha, of which approximately 290ha of terrestrial and freshwater habitat would be affected during Site Preparation and Clearance Works.

2.2 Desk study results

2.2.1 A total of seven records for water vole were received from Cofnod (North Wales Environmental Records Centre) between 1986 and 2005 in a request by Jacobs on behalf of Horizon in 2015 (see Appendix B). These records are all from the Cemlyn Bay area and include live sightings, prints and burrows.

2.3 Field survey results

2.3.1 Field surveys have been completed within the Wylfa Newydd Development Area and surrounding 500m buffer zone in connection with the Wylfa Newydd Project since 2009. These areas combine to form the study area for water vole. A combined summary of the data available on the species is provided below and is presented in table 2-1, taken from the *Consultancy Report: Otter and Water Vole Technical Summary Report* (Appendix B).

2.3.2 In 2009, an extended Phase 1 Habitat Survey identified suitable habitat for water vole including rivers, streams, ditches and ponds. During this survey evidence of water vole was found on two watercourses, shown as Watercourse 1 (a Tre'r Gof SSSI drain) and Watercourse 3 on figure 1 (Appendix A), with field signs including burrows, latrines and feeding stations.

2.3.3 In 2010 water vole were found in a Tre'r Gof SSSI drain (Watercourses 1), and Watercourse 3 as determined by the presence of latrines and feeding stations.

2.3.4 In 2011 a single latrine was identified on a third watercourse, shown as Watercourse 8 on figure 1 (Appendix A).

2.3.5 In 2013 water vole latrines were found on Afon Cafnan (Watercourse 10), watercourse 15 and the Nant Caedegog Isaf, shown on figure 1 (Appendix A).

2.3.6 In 2014, Afon Cafnan (Watercourse 10) was found to support water voles with latrines and feeding stations identified. A further watercourse, shown as Watercourse 19 on figure 1 (Appendix A), was identified as supporting water vole,

as field signs including live sightings, burrows, prints, latrines and feeding stations were found.

2.3.7 No evidence for water vole was found on a Tre'r Gof SSSI drain (Watercourse 1), Watercourses 3 or Watercourse 8. It is therefore suggested there have been localised extinctions of water vole from these watercourses. The most likely causative factors for this are considered to be flooding; agricultural practises (especially poaching and over-grazing); prolonged lapses in appropriate management leading to scrub encroachment; and habitat isolation. As a result, only four watercourses (Afon Cafnan, Watercourse 15, Watercourse 19 and the Nant Caedegog Isaf), were considered to be supporting a population of water vole at the most recent time of survey in 2014.

2.3.8 Given the current baseline information, the Nant Caerdegog Isaf is the only watercourse that has been assessed as potentially having a water vole population that could be directly affected by Site Preparation and Clearance Works. The Nant Caerdegog Isaf is a narrow watercourse at only 1m in width for most of its length. Although the watercourse opens out towards the confluence with watercourse 8 at the eastern end, the remainder of the banks are covered with very dense scrub dominated by bramble (*Rubus fruticosus agg.*). This is shown in plates 1 and 2 in Appendix C.

Table 2-1 Summary of water vole survey results on watercourses where evidence of the species has been found

Watercourse reference	Habitat quality assessment	2009	2010	2011	2013	2014	Watercourse considered currently occupied by water vole
Tre'r Gof SSSI drain (Watercourse 1)	Optimal	Burrows, latrines and feeding stations	Latrines and feeding stations	No evidence	No evidence	No evidence	NO
Watercourse 3	Optimal	Latrines and feeding stations	Latrine	No evidence	No evidence	Not surveyed*	NO
Watercourse 8	Sub-optimal	No evidence	No evidence	Latrine	No evidence	Not surveyed*	NO
Afon Cafnan (Watercourse 10)	Optimal	No evidence	No evidence	No evidence	Latrines	Latrines and feeding stations	YES
Nant Caerdegog Isaf (Watercourse 13)	Optimal	-	-	No evidence	Latrines	Not surveyed*	YES
Watercourse 15	Optimal	-	-	-	Latrines	Not surveyed*	YES
Watercourse 19	Optimal	-	-	-	-	Live sightings, burrows, prints, latrines and feeding stations	YES

*Not surveyed indicates where access permission was not granted for that watercourse in that year of survey. Watercourses 15, 19 and the Nant Caedegog Isaf were added to the survey scope as the survey area increased.

3 Mitigation methodology

3.1 The Nant Caedegog Isaf rationale and pre-construction surveys

3.1.1 A channel realignment of the Nant Caedegog Isaf will permanently affect approximately 360m of its length. The proposed realignment to a new location approximately 60m to the south of its current position will be completed in order to facilitate construction of the Power Station, as shown on figure 2 (Appendix A). This will be completed during the Site Preparation and Clearance Works.

3.1.2 The existing channel is currently located within the development footprint. Realignment is the preferred solution to maximise biodiversity benefit as it allows the creation of new habitat that will be designed specifically for water voles and links to existing, retained habitat. Standard practice from the Environment Agency recommends any new channel should be designed in detail before the dewatering of the original channel. This allows the new channel to be developed and made suitable for water vole habitation as part of a mitigation strategy.

3.1.3 At this current point in time the evidence of water vole recorded in the Nant Caedegog Isaf means that licensable mitigation prior to construction will be required, although the results of previous surveys suggest that the water vole distribution within the study area is dynamic and subject to change on an annual basis. Site Preparation and Clearance Works will start in Year 1 although no works which would affect the Nant Caedegog Isaf would occur until Year 2. Monitoring of all watercourses affected by the scheme will occur during Year 1 to highlight any changes to the current baseline water vole data; the results of these surveys will inform the need to obtain a licence.

3.1.4 Using the results of the pre-construction surveys a specific mitigation strategy will be developed adapting one or more of the following approaches shown in table 3-1.

Table 3-1 Potential mitigation strategies

Mitigation Strategy	Reasoning	Timing restrictions
No licensable activities	If no water vole are identified in the affected section of the Nant Caedegog Isaf.	N/A
Displacement	If water vole are found in a <50m length (or <30m length for a high density population) within the affected section of the Nant Caedegog Isaf and where there is sufficient adjacent habitat for dispersal into ('sufficient' is as defined in paragraph 4.6.24 of the *Water Vole Mitigation Handbook* (Dean *et al.*, 2016)).	15th February to 15th April of Year 2

Mitigation Strategy	Reasoning	Timing restrictions
Trapping and direct soft release into new channel	If water vole are found in a >50m length within the affected section of the Nant Caedegog Isaf and the new channel is developed into a receptor area.	New channel development February to March of Year 1. Trapping and soft release into new channel 1st March to 15th April of Year 2 (once new habitat is suitably established).

3.1.5 If trapping is required, it will take place between 1st March and 15th April of Year 2 when water vole are active but not in the breeding season to minimise the chance of trapping pregnant or lactating females with dependant young.

3.1.6 This draft licence application and the accompanying method statement will be amended depending on the results of pre-construction surveys for water vole during Year 1. For the purposes of the draft licence application and this accompanying method statement, the mitigation measures described in Sections 3.2 to 3.6 apply to potential licensable activities related to the proposed realignment of the Nant Caedegog Isaf, only where there is a direct impact on water vole.

3.2 Displacement

3.2.1 If displacement is considered the most favourable strategy (<50m length of habitat with water vole affected (or <30m length for a high density population) as determined by pre-construction survey results), the following methods will be implemented in line with Appendix 1 of the *Water Vole Mitigation Handbook* (Dean *et al.*, 2016):

- All burrows in the working area will be identified and marked.
- Vegetation from the working width (up to 5m either site) will be removed using a strimmer until only bare earth remains. The strimmed area will extend to the top of the bank and a further 2m back.
- All arisings from the strimmed area will be raked off and removed.
- The burrow entrances will be checked to ensure they have not become blocked.
- The strimmed area will be monitored on a daily basis for field signs of water voles. Where field signs are recorded the need to repeat or extend the strimming will be reviewed.
- A destructive search will be carried out five days following strimming and if no evidence of water vole is recorded following a re-survey, as detailed in Section 3.5.5.
- The area will then be maintained as unsuitable for water voles as the works are carried out.

3.3 Habitat enhancement

3.3.1 To increase the conservation benefit to water vole in the area, any suitably identified stretches of other watercourses within the Wylfa Newydd Development Area will be managed to enhance their suitability to support water vole. This will include sections of sub-optimal ditch habitat joined to stretches of optimal habitat where water vole signs have been found previously.

3.3.2 The appropriate design of the proposed receptor site and enhancement to other watercourses/riparian habitats will include the following where applicable:

- altering bank profiles to include a two-staged channel (realigned Nant Caedegog Isaf only);
- erosion control using coir fibre rolls or similar;
- de-silting;
- prevention of bank poaching; and
- appropriate habitat management, including reducing scrubby vegetation encroachment.

3.3.3 Enhancements will not be undertaken on sections where water voles are already present or where there is a likelihood of local population isolation.

3.4 Habitat creation – new channel

3.4.1 The new realigned watercourse, measuring approximately 350m in length, will be established over a 12-month period prior to its use as a receptor site for any displaced animals. This will provide sufficient time for newly planted vegetation to become established prior to water vole soft release. The wetland habitat in the newly constructed watercourse will be designed specifically to benefit water voles and will ensure that the following are provided: areas of high ground for burrowing and refuge, and riparian vegetation for food and shelter (Strachan *et al.*, 2011). The new channel will be meandered to create natural diverse flow, pools and berms with a two stage channel, where appropriate.

3.4.2 Within the newly aligned channel, the proposed planting of aquatic, terrestrial and marginal plants will be undertaken using locally sourced stock as far as possible. Terrestrial and aquatic plant establishment will be accomplished via a mixture of natural colonisation, translocation of turfs and/or individual plants from on-site sources, and nursery-sourced pre-planted coir mattresses and plug plants to reduce establishment time. The banks of the newly created channel may also be hydro-seeded with a species-rich grass mix, if appropriate. The final plan for instating of these vegetation types and their layout will be drawn up at the detailed design stage and will be used to support a final licence application.

3.4.3 Water voles require dense growth of herbaceous bankside and emergent vegetation to provide suitable food and cover. Native species of local provenance known to be of importance to water vole will be used (Strachan *et al.*, 2011). These include:

- branched bur-reed (*Sparganium erectum*);

- floating sweet-grass (*Glyceria fluitans*);
- flowering rush (*Butomus umbellatus*);
- fool's watercress (*Apium nodiflorum*);
- meadowsweet (*Filipendula ulmaria*);
- reed canary grass (*Phalaris arundinacea*); and
- reed sweet-grass (*Glyceria maxima*).

3.4.4 Where these species cannot be suitably sourced, similar species listed as important for water voles in the *Water Vole Conservation Handbook* (Strachan *et al.*, 2011) will be used.

3.4.5 Throughout the development of the newly created habitat within the new channel, monitoring will review the success of vegetation development and establishment with regard to water vole food plant and vegetation cover.

3.5 Relocation of water vole

3.5.1 If relocation is required, the following methods and specifications will be used as per the *Water Vole Mitigation Handbook* (Dean *et al.*, 2016).

Exclusion fencing

3.5.2 Water vole-resistant fencing will be erected around the section of affected Nant Caedegog Isaf to isolate the area and allow trapping and exclusion of water vole to take place. This exclusion fencing will be installed 5m past the last burrow on each end of the channel if any extend further than the affected section of watercourse, but its final configuration will be determined at the detailed design stage.

3.5.3 Any water vole fencing will be constructed following the guidance set out in Appendix 5 of the *Water Vole Mitigation Handbook* (Dean *et al.*, 2016). This recommends the use of 20mm (min) thick marine plywood, or similar, with a minimum above-ground height of 1.2m and a buried depth of 0.5m (min). Posts used to ensure stability will be located on the inside of the excluded area and on the outside around the new channel to prevent water vole using them as an aid to climb the fence. A further deterrent of an outward return of wire mesh at the base of the fence may also be used if considered necessary. Installation of the fencing will be supervised by an experienced ecologist with care taken to avoid any burrows. By necessity, therefore, the position of the fencing may change slightly to avoid burrows. This fencing will be inspected regularly to ensure effectiveness in providing a physical barrier to water vole movement. Where the exclusion fence crosses the watercourse, 1.5cm x 1.5cm weld mesh will be sunk to a depth of 1m across the channel and topped with boards to prevent climbing.

3.5.4 Throughout the period of excluding water voles, including the trapping period, the exclusion fencing will be inspected twice a week to ensure it remains an effective barrier to water voles and is undamaged. Any field signs within the exclusion area will be recorded and used to estimate current occupancy by water vole. In the event that the exclusion fencing is damaged and field signs are recorded within the exclusion area, a new trapping period will commence following the

procedures outlined below once damage is repaired and the breach has been closed.

Trapping

3.5.5 On the Nant Caedegog Isaf, water voles will be trapped within the excluded area and directly released into the new realigned channel.

3.5.6 The following details the proposed trapping methodology and is adapted from the protocol described in Appendix 2 of the *Water Vole Mitigation Handbook* (Dean *et al.*, 2016) and experience undertaking licensed water vole trapping and translocation on other projects (e.g. Crossness Sewage Treatment Works Improvements and Medmerry Managed Realignment).

- Trapping will be conducted from 1st March to 15th April (inclusive) of Year 2 on the Nant Caedegog Isaf. Trapping will not be undertaken during night-time temperatures of below freezing, day-time temperatures above 20°C, or during flood conditions.
- Purpose-built traps, such as the Greenalyte water vole traps or Sherman traps, will be used to capture water voles. These will be fitted with a wooden nest box at the rear to allow for sufficient food and bedding provisions to be stored.
- The nest box will be prepared by packing with straw for bedding/insulation and at least one carrot and half an apple to provide food for captured animals. As a minimum, this will be replaced every two days if the trap has not been sprung, and following each successful capture.
- The traps will be soaked in local river water before use and allowed to drip-dry. The traps will be left in situ for two days before trapping to take on the scent of the habitat and thus become more attractive to water voles. During these two days the traps will be pre-baited with the catch mechanism disengaged so the water voles can become accustomed to entering them.
- Traps will be set at 10m intervals along the length of the watercourse on both banks, placing them next to latrines, burrows and feeding stations where possible. If appropriate, traps will also be positioned on floating rafts.
- Each trap will be secured in place with a peg, cane or wire to hold it in position and prevent it being dislodged into the water. For some traps it will be suitable to dig a small channel at a right angle from the watercourse into the bank to hold it in place. The traps will be set high enough up the banks to account for water level rises.
- Each trap will be tested before setting ensuring the treadle works efficiently. A small amount of apple will be left outside the entrance of the trap to act as a lure. The trap itself will be covered by vegetation.
- All trap positions will be numbered, recorded and mapped.
- The traps will be set at approximately 06:00 on the first trapping day. The traps will then be checked every eight hours at approximately 06:00, 14:00

and 22:00 each day. Each check will be carried out by two people familiar with the positions of the traps. The check will involve all traps being checked for bait and bedding with replenishing taking place if necessary.

- After five days of trapping during suitable conditions (i.e. when the temperature has not dropped below freezing), historic water vole field signs will be removed from the trapping area to assist with the identification of fresh field signs; these will be used to determine the continued presence or likely absence of water voles from the trapping area.
- Trapping will be considered complete once there has been a period of five days or more (when overnight temperatures are above freezing) with no captured animals and no field signs within the trapping area. If no captures are made within the trapping period, the attendant ecologist will make a decision on whether water vole can be deemed absent from the exclusion zone or whether additional days of trapping are required.
- If a lactating female is caught (i.e. obvious swollen bare nipples) it will be immediately released where it was caught to ensure no dependent young are left abandoned. Trapping in this area will cease for a period up to four weeks with new release pens being included in the new channel to accommodate for all of the litter.
- All trapped water voles will be run from the trap into a pop-up garden bag where they will undergo a visual health check including being weighed and sexed. Water vole handling will be kept to a minimum to reduce stress. Cardboard crisp tubes or similar will be used to aid handling. Animals will be processed individually and will not be allowed to mix.
- The care of captured water voles will be in accordance with the protocol described in Appendix 3 of the *Water Vole Mitigation Handbook* (Dean *et al.*, 2016). Captured water voles will then be transferred to holding cages, labelled with the location and date/time of capture, sex and any other pertinent details (e.g. distinguishing marks and condition of animal). Holding cages will be provisioned with food, water and bedding. Captured water voles will be held in holding cages for no longer than 16 hours in a secure environment with limited disturbance.
- Following a capture, traps will be cleaned and reset.
- The weather conditions will be monitored daily when trapping is taking place. If there is any risk of rapidly rising water levels, traps will be removed. The traps will be closed if night-time temperatures are expected to fall below freezing or if day-time temperatures are expected to rise above 20°C.
- All animals will have a basic health assessment (as per Appendix 6 of the *Water Vole Mitigation Handbook* (Dean *et al.*, 2016)) and be transferred to soft-release pens within the new channel.
- If any non-target animals are captured in the traps they will be released immediately with the exception of American mink (*Neovision vison*). As it is

illegal to release mink back into the wild if caught in a trap, veterinary assistance will be sought to have the animal humanely euthanised.

Soft release

3.5.7 The soft release methodology will be as per the protocol described in Appendix 4 of the *Water Vole Mitigation Handbook* (Dean *et al.*, 2016). All water voles caught during the trapping period will be soft released into pens within the new channel. This will allow the animals to acclimatise to their new surroundings whilst being kept safe from predation. The plywood release pens to be used will follow the specification in the *Water Vole Conservation Handbook* (Strachan *et al.*, 2011) as follows:

- having a minimum of a 1m² floor area;
- having a minimum height of 45cm;
- holding one individual only (unless family groups of mother and young are trapped);
- being dug into the ground around 15-20cm;
- being located as close to the water as possible surrounded by tall vegetation;
- having a predator-proof wire mesh; and,
- having sufficient nesting material (straw/hay) provided.

3.5.8 The release pens will be constructed and installed two to three weeks prior to the water vole release allowing vegetation cover to establish in and around the pens.

3.5.9 Individuals of the same sex will be separated by a minimum of 40m intervals along the watercourse, with alternating females and males if possible.

3.5.10 To provision the pens, one sixth of a straw bale will be placed inside before water vole release to provide immediate cover. This will be broken up so the water voles cannot reach the lid when standing upon it and injure themselves. A large (60x30x15cm) water trough e.g. a cat litter tray containing stream water will be placed within the pen. Each water vole will be provided with quarter of an apple, half a carrot and cut external vegetation daily. Water vole will be supported with food for eight days before the pen is removed leaving the old bedding in place.

Destructive search

3.5.11 Immediately following the strimming (displacement) or trapping period (relocation), a destructive search within the fenced area of the excluded channel will be undertaken, under the direct supervision of the named ecologist or accredited agent. This will seek to make the habitat and bank structure unsuitable for water vole. The following stages of destructive searching will be undertaken as advised in the *Water Vole Mitigation Handbook* (Dean *et al.*, 2016):

- All burrows will be identified and marked so that they can be located and remain unobstructed. Vegetation from the banks (and 5m to either side) and

within the channel will initially be strimmed/removed to ground level. Any arisings will be raked off and removed from the cleared area.

- Burrow entrances will be checked to ensure they have not become blocked and any latrines or feeding remains will be removed.
- The existing channel will be dewatered as the water is directed through the new channel.
- The strimmed area will be left for five days to allow water vole to relocate.
- The area will be re-surveyed for evidence of water voles. A destructive search will commence if no field signs are recorded.
- All burrows will be excavated by hand where possible. Gloves, nets and animal holding tanks containing bedding and food will be kept at hand in case animals need to be caught. If any water voles are caught they will be taken to be soft-released in the new channel.
- The use of a mechanical digger, with a toothed bucket, will be supervised by ecologist to rake through the turf and topsoil on the bank face and top. With a second or third sweep of the bucket, the turf and top soil will be removed to a depth beyond which any burrows would be present.
- Remaining vegetation (including in-channel) will then be stripped, roots included, to maintain an unsuitable habitat for water vole colonisation. After this the areas will be monitored for two to four hours to observe any further water voles.
- Following the removal of all vegetation the main works will commence immediately or the site will be maintained in an unsuitable condition for water voles.

3.5.12 If water voles are sighted within the excluded area, but not caught, the destructive search will cease and trapping will re-commence (if a trapping strategy is being implemented at that location). On completion of such additional trapping, the destructive search would recommence and be continued through to completion.

Fence removal

3.5.13 When the watercourse has been dewatered and the destructive search is complete, the exclusion fencing surrounding the old channel will be removed. Fencing may be retained where it is still a functional barrier to water voles, mainly at the east and west edges of the realignment perpendicular to the channel. This fencing will be removed on the completion of the works in the area.

3.6 General scheme mitigation for water vole

Disturbance

3.6.2 There are no other major impacts to other watercourses proposed as part of the Site Preparation and Clearance Works, and a 15m buffer will be in place around Afon Cafnan (Watercourse 10), Nant Caedegog Isaf (Watercourse 13), Nant

Cemlyn (Watercourse 16), and Tre'r Gof SSSI drains (Watercourses 1, 2, and 11) within which there will be no significant construction activity. However, there will be small scale works to construct drainage outflows which will feed into existing streams. These will be managed on a case-by-case basis with a view to avoiding licensable works through micro-siting the structures to avoid sensitive areas; this will be informed by pre-construction surveys and will be supervised by an ecological clerk of works. The effects of disturbance are therefore not predicted to affect the conservation status of the species.

3.7 Post development monitoring

3.7.1 After the construction and planting of the realigned watercourse, regular visits will be undertaken to monitor the establishment and development of vegetation along the banks. In doing so, the need for any further management can be identified and implemented to ensure vegetation suitability for food and coverage for water vole.

3.7.2 Post-development monitoring will also assess the success of the displacement/relocation strategy within the local water vole population and will be undertaken in accordance with Box 4 in the *Water Vole Mitigation Handbook* (Dean *et al.*, 2016). On completion of the works, when all fencing is removed, annual water vole surveys will be undertaken during the breeding season for a minimum of three years within the Wylfa Newydd Development Area. All water vole field signs as described in the *Water Vole Conservation Handbook* (Strachan *et al.*, 2011) will be recorded and used to ascertain whether water vole are present. Latrine counts within these areas will give an approximate estimate of population size, which can be compared to pre-construction estimates.

3.7.3 Overall the post-development monitoring will assess the success of the mitigation strategy as well as the suitability and level of occupation of newly-created compensation habitat post-construction.

3.8 Post-development maintenance

3.8.1 Post-construction, the new channel and other watercourses within the Wylfa Newydd Development Area will be maintained indefinitely by Horizon to retain suitability for water vole occupation. This may require maintenance which would include:

- Scrub removal to stimulate growth of bank-side and aquatic vegetation; this will increase the complexity of vegetation types and offer more reliable and sustained food resources;
- Ensuring fencing erected to prevent poaching by livestock is maintained; and,
- Watercourse maintenance operations to remove silt to improve the availability of standing water and vegetative growth.

3.8.2 Additional enhancements will not be undertaken in surrounding habitat where evidence for a good established water vole population with suitable vegetation is found.

4 Works schedule

	Year 1												Year 2				
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Preparation																	
Pre-construction surveys (spring and autumn)				X	X			X	X								
Licence Submission and Issue												X	X				
Habitat creation																	
Creation and development of new realigned watercourse		X	X														
Relocation																	
Exclusion fencing installed around the Nant Caedegog Isaf exclusion area														X			
Inspections of Nant Caedegog Isaf exclusion area (fencing/water vole signs)														X	X	X	
Trapping															X	X	
Soft release of water vole into new channel															X	X	
Destructive Search / dewatering and backfilling of old channel																X	
Fencing removal																	
Exclusion fencing removed from the excluded Nant Caedegog Isaf area																X	

5 References

Dean, M., Strachan, R., Gow, D., and Andrews, R. 2016. *The Water Vole Mitigation Handbook* (The Mammal Society Mitigation Series). Eds. Matthews F. and Chanin P. The Mammal Society: London.

Strachan, R., Moorhouse, T., and Gelling, M. 2011. *Water Vole Conservation Handbook*. Third Edition. Wildlife Conservation Research Unit (WildCRU): Oxford University.

Appendix A – Figures

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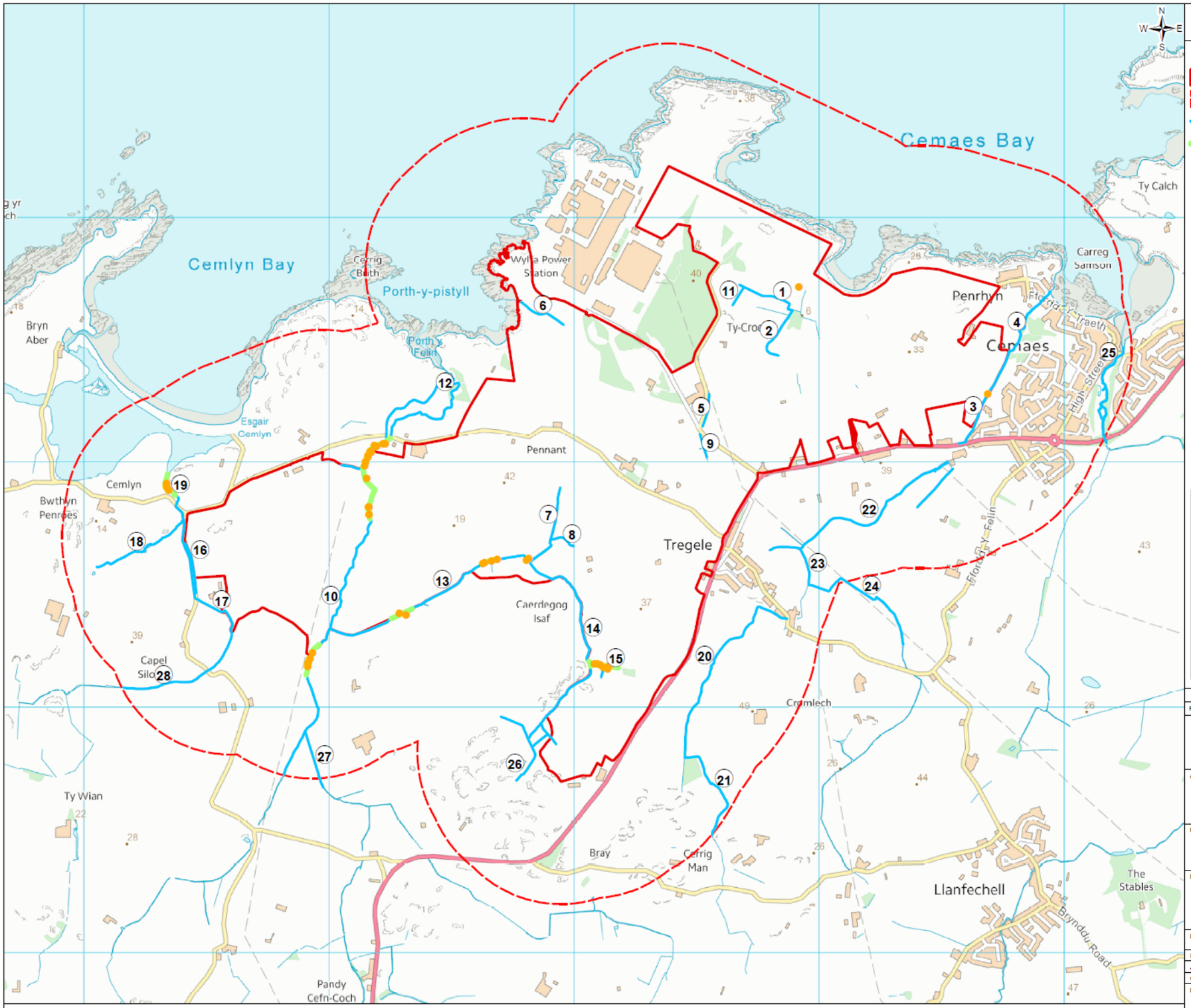

FIGURE 1

Legend

- Site Preparation and Clearance Application Site
- Study area boundary
- Surveyed watercourses
- Water vole present 2014
- Water vole results
- (#) Watercourse reference number

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	App'd
0	NOV 17	Initial Issue	RM	JJ	NC	TK

JACOBS
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Client: HORIZON NUCLEAR POWER

Project: SITE PREPARATION AND CLEARANCE ENVIRONMENTAL STATEMENT

Drawing Title: WATER VOLE SURVEY RESULTS

Drawing Status

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Jacobs No.	60PO8078	
Client No.		

Drawing No.: 60PO8078_SPC_ES_TE_01

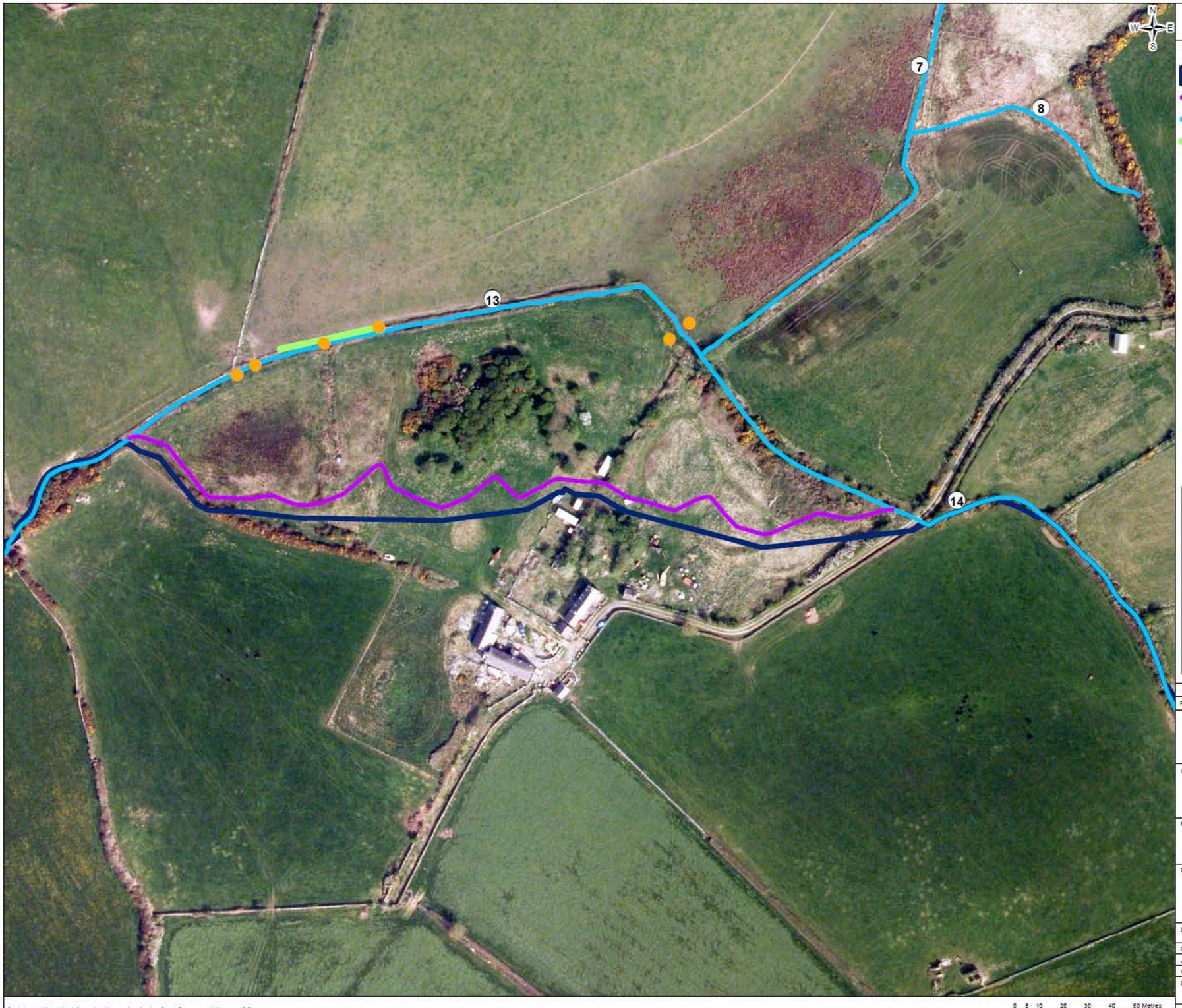

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FIGURE 2

Legend

- Wylfa Newydd Development Boundary
- Proposed watercourse realignment
- Existing watercourses
- Water vole present 2014
- Water vole results
- (#) Watercourse reference number

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
0	NOV 17	Initial issue	RM	JJ	NC	TK

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Client: HORIZON NUCLEAR POWER

Project: SITE PREPARATION AND CLEARANCE ENVIRONMENTAL STATEMENT

Drawing Title: Channel realignment

Drawing Status:

Scale @ A3	1:1,500	DO NOT SCALE
Jacobs No.	60PO8078	
Client No.		

Drawing No.: 60PO8078_SPC_ES_TE_02

Appendix B – Technical Summary Report

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Appendix C – Plates

Plate 1: Dense scrub on the banks of the Nant Caedegog Isaf in spring 2013

Plate 2: Emergent vegetation on the more open area of the Nant Caedegog Isaf in spring 2013