HORIZON NUCLEAR POWER

WYLFA NEWYDD

ENERGY WORKING FOR BRITAIN

Wylfa Newydd Project

6.4.53 ES Volume D - WNDA Development App D9-20 - Draft Bat Mitigation Licence

PINS Reference Number: EN010007

Application Reference Number: 6.4.53

June 2018

Revision 1.0

Regulation Number: 5(2)(a)

Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Horizon Internal DCRM Number: WN0902-JAC-PAC-APP-00154

[This page is intentionally blank]

Contents

[This page is intentionally blank]

A. Executive summary

Horizon Nuclear Power (Wylfa) Ltd (Horizon) has undertaken a suite of bat surveys between 2009 and 2015 in relation to the proposed development of a new nuclear power station on the Isle of Anglesey, referred to as the Wylfa Newydd Project. The Wylfa Newydd Project will take place within the Wylfa Newydd Development Area (WNDA). The study area described in this report is the area including the WNDA and a buffer of 500m around the boundary.

The Wylfa Newydd Project will involve the demolition of existing structures prior to construction commencing. Of the structures to be demolished, 16 buildings have been confirmed as supporting roosting bats. Of these, only one maternity roost was identified (at The Lodge), the remainder having only individual or low numbers of bats at varying times through the bat activity season.

The roosting bat species present are common pipistrelle, soprano pipistrelle, brown long-eared, whiskered/Brandt's, and Natterer's. The maternity roost at The Lodge comprises Natterer's.

Subject to planning agreement, the 16 roost structures will be subject to supervised sensitive demolition between March and June of Year 1 of the Wylfa Newydd Project ('Year 1' being the year in which the application for development consent is granted). No exclusion is proposed due to the seasonality of works and the complexity of the structures.

To mitigate for the loss of the 16 roosts, two dedicated bat barns are under construction and will be completed by summer 2018, to allow sufficient time for bats to find them and occupy them prior to structure demolition in Year 1. Roost features in the design of the bat barns include access points at tiles, lead flashing, gable ends, exposed rafters and wall tops; and roosting provision in the form of roost boards, multiple internal/external Schwegler bat tubes, ridge beams, an uncluttered loft, and a 'cool tunnel' to provide suitable conditions for hibernation.

The bat barns will be located within Horizon's permanent land-holding in areas away from the WNDA. In addition, within 50m of each bat barn two telegraph poles will be installed along existing hedgerow/scrub vegetation and these will support four Schwegler bat boxes each (two 1FF and two 2FN boxes per pole). The purpose of these pole mounted boxes is to provide roosting habitat for species that will readily roost in trees, in the absence of natural mounting sites. Each building will be surrounded by a buffer strip of tree and shrub planting up to 10m wide with native species of local provenance, including oak, rowan, willow, hazel, holly and hawthorn. A small wildlife pond will be created within 50m of each bat barn to provide an additional local foraging resource.

A further 24 Schwegler bat boxes will be hung within an area of retained woodland to the east of the Existing Power Station (four 1FF, six 2FN, 12 2F [double front panel] and two 1FS boxes). The boxes will comprise a range of designs. The exact locations of the bat boxes will be determined by the named ecologist on the licence but will be positioned to maximise the likelihood of them being used by bats, providing a range of roosting conditions and allowing for effective monitoring.

Horizon will have sole responsibility for future maintenance of the bat barn roosts, bat boxes, surrounding habitat and landscaping maintenance.

The Landscape and Habitat Management Strategy (Application Reference Number: 8.16), illustrates the coordinated range of environmental mitigation and enhancement measures to be incorporated into the landscape restoration of the WNDA at different phases of construction and

during operation. This includes commitments to protect and sensitively manage retained and newly planted vegetation for biodiversity benefits, including the protection and enhancement of bat commuting and foraging habitats.

Monitoring of the bat barns and the 40 external bat boxes will be undertaken annually in August/September throughout the construction of the new Power Station (Years 2-11). The monitoring will inform the need for any remedial action to ensure their long-term effectiveness.

B. Introduction

B.1 Background to activity/development

Horizon is planning to develop a new nuclear power station on Anglesey as identified in the National Policy Statement for Nuclear Power Generation (EN-6). The Wylfa Newydd Project (the Project) comprises the proposed new nuclear power station (the Power 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. The Project will require a number of applications to be made under different legislation to different regulators. As a nationally significant infrastructure project under the Planning Act 2008, the construction and operation must be authorised by a development consent order.

A previous European Protected Species licence application was made to Natural Resources Wales (and its predecessors) to permit the demolition of 20 buildings that were used by roosting bats. These buildings were demolished under licence between 2013 and 2015 (licence references: BAT/2879/WG/IND, 54318:OTH:EPS:201356038:OTH:EPS:2014). The purpose of these licences was for preserving public health and safety as the buildings were rapidly falling in to disrepair and subject to intrusion and vandalism.

The approximate centre of the WNDA is located at Ordnance Survey grid reference SH 354 933.

B.2 Full details of proposed works on site that are to be covered by the licence

Sixteen known roost structures at eight property complexes require complete demolition as part of Site Preparation and Clearance Works that will clear the WNDA to facilitate construction of the new nuclear power station. The structures will be demolished in Year 1 (the first year of construction which will begin with the Site Preparation and Clearance Works). The demolition of these structures will form part of the Wylfa Newydd Project, consent for which will be secured prior to the formal submission of this licence application.

B.3 Actions requiring licensing

The demolition of the 16 known roost structures requires the following licensed actions: disturbance, capture of bats (if needed) and the destruction of breeding sites/resting places.

The destruction of breeding sites/resting places is necessary as the roost structures lie within the footprint of the WNDA and so will need to be removed before the construction phase of the Project can commence.

Disturbance of roosting bats may occur as they may still be present in the spring and autumn period when sensitive demolition will take place (although the works are programmed for these seasons to reduce the likelihood of bats being present and to ensure they are neither hibernating, heavily pregnant or nursing young). Similarly, it may be necessary to capture any bats found by hand/net and remove them to a place of safety if they are at imminent risk of being harmed by demolition activity.

Exclusion of the bats from the buildings will not be possible due to the proposed timing of the works as there is a possibility of torpid bats being trapped inside the structures rather than successfully excluded. Also, the complexity of many of the structures and the multitude of potential access points for bats makes exclusion an impractical approach.

C. Survey and site assessment

C.1 Existing information on the bat species at the survey site

A background data search was requested in order to determine the scope of surveys required and to inform the Project's Environmental Impact Assessment. This was requested from Cofnod (North Wales Environmental Information Service) and included all legally protected and notable species records, including bats, within 2.5km of the centre of the WNDA.

The data from the 2013 Cofnod background data search are summarised in table 1.

Species	Years	Live bat records	Dead bat records	Roosts recorded
Unknown	1989-2006	11	1	2
Myotis species	1986-1992	9	0	0
Whiskered bat (*Myotis mystacinus*)	1994	0	1	0
Noctule bat (*Nyctalus noctula*)	1998	1	0	0
Pipistrelle species (*Pipistrellus sp.*)	1986-2005	3	0	0
Common pipistrelle bat (*P. pipistrellus*)	1990-2008	20	0	0
Brown long-eared bat (*Plecotus auritus*)	1990	15	0	1

Table 1: Summary of background data search from Cofnod records

The desk study data were considered to be of limited value compared to the site specific survey data due to its age, limited number of records and the paucity of roost records returned.

Bat surveys have been completed within the WNDA every year between 2009 and 2015, with surveys between 2013 and 2014 extended to include a 500m wide buffer around the initial survey area. No surveys are known to have taken place of the study area prior to 2009. The scope of the surveys that have taken place each year has varied and is summarised in table 2 below.

	2009 (Arup, 2012a)	2010 (Arup, 2012b)	2011 (Arup, 2012b)	2012 (Arup, 2013)	2013 (Jacobs, 2014)	2014 (Jacobs, 2015a)	2015 (Jacobs, 2015b/2015c)
Internal building inspections	Yes	Yes	Yes	Yes	Yes	Yes	No

	2009 (Arup, 2012a)	2010 (Arup, 2012b)	2011 (Arup, 2012b)	2012 (Arup, 2013)	2013 (Jacobs, 2014)	2014 (Jacobs, 2015a)	2015 (Jacobs, 2015b/2015c)
Building emergence surveys	No	Yes	Yes	Yes	Yes	Yes	Yes
Tree assessment surveys	No	Yes	Yes	Yes	Yes	No	No
Transect activity surveys	Yes	No	No	No	Yes	Yes	No
Static activity surveys	Yes	No	No	No	Yes	Yes	No
Mitigation monitoring	-[1]	-	-	-	Yes	Yes	Yes

Table 2: A summary of the scope of bat surveys undertaken at the Wylfa Newydd Project site between 2009 and 2015

The habitat assessment and activity surveys showed that the composition of bats using the study area for foraging and commuting are what would be expected for a similarly sized area anywhere in north Wales. The composition was dominated by the most common and widespread species (common and soprano pipistrelle (*P. pygmaeus*), brown long-eared and commoner *Myotis* species, with rare occurrences of noctule and Nathusius' pipistrelle (*P. nathusii*). These species tended to be recorded more frequently in areas of greater habitat heterogeneity, including wooded areas and field boundaries, although it is recognised that this is partly an artefact of the transect routes used. However, bats did tend to be less frequently using marshy grassland areas, and showed an affinity to coastal interface environments.

The study area supports very small numbers of trees with features that have the potential to support roosting bats, with no tree roosts identified following surveys. The geographical location of the study area also makes it very unlikely that the study area supports any of the rarer bat species of higher conservation value and sensitivity that primarily roost in trees e.g. barbastelle (*Barbastella barbastellus*). The survey effort to date has not extended to include emergence surveys of all trees with features that have the potential to support roosting bats although this will occur prior to any felling works in Year 1.

The number of structures that have been surveyed in the study area has varied between survey years. This has been caused by expansions of the study area as the Project design has developed. The most significant change was between 2012 and 2013 when the study area was increased to include a 500m buffer zone around the boundary of the WNDA to better understand the context of bat populations within the wider environment. Although the number of buildings surveyed in the 500m buffer zone was limited by access constraints, a number of additional bat roosts were identified in 2013 and 2014.

[1] Compensation roosts were built in 2013 to permit the demolition under licence of 20 known roost buildings.

The emergence and internal inspection surveys have shown that bats use 36 of the 100 extant structures for roosting in the study area (16 of which will be lost to the development and are the subject of this licence application). These roosts predominantly comprise low numbers of bats, with only two structures ever having supported more than seven individual bats. The predominant species recorded are the same as those cited for the activity surveys, although whiskered/Brandt's (*M. brandtii*) bat roosts were also found.

There were no 'rarer' species, noctule bat or Nathusius' pipistrelle roosting records, indicating a population of lower value and sensitivity, unlikely to be of significance outside of the boundary of the study area. Not all structure roosts were occupied by bats each year and therefore the total number of occupied roosts varied greatly between years.

The two most significant extant roosts in the study area are the maternity colony of pipistrelle species in the Tyn y maes bat barn, and the Natterer's bat colony in The Lodge. The Tyn y maes bat barn and associated habitat enhancement works were completed as compensation following the demolition of Tyn y maes house in 2013. This building was occupied in 2015 by over 50 bats from four species (common and soprano pipistrelle, brown long-eared and whiskered/Brandt's bat) and is an example of successful mitigation. The blue print for this mitigation strategy will therefore be used for the displacement of The Lodge roost that will be required as part of this licence application.

Table 3 below summarises the survey results between 2010 and 2015 of properties requiring demolition as part of the Wylfa Newydd Project that included structures which support bat roosts.

(Key: P45 = common pipistrelle; P55 = soprano pipistrelle; BLE = brown long-eared bat; LE = Long-eared bat (likely brown long-eared); NAT = Natterer's bat; WH/BR = whiskered/Brandt's bat; MYO = Myotis species bat; and Uk = unknown bat species. - = no survey conducted that year; N/A = not applicable)

Property name and grid reference	Buildings	Roost potential rating (Hundt, 2012 and Jacobs, 2015b)	2010	2011	2012	2013	2014	2015	Peak count per species
Magnox Depot and Back up office facility/back up auxiliary facility SH 35342 92892	1	Negligible	-	No bats	No bats	No bats	-	No Access	N/A
	2	Known roost	-	BLE x 3	BLE x 1	BLE x 2	BLE x 2	BLE x 1 MYO x 1	BLE x 3 MYO x 1
	3	Medium	-	No bats	No bats	No bats	-	No Access	N/A
Wylfa sports and social club (formerly referred to as the leisure centre) SH 35317 93321	1	Known roost	-	P45 x 1	No bats	No bats	No bats	No bats	P45 x 1
	2	Known roost	-	No bats	No bats	No bats	P45/P55 x 1 (probable P45)	No bats	Uk x 1 (probable P45)
	Out-building	Low	-	-	No bats	-	-	-	N/A
Nantorman SH 36237 93365	1	Known roost	-	No bats	No bats	P55 x 1	No bats	P55 x 1	P55 x 1
	22	Known roost	-	No bats	LE droppings only	No bats	No bats	No bats	LE x1
	3	Known roost	-	No bats	No bats	P55 x 2	No bats	No bats	P55 x 2
	4	Negligible	-	-	-	-	-	-	N/A
The Firs Hotel SH 35289 92983	Out-building	Known roost	No bats	-	-	NAT x 1	No bats	No bats	NAT x 1

[2] Building 2 at Nantorman is being considered as a roost of long-eared bats given the presence of droppings in 2012.

Property name and grid reference	Buildings	Roost potential rating (Hundt, 2012 and Jacobs, 2015b)	2010	2011	2012	2013	2014	2015	Peak count per species
The Lodge SH35510 93130	The Lodge	Known maternity roost	BLE x 2 MYO x 2 P55 x 1	BLE x 2 MYO x 8 P55 x 2	BLE x 5 NAT x 12	BLE x 5 NAT x 26 (+ young)	BLE x 3 NAT x 38 (+ young) WH X 1	BLE x 4 NAT x 34 (+ young)	BLE x 5 NAT x 38 (+ young) MYO x 8 P55 x 2 WH x 1
Tre'r Gof Uchaf farm buildings SH 36325 93156	2 and 4 (buildings are joined)	Known roost	-	P45 x 1 BLE x 1	No bats	P45 x 2 P55 x 2	P45 x 1	No bats	P45 x 2 P55 x 2 BLE x 1
	5	Low	-	No bats	No bats	-	-	No bats	N/A
	6	Negligible	-	No bats	No bats	-	-	No bats	N/A
Tyddyn Gele SH 35068 92613	1	Known roost	-	-	P55 x 1 WH/BR x 1	P55 x 2 WH/BR x 1	P45 x 1 P55 x 6	No bats	P45 x 1 P55 x 6 WH/BR x 1
	2	High	-	-	No bats	No bats	No bats	No bats	N/A
	3	Known roost	-	-	No bats	P45 x 1 P55 x 1	BLE x 1	No bats	BLE x 1 P45 x 1 P55 x 1
	4	Known roost	-	-	No bats	No bats	P55 x 1	No bats	P55 x 1
	5	Negligible	-	-	No bats	No bats	No bats	No bats	N/A
	6	Known roost	-	-	No bats	No bats	P55 x 2	No bats	P55 x 2
	7	Low	-	-	No bats	No bats	No bats	No bats	N/A
	Containers	Negligible	-	-	No bats	No bats	No bats	-	N/A

Property name and grid reference	Buildings	Roost potential rating (Hundt, 2012 and Jacobs, 2015b)	2010	2011	2012	2013	2014	2015	Peak count per species
Tyddyn Goronwy Farm SH 35848 93258	1	Known roost	-	No bats	No bats	P55 x 1	P45 x 1	P45 x 1	P45 x 1 P55 x 1
	2	Medium	-	No bats	No bats	No bats	No bats	No bats	N/A
	3	Known roost	-	No bats	No bats	No bats	P45 x 1	No bats	P45 x 1
	4	Low	-	No bats	No bats	No bats	No bats	No bats	N/A
	5	Negligible	-	No bats	No bats	No bats	No bats	No bats	N/A

Table 3: A summary of the results of structure inspections and emergence/re-entry bat surveys undertaken between 2010 and 2015 at properties requiring demolition where roosting bats were confirmed

Table 4 below provides a cumulative total of the peak numbers of each species recorded at each property between 2010 and 2015 (taken from table 3) so as to illustrate the approximate number of bats that will be affected by the demolition works under this licence application.

Estimated total number of roosting bats by species	
Common pipistrelle (P45)	7
Soprano pipistrelle (P55)	21
Brown long-eared (BLE)	13
Natterer's (NAT)	40
Whiskered/Brandt's (WH/BR)	1
Myotis sp.	8
Unknown species	1
Estimate of total number of affected roosting bats for all species (excluding young Natterer's)	**91**

Table 4: An estimate of the total number of roosting bats of each species that may be affected by the demolition works

The 'pipistrelle species' bat recorded at the Wylfa sports and social club in 2014 was identified from a photograph of a bat roosting on the exterior wall of the building by a member of the Existing Power Station staff. It is assumed that this individual, and the unknown bat recorded in 2015, were common pipistrelle as this species was confirmed as roosting in the same building in 2011.

The full bat survey reports for the WNDA study area between 2009 and 2015 are shown in annex J.1 of Document 2: Delivery information – Mitigation, compensation and monitoring.

C.2 Statutory sites notified for the species (SSSIs or SACs) within 10km

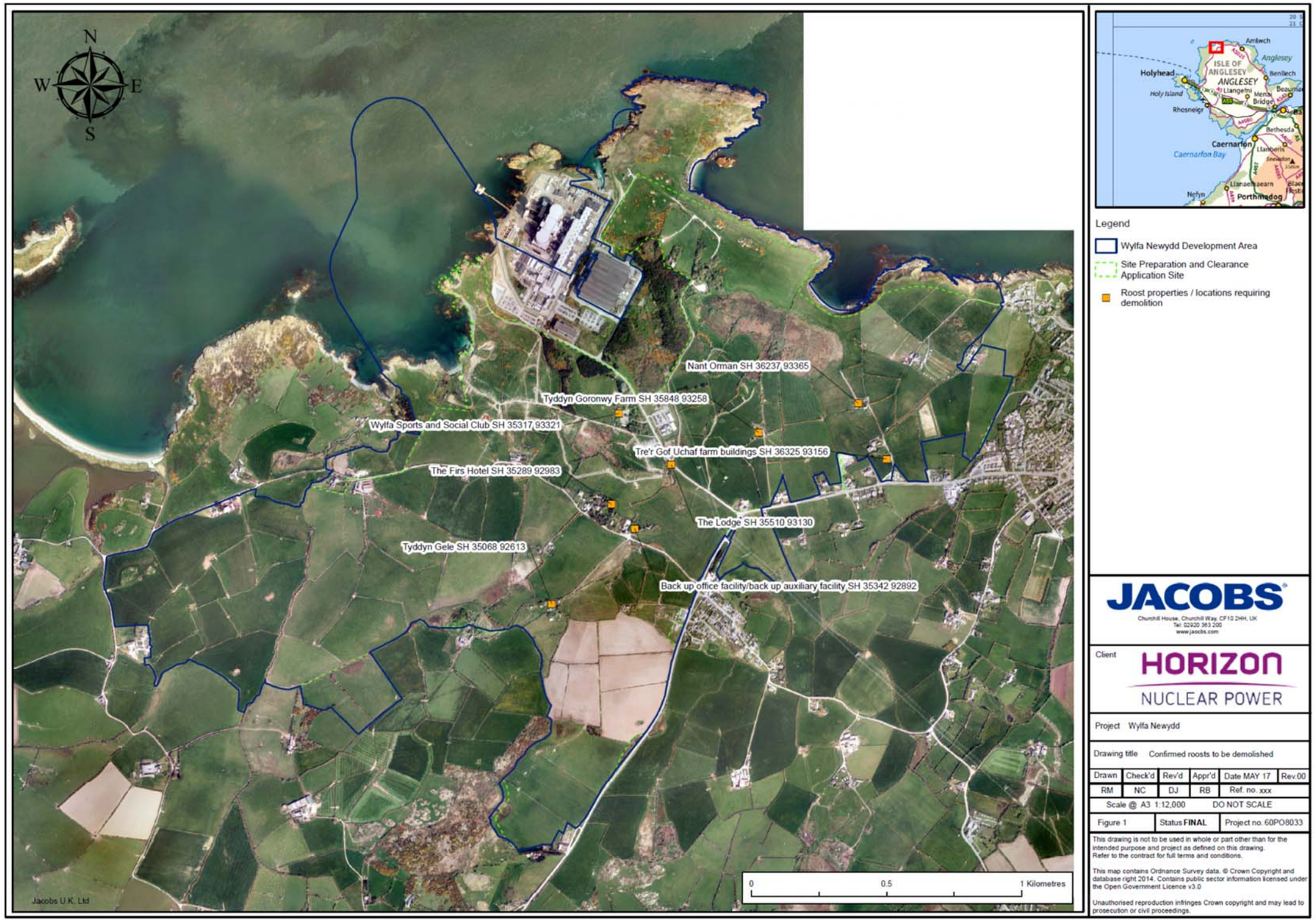
There are no Sites of Special Scientific Interest or Special Areas of Conservation notified for roosting bat species within 10km of the Wylfa Newydd Project study area.

C.3 Objectives of the survey

The objective of the bat surveys was to establish which bat species were present on the site, the location and status of any roosts, and the use of any landscape features by bats that may be affected by the proposed development.

C.4 Scaled plan/map of survey area

See overleaf.



Legend

- Wylfa Newydd Development Area
- Site Preparation and Clearance Application Site
- Roost properties / locations requiring demolition

JACOBS

Churchill House, Churchill Way, CF10 2HH, UK
Tel: 02920 363 200
www.jacobs.com

Client HORIZON NUCLEAR POWER

Project Wylfa Newydd

Drawing title Confirmed roosts to be demolished

Drawn	Check'd	Rev'd	Appr'd	Date MAY 17	Rev.00
RM	NC	DJ	RB	Ref. no. xxx	

Scale @ A3 1:12,000 DO NOT SCALE

Figure 1	Status FINAL	Project no. 60PO8033

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing.
Refer to the contract for full terms and conditions.

This map contains Ordnance Survey data. © Crown Copyright and database right 2014. Contains public sector information licensed under the Open Government Licence v3.0

Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings.

Figure 1: Site plan

C.5 Site/habitat description

The WNDA (the main footprint of which will be located within the blue boundary line as shown in figure 1, which is the Nuclear National Policy Statement boundary) is primarily dominated by grazed agricultural land surrounded by a rocky coastline. The fields are predominantly segregated by hedgerows which provide habitat connectivity. Areas of scrub, especially gorse, are present in some areas around the coast and there are two areas of woodland planted as landscaping for the Existing Power Station. These take the form of a coniferous plantation and a broadleaved woodland. There are also small areas of wetland, one of which is the Tre'r Gof Site of Special Scientific Interest.

The following eight named property complexes supporting roosting bats in 16 discrete structures are proposed for demolition under this licence application:

1. Back up office facility/back up auxiliary facility – building 2.
2. Wylfa sports and social club – buildings 1 and 2.
3. Nantorman – buildings 1, 2 and 3.
4. The Firs Hotel – out-building.
5. The Lodge.
6. Tre'r Gof Uchaf farm buildings – buildings 2 and 4.
7. Tyddyn Gele – buildings 1, 3, 4 and 6.
8. Tyddyn Goronwy Farm – buildings 1 and 3.

Figure 2 (Volume D, shows the location of each property complex where roosting bats were confirmed and the surrounding habitat types as shown using standard Phase 1 Habitat Survey codes (JNCC, 2010).

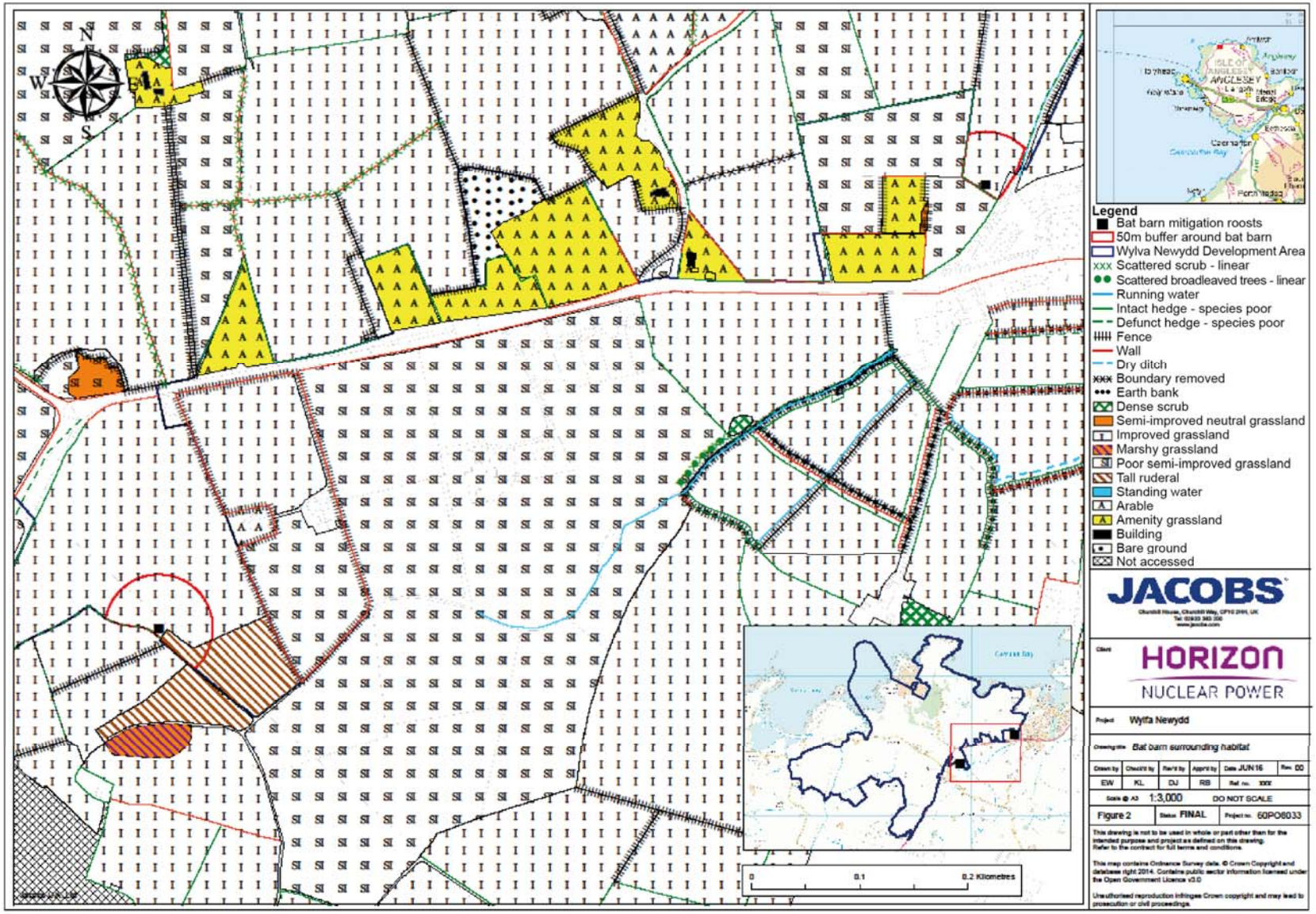


Figure 2 The locations of bat barns and surrounding habitat.

Descriptions of the local habitat and structure for each confirmed roost are given below along with illustrative photographs.

C.5.1 Back up office facility/back up auxiliary facility – building 2

No photograph is available of this building as it is used for security purposes and permission was not granted to photograph it.

C.5.1.1 Habitat

The back-up office facility/back up auxiliary facility is sheltered by a large hedge of Lawson's cypress (*Chamaecyparis lawsoniana*), which not only provides shelter but also darkness and cover. Immediately adjacent to the facility is a large area of scrub and the heavily wooded gardens of a property named The Firs. There is also good connectivity with habitats in the wider landscape via the complex network of hedges.

C.5.1.2 Structure description

Building 2 is a single-storey brick structure with a slate roof. On the exterior, there are some gaps under slates and ridge tiles. The soffits are mostly sealed but there is a small gap on the west-facing gable end. There are large gaps on the east elevation and two ventilation grilles on this east side are missing. There is a rot hole in the fascia on the south-east corner of the building.

In the interior, there is a suspended ceiling below the un-insulated roof void area. There is a strip light set in this ceiling which partially illuminates the roof void. The roof void is sub-divided, but there is potential bat access between the sections. The slate is lined with traditional F1 roofing felt and the rafters appeared relatively new. There is an overlap on the purlins with a potential roosting crevice between.

C.5.2 Wylfa sports and social club – buildings 1 and 2

Photograph 1: The front elevation of the Wylfa sports and social club (building 1)

C.5.2.1 Habitat

The Wylfa sports and social club has good connectivity with the wider landscape and is partially surrounded by mature and semi-mature broadleaved trees which provide sheltered habitat for foraging.

C.5.2.2 Structure description

The main body of building 1 (the Wylfa sports and social club) is a steel frame clad with corrugated cement sheeting on both the walls and roof. A suspended ceiling creates a sizable but cluttered roof void. Crevices and potential bat access points are formed where corrugated walling and roofing sheets meet the corner 'coping' sheets.

On the front and back of the club building are flat-roofed extensions. The walls of these extensions comprise block work, plastered internally and pebble-dashed externally. The flat roof is covered with bitumen felt, white UPVC soffits, and fascias are fitted and well-sealed.

Overall the Wylfa sports and social club has low potential to support roosting bats.

Building 2 (the garage) is constructed of large, prefabricated concrete block sections, with some standard block work around the doors. The roof is clad with corrugated cement sheeting.

C.5.3 Nantorman – buildings 1 , 2 and 3

Photograph 3: Building 1 (Nantorman) shown from the eastern elevation

Photograph 4 Building 2 (Nantorman Cottage) shown from the western elevation

Photograph 5: Building 3 (Bwthyn y Gafr) shown from the southern elevation

C.5.3.1 Habitat

Nantorman is in a very open, exposed location but has very good habitat connectivity via a network of hedges. This property is in relatively close proximity to the Tre'r Gof SSSI wetland which could provide a productive foraging habitat.

C.5.3.2 Structure description

The main house (building 1) at Nantorman has a pebble-dashed exterior although there are some gaps in the rendering which give potential bat access to behind the fascia boards. There are gaps under some slates, ridge tiles and lead flashing, particularly on the rear of the building. On the interior, the roof is lined with traditional F1 roofing felt and the loft insulated.

Building 2 (Nantorman Cottage) is a newly converted building, and has a pebble-dashed exterior. There are some gaps under ridge tiles but the roof is largely in a very good condition.

Building 3 is only partially converted and the exterior walls have been pebble-dashed. The roof is in poor condition with numerous gaps under the slates and in the stone-work of the chimney. There is potential bat access to the building interior via a vent in the west-facing elevation which is also used by swallows (*Hirundo rustica*). On the interior there are potential roosting locations between the foam insulation and the underside of the roof, in a cavity along the interior of the eaves and in the interior of the large open chimney.

C.5.4 The Firs Hotel – out-building

Photograph 6: The outbuilding at The Firs

C.5.4.1 Habitat

The outbuilding is within the wooded garden of the old Firs Hotel. It is surrounded by mature trees, a mixture of conifers dominated by Scots pine (*Pinus sylvestris*) with some native broadleaf trees including ash (*Fraxinus excelsior*), horse chestnut (*Aesculus hippocastanum*) and cherry (*Prunus avium*).

C.5.4.2 Structure description

Building 1 is an out-building within The Firs garden and is a brick built structure with a cast concrete roof containing very few crevices. The doors are either missing or have had their glass broken. Internally, carpet has been hung from the walls as sound-proofing, creating potential roosting points behind.

C.5.5 The Lodge

Photograph 7: The Lodge showing the southern elevation

C.5.5.1 Habitat

The Lodge is bordered on the north and west by mature and semi-mature trees and has very good habitat connectivity via the network of hedges in the vicinity. There is a large, un-grazed field/wetland area to the immediate west and a small pond just over the garden boundary also to the west. To the east lies the approach road to the power station, across from which there is a network of hedges. There are street lights on the road but these terminate just to the north of the property.

C.5.5.2 Structure description

The Lodge is a single storey, rendered structure with a slate roof which is in poor condition with numerous gaps under the slates. The roof is of an 'exposed rafter ends' design which in places gives potential bat access to the area between the roof and the top of the exterior walls and to the roof void. There are sections of barge boarding missing on the south gable end giving potential bat access under the slates and between the slates and the top of the exterior wall. There are gaps behind decayed external timber-work and under ridge tiles.

The roof void from the interior was found to be divided into two halves separated by a supporting wall and the chimney breast. However, there are potential bat access points between the two sections via gaps around the chimney. The chimney is not thought to be lined.

C.5.6 Tre'r Gof Uchaf farm buildings – buildings 2 and 4

Photograph 8: Building 2 shown from the southern elevation

Photograph 9: Building 4 shown from the southern elevation

C.5.6.1 Habitat

Although Tre'r Gof Uchaf Farm is situated in a fairly exposed location, there is good connectivity with habitats in the wider landscape via the complex network of hedges.

C.5.6.2 Structure description

This property was originally a larger complex of farm buildings. Buildings 1 and 3 were unused stone barns and were demolished in spring 2013 under the Welsh Government European Protected Species derogation licence, leaving the utilised buildings 2 and 4 intact.

Building 2 is a large barn consisting of a steel frame clad with a combination of corrugated metal sheeting and corrugated cement sheeting. Due to the design of this building the internal light levels are high.

Building 4 is a large barn constructed with a frame which is a combination of steel, concrete and timber. The building is mostly clad with corrugated cement sheeting although some corrugated metal sheeting is also present. The interior is very light and draughty and the barn was still in use for agricultural purposes at the time of survey.

C.5.7 Tyddyn Gele – buildings 1, 3 4 and 6

Photograph 10: The front (western) elevation of the main house at Tyddyn Gele (building 1)

Photograph 11: Buildings 2 and 3 respectively at Tyddyn Gele (western elevation). The distant building with the shallow pitched roof (building 3) is the confirmed roost

Photograph 12: The southern elevation of building 4 at Tyddyn Gele

Photograph 13: The hot tub roof (building 6) at Tyddyn Gele

C.5.7.1 Habitat

Tyddyn Gele has particularly good connectivity with habitats in the wider landscape via the network of hedges. There are a number of mature trees, primarily sycamore (*Acer pseudoplatanus*) in the immediate vicinity. Bat potential may have been limited by the fact that the majority of this property was very heavily illuminated by powerful security lighting in the past.

C.5.7.2 Structure description

Building 1 (the main house) is divided into two sections with the northern section being two-storey and the southern section single-storey. The roof is clad with very old slate of uneven thickness, creating a multitude of potential roost sites on both sections of the building. There are gaps behind the fascias throughout the two-storey section and behind the barge boarding on the south-facing gable end of the single-storey section. The exterior of the building is rendered leaving no crevices in the masonry.

Building 3 is a two-storey structure with numerous gaps under slates and behind the fascias on the front of the building. The fascia was missing from the rear and the barge boarding was absent from both gable ends. There are potential access points under the slates on both gable ends.

Building 4 is a small, open-fronted barn with a slate roof. There are gaps under the slates, ridge tiles, behind fascias and in the masonry. On the interior, the lime torching was missing in places creating gaps between the slates and rafters.

Building 6 is the roof of a hot tub area in the garden to the west of the main house, roofed with wooden shingles attached to plywood. There are gaps between the boarding and roof supports and between the exterior timbers on the corners of the structure.

C.5.8 Tyddyn Goronwy Farm – buildings 1 and 3

Photograph 14: Building 1 (Tyddyn Goronwy) shown from the eastern elevation

Photograph 15: Building 3 shown from the southern elevation.

C.5.8.1 Habitat

As with most of the site there is good connectivity at Tyddyn Goronwy with habitats in the wider landscape via the complex network of hedges.

C.5.8.2 Structure description

The main house (building 1) at Tyddyn Goronwy has a rendered, pebble-dashed exterior leaving no crevices in the masonry. There are no gaps behind soffits and fascias, but there are potential bat access points under slates, ridge tiles and the lead flashing around the dormer windows. On the interior, the roof is lined with traditional F1 roofing felt and is insulated.

Building 3 is a small, single storey barn which has been converted for residential use. Again, the walls are rendered but there are gaps under slates and ridge tiles.

C.6 Field survey(s)

All surveys were undertaken by Cambrian Ecological Limited (CEL), on behalf of Jacobs. Surveys were undertaken at the eight roost property complexes in 2015 that are shown in figure 1 in section 3.4.

Methods were developed with reference to the Bat Surveys – Good Practice Guidelines (Hundt, 2012). The bat emergence surveys were carried out between the beginning of May and the beginning of August 2015 and were led by licensed bat workers Chris Hall (NRW Licence No: 59784:OTH:CSAB:2014), Sam Dyer (NRW Licence No: 60825:OTH:CSAB:2014) and Kate Williamson (NRW Licence No: 60821:OTH:CSAB:2014), and assisted by a team of experienced survey assistants: Daniel Schwarzbaum, Tom Simone, Alan Cowlishaw, Sam Bryan, Nia Haf Jones, Dylan Vaughan-Williams, Rebecca Clews-Roberts, Lucia Ruffino, Shan Griffiths, Christian Middle and Bethan Lloyd.

A visual inspection of the exterior of each previously surveyed structure was made to note any changes in condition that might allow bats to gain entry to roost spaces, or that might reduce the suitability of roost sites through increased wind or water ingress into the structures.

The structures were placed in one of four categories: ‘high’, ‘medium’, ‘low’ and ‘no potential’. These assessments were made in the context of the nature of the structures on the site.

Following the structure assessments, the emergence survey schedules comprised:

- three emergence surveys of the Natterer's bat maternity roost at The Lodge;
- two emergence survey of high and medium potential structures; and
- one emergence survey of low potential structures.

This reduction in the survey effort for these confirmed roosts compared with that prescribed by the Bat Conservation Trust’s Bat surveys: good practice guidelines (Hundt, 2012) was a practical consideration given the large number of buildings requiring survey and the extensive baseline data that has been collected for those buildings over the past five years. As such, the reduction in survey effort in 2015 is not considered to be a constraint when determining levels of impact or proportionate mitigation. Any evidence of roost usage over the last five years will mean a structure is regarded as a roost and, as will be detailed in the delivery information document, all moderate and high potential buildings located at a property where a bat roost is to be demolished will be treated in the same manner as the roost structure itself as a precaution.

All emergence surveys were carried out in appropriate weather conditions with dusk temperatures in excess of 10 degrees centigrade and avoiding periods of heavy rain or strong wind. Details of the environmental conditions for each survey are provided in section 3.7.

Each surveyor used an Anabat SD1 or SD2 unit in conjunction with a Bat Box Duet frequency division bat detector. Confirmation of field identifications were completed via computer analysis of sonogram traces recorded on the Anabats using Analook software. The emergence surveys commenced 15 minutes before sunset and continued until 90 minutes after sunset to allow for the possible presence of late emerging species such as brown long-eared or Natterer's bats. Where required, night vision monoculars, Sony Nightshot camcorders with infra-red floodlighting or Flir E50 thermal imaging cameras were used to look for later emerging species against darker backgrounds.

Bats are highly mobile animals and some species move their roosting sites on a regular basis. It is possible that bats could move into any structure after the survey had taken place. An assessment of the suitability of the structure to support roosting bats is therefore important to establish the likelihood of this occurring. As such, as detailed in the delivery information, a licence is being sought to also cover the demolition of all moderate and high potential structures without evidence of bat use where these form part of a property complex that also supports a confirmed roost.

C.7 Survey results

Table 5 below presents the results of the 2015 structure emergence/re-entry surveys (including roost potential and weather data) at eight properties at which roosting bats have been recorded in one or more structures since surveys began in 2009 and which will be lost to the development.

Full bat survey reports dating between 2009 and 2015 are appended in Annex J.1. Raw survey data is not included in Annex J.2. as the survey reports contain all of the available data.

Property name	Roost potential status (High, Medium, Low and No)	Exterior structure condition (2014-2015)	Survey No. (reduced effort in 2015 discussed in section C6)	Date	Temp °C	Cloud cover %	Wind	Rain	Roost status 2009-2015	Notes
Back up office facility/back up auxiliary facility	B1 No, B2 High, B3 Medium	No change	1 – Dusk emergence survey	23/06/15	12.2	10	Light breeze	None	Day roost – regular	One brown long-eared bat emerged from the eastern gable of B2. One *Myotis* sp. bat emerged from under a ridge tile on the northern end of B2.
Wylfa sports and social club (formerly referred to as the leisure centre)	High	No change	1 – Dusk emergence survey	02/06/15	10.9	10	Moderate breeze	None	Day roost – occasional	Negative survey
			2 – Dusk emergence survey	28/07/15	13.0	100	Light breeze	None		Negative survey
Nantorman	B1-3 High, B4 No	No change	1 – Dusk emergence survey	19/05/15	12.1	20	Still	None	Day roost – occasional	One soprano pipistrelle bat emerged from under a ridge tile on the south eastern hip of B1.
			2 – Dusk emergence survey	30/06/15	20.1	2	Still	None		One soprano pipistrelle bat emerged from behind the facia board on the right side of the front of B1.
The Firs out-building	High	No change	1 – Dusk emergence survey	23/06/15	12.2	10	Light breeze	None	Day roost – occasional	Negative survey

Property name	Roost potential status (High, Medium, Low and No)	Exterior structure condition (2014-2015)	Survey No. (reduced effort in 2015 discussed in section C6)	Date	Temp °C	Cloud cover %	Wind	Rain	Roost status 2009-2015	Notes
			2 – Dusk emergence survey	28/07/15	13.0	100	Light breeze	None		Negative survey
Tre'r Gof Uchaf Farm	High	No change	1 – Dusk emergence survey	19/05/15	12.1	20	Still	None	Day roost – regular	Negative Survey
			2 – Dusk emergence survey	23/06/15	12.2	10	Light breeze	None		One common pipistrelle bat emerged from B4. It was heard foraging internally initially before emerging.
Tyddyn Gele 1 (House)	High	No change	1 – Dusk emergence survey	16/06/15	13.1	100	Moderate breeze	None	Day roost – regular	Negative survey
Tyddyn Gele Building 3	High	No change	1 – Dusk emergence survey	23/06/15	12.2	10	Light breeze	None	Day roost – occasional	Negative survey
			2 – Dusk emergence survey	21/07/15	15.1	100	Still	None		Negative survey
Tyddyn Gele Building 4	High	No change	1 – Dusk emergence survey	16/06/15	13.1	100	Moderate breeze	None	Day roost – occasional	Negative survey
			2 – Dusk emergence survey	21/07/15	15.1	100	Still	None		Negative survey

Property name	Roost potential status (High, Medium, Low and No)	Exterior structure condition (2014-2015)	Survey No. (reduced effort in 2015 discussed in section C6)	Date	Temp °C	Cloud cover %	Wind	Rain	Roost status 2009-2015	Notes
Tyddyn Gele Building 6 (hot tub roof)	High	No change	1 – Dusk emergence survey	16/06/15	13.1	100	Moderate breeze	None	Day roost – regular	Negative survey
			2 – Dusk emergence survey	14/07/15	12.9	10	Light breeze	None		Negative survey
Tyddyn Goronwy Farm	B1 & 3 High, B2 Medium, B4 Low, B5 No	No change	1 – Dusk emergence survey	19/05/15	12.1	20	Still	None	Day roost – occasional	One common pipistrelle bat emerged from front facia over dormer window
			2 – Dusk emergence survey	28/07/15	13.0	100	Light breeze	None		Negative survey
The Lodge	High	No change	1 – Internal inspection and dusk emergence survey	26/05/15	11.2	50	Still	None	Maternity roost	Twenty-six Natterer's bat in southern roof void. Three brown long-eared bats in northern roof void.
			2 – Internal inspection and dusk emergence survey	30/06/15	20.1	2	Still	None		34 x Natterer's bat (including at least two juveniles) in southern roof void. Four brown long-eared bats in northern roof void. One soprano pipistrelle bat emerged from the slate edge of the front porch.

Property name	Roost potential status (High, Medium, Low and No)	Exterior structure condition (2014-2015)	Survey No. (reduced effort in 2015 discussed in section C6)	Date	Temp °C	Cloud cover %	Wind	Rain	Roost status 2009-2015	Notes
			3 – Internal inspection and dusk emergence survey	21/07/15	15.1	100	Still	None		19 x Natterer's bat (including at least six flying juveniles) in southern roof void. Three brown long-eared bats in northern roof void (including at least one male).

Table 5: Summary of the results of 2015 surveys at known roost structures to be demolished

The structure diagrams below show the properties included in this licence application. A key showing how to interpret these diagrams is also provided which shows the colours assigned to each roost status of buildings at each property and the location of surveyors. Indicative bat foraging/commuting routes are shown; these reflect the cumulative results of all surveys undertaken on the structures between 2010 and 2014.

All diagrams are orientated to the north and are not to scale.

Diagram 1: Key to structure survey result diagrams

Diagram 2: Back up office facility/back up auxiliary facility (Roost building 2)

Diagram 3: Wylfa sports and social club (Roost buildings 1 and 2)

Diagram 4: Nantorman (Roost buildings 1, 2 and 3)

Diagram 5: The Firs Hotel out-building (Roost)

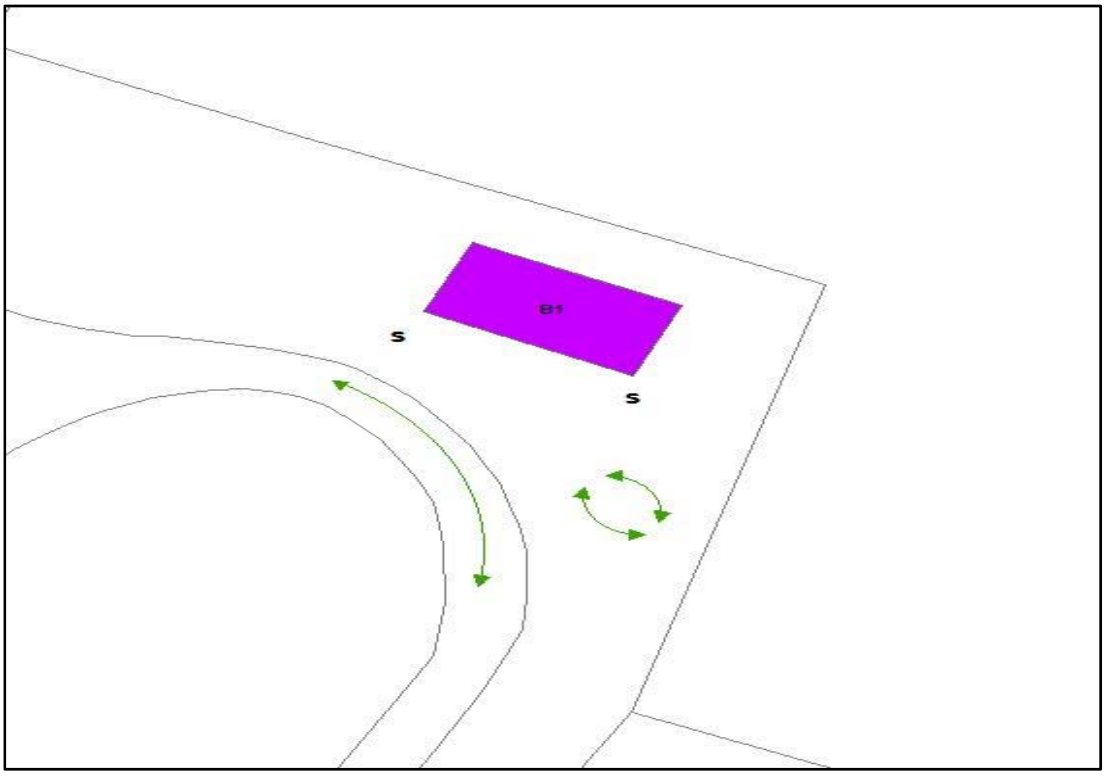


Diagram 6: The Lodge (Maternity roost)

Diagram 7: Tre'r Gof Uchaf farm buildings (Roost buildings 2 and 4)

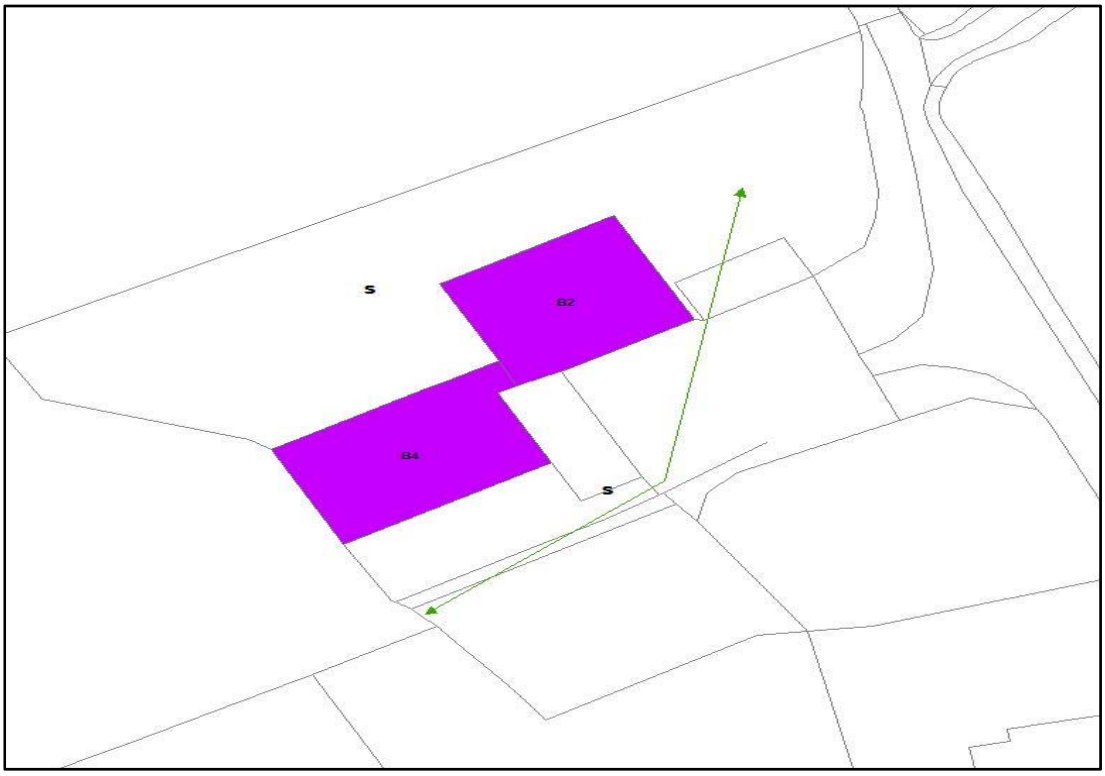


Diagram 8: Tyddyn Gele (Roost buildings 1, 3 4 and 6)

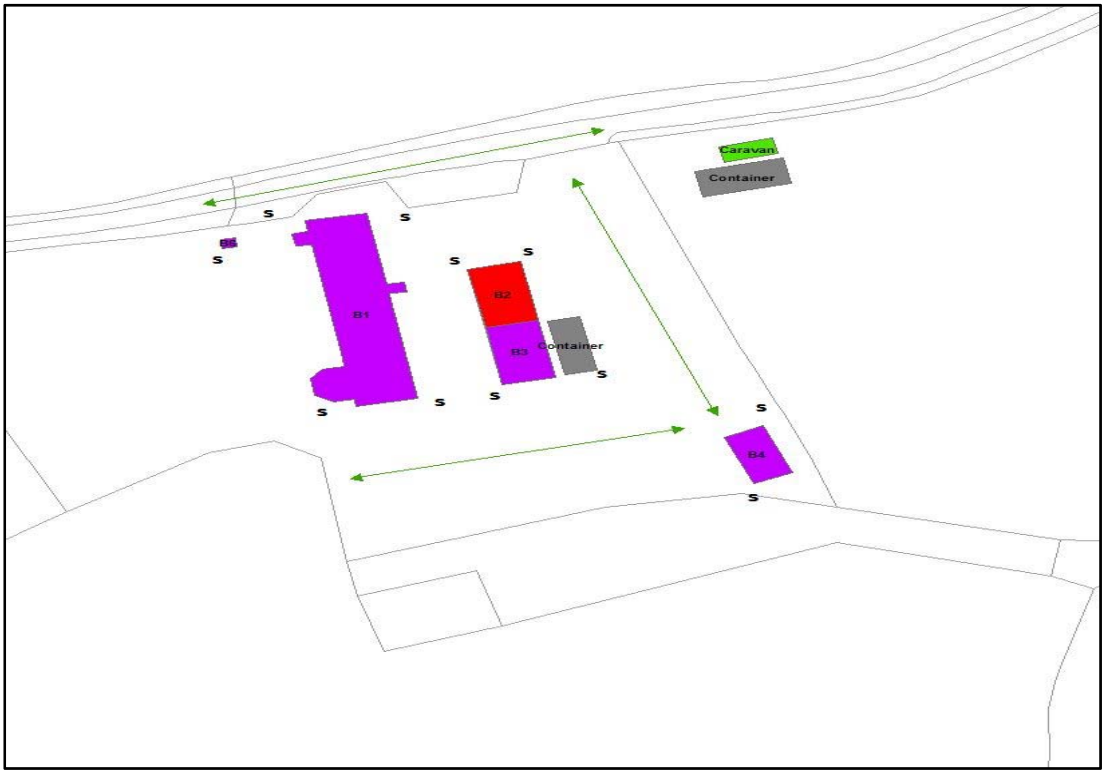


Diagram 9: Tyddyn Goronwy Farm (Roost buildings 1 and 3)

C.8 Interpretation/evaluation of survey results

The WNDA only appears to support a low density bat population, as based on the results of current emergence surveys and previous transects. The site has very good habitat connectivity via a network of hedges, combined with potentially productive foraging habitats such as the wetland of Tre'r Gof SSSI.

The 2015 structure survey results show that the total number of structures in the study area that support roosting bats is 36 and that these generally comprise roosts containing only one or two bats at a time. Of these, 16 roost structures are scheduled for demolition as part of Site Preparation and Clearnace Works for the WNDA Development. The species present within these roosts are generally common and widespread and typical for a site in north Wales.

The survey results strongly suggest low populations of bats are present in the area, with the majority of recorded roosts being utilised by low numbers or individual bats likely to be males or non-breeding females. Results suggest that these bats regularly moved around the site, roosting within different structures as each season progressed. This pattern was displayed through the six summer seasons of surveys undertaken as the survey results were not consistent for each structure, with structures previously identified as having low usage often found to support no bats on repeat surveys, or vice versa.

There is one building requiring demolition that supports a maternity roost of Natterer's bats (The Lodge). The Lodge is the most significant roost of bats in the study area and supports a population of around 40 individuals as well as low numbers of brown long-eared, soprano pipistrelle and whiskered/Brandt's bats.

Overall the number of roosts is not considered to be exceptional in terms of density for an area the size of the study area (approximately 822ha). Similarly, the number of individuals and composition of species that the WNDA supports is also not beyond what would be expected for a site with the range of structures and habitats that are present. However, the population of Natterer's bats in the Lodge would be of at least local significance, and is of primary concern when mitigating the impacts on bats from Site Preparation and Clearance Works.

D. Impact assessment

D.1 Short-term impacts: disturbance

In the absence of any mitigation measures there is the potential for a negative impact on a local level on all of the bat species present with a risk of bats being injured, killed or disturbed as a result of the works. The disturbance would be in the form of noise and vibration from machinery and contractors, light disturbance, changes to airflow and humidity as parts of the structure are removed and loss of internal and external flightpaths around roost properties. This disturbance could cause bats to deplete their energy reserves at times when these are difficult to replenish such as during inclement or cold weather as they seek to escape from the source of the disturbance. It could lead to roost abandonment during daylight when bats would be more disorientated and vulnerable to injury and predation.

As a worst case scenario (if undertaken in the wrong season) disturbance could lead to the abandonment of dependant young in the maternity roost at The Lodge. The impact on the species breeding at this site would be expected to be significant. It is however anticipated that

with the timing of the demolition and the provision of alternative roosts prior to demolition that this impact can be minimised.

D.2 Long-term impacts: roost modification

No roost modification impacts are anticipated as all 16 roost structures will be completely demolished.

D.3 Long-term impacts: roost loss

A total of 16 roost structures will be demolished and consequently complete roost loss will occur. The roosts comprise one Natterer's bat maternity roost at The Lodge with the remainder being transitory day roosts used by common and soprano pipistrelle, brown long-eared and whiskered/Brandt's bats.

In the absence of any mitigation measures there is the potential for a significant local impact on all of the bat species on this site. The loss of the maternity roost would impact primarily on Natterer's bats (but also on brown long-eared, soprano pipistrelle and whiskered/Brandt's bats) leading to a loss of breeding productivity and the possible death and injury to bats. The loss of the other roosts on the site would have a lesser impact as these are thought to be predominantly utilised by low numbers or individual males and non-breeding females of common species.

Based on the Bat Mitigation Guidelines (Mitchell-Jones, 2004), the destruction of a maternity roost is considered a 'high' level of impact whereas the loss of transitory night roosts would be considered individually as being a 'low' level of impact.

It is however anticipated that with the timing of the demolition and the provision of alternative roosts prior to demolition that these impacts can be minimised.

D.4 Long-term impacts: fragmentation and isolation

No habitat fragmentation will occur during the demolition stage of the proposals as this will only entail a minor loss of vegetation to enable plant and machinery to gain access to the structures. This is preferable to significant vegetation loss occurring prior to the loss of roost structures as it means bats would not be left isolated by a lack of established commuting routes.

There will however be a significant loss of habitat as a result of Site Preparation and Clearance Works, including the removal of hedges and dry stone walls which currently provide connectivity to the wider landscape. This could again have a significant impact on the bat population on the site. Measures are however in place to provide continued habitat connectivity with the proposed new roosts around the site perimeter during this next phase of the development as well as phased landscape and biodiversity measures detailed in the Lanscape and Habitat Management Strategy (Application Reference Number: 8.16).

D.5 Post-development interference impacts

No impact is anticipated due to post development interference as the existing roosts will all have been removed. The new roosts will be located in areas of land owned by Horizon. These areas would remain in the ownership of Horizon in perpetuity. Ensuring that the new roosts had not been inferred with e.g. vandalism, would also form part of the monitoring of the WNDA by a

security company employed by Horizon for the duration of the construction period of the Generating Station, and would therefore be for a minimum of ten years.

D.6 Predicted scale of impact

In the absence of any mitigation measures the overall cumulative scale of the impact as a result of the demolition phase is likely to be medium at a site/local scale for all of the bat species involved (common pipistrelle, soprano pipistrelle, brown long-eared, Natterer's and whiskered/Brandt's bat) due to the high potential for causing injury, death and disturbance. Although a maternity roost (high level of impact) and up to 15 other roost structures will be lost, the majority of these roosts support very low numbers of bats utilising the roosts at varying times of year (low level of impact), leading to the conclusion that there is a relatively low bat population on this exposed coastal site and the bats recorded tend to move between many of the surveyed structures at different times of year. As such, no impact is anticipated at either a county or regional scale.

Providing that the suggested mitigation is implemented, no significant negative impact is anticipated on any of the species identified utilising the roosts which will be demolished, at either a local, regional or national level, and the favourable conservation status and continued ecological functionality of the species will not be impacted by the proposed works. The key component of the mitigation strategy for this licence is the provision of two bat barns of the same design as that provided to compensate for the loss of the roost at Tyn y maes in 2013. This design has proven its potential effectiveness at this site being used by over 50 individuals from four species (common pipistrelle, soprano pipistrelle, brown long-eared and whiskered/Brandt's bat) in 2015.

Figure 3 is a plan that shows the eight property complexes and 16 known roost structures to be demolished and showing 'hot spots' of bat activity derived from transect and static monitoring surveys that show important flight lines to be lost as a result of the development.

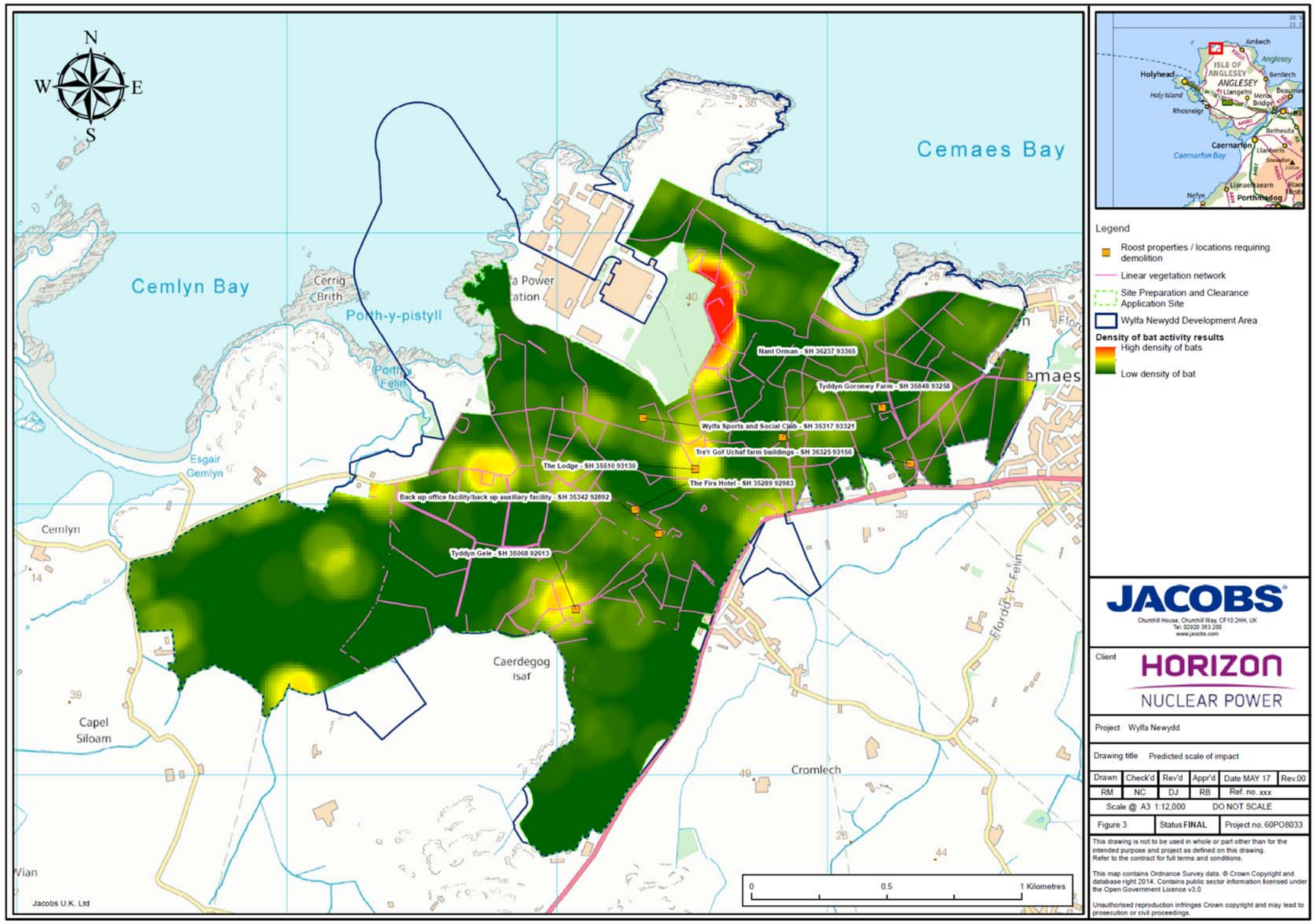


Figure 2: The location of each property complex where roosting bats were confirmed, the proposed vegetation clearance extent and key areas of bat activity indicating important flight lines

E. References

Arup Ltd. 2012a. Wylfa New Nuclear Power Station. *Initial bat activity and building assessment report*.

Arup Ltd. 2012b. Wylfa New Nuclear Power Station. *Report on bat surveys 2010 and 2011*.

Arup Ltd. 2013. Wylfa New Nuclear Power Station. *Bat roost survey report 2012*.

Hundt, L. 2012. *Bat Surveys – Good practice guidelines*. 2nd Edition. Bat Conservation Trust: London.

Bat Conservation Trust. 2014. *The National Bat Monitoring Programme annual report for 2014*. [Online]. [Accessed 01 December 2015] Available from: http://www.bats.org.uk/pages/nbmp_annual_report.html

Mitchell-Jones, A.J. 2004. *Bat mitigation guidelines*. English Nature: Peterborough.

Jacobs UK Ltd. 2014. Horizon Nuclear Power (Wylfa) Ltd. *Consultancy report: bat monitoring 2013*.

Jacobs UK Ltd. 2015a. Wylfa Newydd Project. *Consultancy report: bat monitoring 2014*.

Jacobs UK Ltd. 2015b. Wylfa Newydd Project. *Technical summary report - bats*.

Jacobs UK Ltd. 2015c. Wylfa Newydd Project. *Bat monitoring survey report 2015 addendum to bat technical summary report*. Joint Nature Conservation Committee. 2004. Bat workers' manual. 3rd Edition. JNCC: Peterborough.

Joint Nature Conservation Committee. 2010. *Handbook for phase 1 habitat survey - a technique for environmental audit*. 2nd Edition. JNCC: Peterborough.

HORIZON NUCLEAR POWER

ENERGY WORKING FOR BRITAIN

EUROPEAN PROTECTED SPECIES MITIGATION LICENCE METHOD STATEMENT DELIVERY INFORMATION: BATS (DRAFT)

Mitigation, Compensation and Monitoring

DCRM Ref Number: WN034-JAC-PAC-REP-00049

Revision: 1.0

Additional Requirements or Controls			
LISTED READERS ONLY		LEGALLY PRIVILEGED	

Comments: Draft document – not for formal licence submission

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION OF HORIZON NUCLEAR POWER LIMITED'S GROUP. ANY INFORMATION CONTAINED HEREIN, IN WHOLE OR IN PART, SHALL NOT BE USED FOR ANY PURPOSE OTHER THAN THE PERFORMANCE OF WORK UNDER CONTRACT, OR BE DISCLOSED IN ANY MANNER OR BY ANY MEANS TO ANY THIRD PERSON OR PERSONS WITHOUT SPECIFIC CONSENT IN WRITING FROM THE APPROPRIATE MEMBER OF HORIZON NUCLEAR POWER LIMITED'S GROUP

This document may contain EXPORT CONTROLLED Information. The release of this information to any other party other than its intended recipient may result in a violation of U.S., Japanese or UK export controls. If you have received this document in error, please notify Horizon immediately by returning the document to the sender. You must take reasonable measures to prevent unauthorised persons from having access to or using any EXPORT CONTROLLED Information contained herein.

Distribution		
Required for Listed Readers Only and Legally Privileged but can be used with other markings		

Approvals Table				
	Role	**Printed Name**	**Signed Name**	**Date**
Originated by	Document Author	Ken Lipscomb	[redacted]	11/04/16
Reviewed by	Document Reviewer	Dave Jones		11/04/16
Checked by	Head of Section	Nick Clark		11/04/16
Approved by	EMT Representative			

[This page is intentionally blank]

Contents

Table of Figures

[This page is intentionally blank]

E. Works to be undertaken

Following extensive bat surveys in the last six years, and in consultation with Natural Resources Wales (NRW), the decision has been taken to approach mitigation for bats at this site in a holistic fashion to maintain the favourable conservation status of bats rather than taking a piecemeal approach for each structure and tree. This licence application is therefore intended to provide mitigation and compensation measures for all of the known roost structures, and for the loss of potential roost sites in trees incurred as part of the Site Preparation and Clearance Works of the Wylfa Newydd Project (the Project). However, dedicated tree surveys (in accordance with the latest best practice guidance) will be undertaken prior to felling, and any felling works to identified roosts would be covered by a separate licence application.

E.1 Capture and exclusion

E.1.1 Structures

Exclusion of the bats from the buildings will not be possible due to the proposed timing of the works (March – April) as there is a possibility of torpid bats being trapped inside the structures rather than successfully excluded. Also, the complexity of many of the structures, and the multitude of potential access points for bats makes exclusion an impractical approach.

Before commencing any works on site, the contractors undertaking the demolition works will be inducted by a licensed bat ecologist to make them aware of the possible presence of bats, their legal protection and of working practices to avoid harming bats. A copy of the method statement and licence documentation will remain available on site at all times. A summary sheet of guidance will be given to each contractor undertaking the demolition works.

Before the demolition works commence in spring of Year 1 of the construction programme, the two bat barns and 40 additional Schwegler bat boxes will have been installed to provide alternative roosting habitats and time for bats to have become familiar with them. The bat boxes are to be installed a minimum of 4m above the ground in locations specified by a bat ecologist. These bat boxes will remain on site permanently to provide alternative roosting opportunities for the small number of bats that may be displaced during the works.

Any evidence of roost usage over the last five years (e.g. live bats, dead bats, positive emergence/re-entry surveys, droppings) will mean a structure is regarded as a roost and is included in this licence. All moderate and high potential buildings located at a property complex where a bat roost is to be demolished will be treated in the same manner as the roost structure itself as a precaution. In addition, the building demolition will be phased (where possible) so that structures are demolished in order of increasing potential: negligible, low, moderate, high and confirmed roost. This measure is so as to minimise the risk of displacing bats in to neighbouring previously unused buildings as a result of demolition.

To minimise the risk of encountering vulnerable bats, works affecting any part of a structure that could be used by roosting bats at the eight known roost property complexes will take place between March and June of Year 1. For The Lodge maternity roost, the sensitive stages of the works should be restricted to April so as to have greatest confidence of avoiding heavily pregnant females or dependant young. Sensitive demolition would avoid the hibernation period for bats (November to March inclusive) as, although there is no evidence of the structures being used for hibernation, species such as pipistrelle and brown-long eared bats will often hibernate

in crevices in structures and, as such, would be particularly vulnerable to winter demolition works.

An internal building inspection will be undertaken (where access can safely be achieved) the day before works are due to commence on a given building roost. The purpose of this inspection is to attempt to ascertain whether any roosting bats are present at the time of demolition and to better determine where mitigation efforts should be targeted at a given structure. If it is possible to do so, any bats encountered should be captured by the licensed bat worker and taken to the closest bat barn for immediate release at a similar roost feature. A dawn re-entry survey of each structure will also be undertaken the day before works are due to commence, if possible (assuming suitable weather conditions for bat activity – as determined by a bat ecologist) with a view to identifying the exact locations where any bats are roosting at the start of demolition.

A licensed bat worker will supervise the bat-critical stages of the demolition works (mainly the dismantling of the roofs of the properties but particularly the removal of tiles, roof lining, any chimneys, porches, fascia boarding, weather boarding, lead flashing, cavity walls etc.). The removal of all tiles and roof lining will be by hand (where it is safe to do so). The licensed bat worker will decide how long to supervise the demolition works for at a given property, or whether to stay 'on-call' once the works have started depending on the potential risk of bats being present.

When roof tiles are removed, they will be lifted up and away from the roof, and not twisted or slid, to avoid injury to any bats potentially roosting beneath them. Each tile will be turned over to check the underside for the presence of roosting bats.

If an active bat is encountered during the inspection survey or supervised works, the licensed bat worker will attempt to capture the bat with gloved hands or a hand net, place the bat in a draw-string cloth bag and then take it to one of the pre-arranged receptor sites which will all be constructed/erected prior to works commencing. Receptor sites will be the new bat barns at Cemaes and north of Tregele (SH 36603 93167 and SH 35847 92747), and the eight telegraph pole-mounted Schwegler bat boxes (4 x 1FF and 4 x 2FN) installed within 50m of each bat barn. Figure **E**.**1** (Volume D, Application Reference Number: 6.4.53) illustrates the location of the eight roost property complexes to be demolished and the locations of the two bat barns, and 40 bat boxes, that will be erected prior to this demolition to compensate for the loss of roosting habitat. Bats will be released directly in to the closest box to their point of origin subject to dry weather conditions. To prevent bats from flying straight out of a box they would be released into, a 'stuffer' (a soft cloth) will be used to block the entrance. A string-tied securely to the stuffer will allow it to be removed from ground level at the end of the working day once the bats have become calm in the temporary roost.

If the weather conditions are not suitable for immediate release (e.g raining heavily), the bat will be temporarily taken into care and fed and watered until such time conditions are suitable (i.e. dry and with an evening temperature of 8°C or more) at which point the bat will be released at dusk. If required, the temporary care of bats will be undertaken by a licensed bat worker with experience of caring for captive bats [a named individual will be provided in the formal licence application, but this is not possible to provide at this draft stage]. The capture and handling of any bats will only be undertaken by licensed bat workers. Injured bats will immediately be taken into care (as directed by The Bat Workers Manual, s7.3, pp. 64-66, 3rd Edition, 2004). Injured bats will be taken in by a licensed bat worker with experience of looking after injured bats. The Bat Conservation Trust's bat helpline will be contacted for advice and for the contact details of a

local bat carer if required (0345 1300 228. October-April [non-peak season]: Monday-Friday 9am-5.30pm. Out of hours emergency calls can be made May-September). The closest veterinary surgery to the Wylfa Newydd Development Area (WNDA) is Bodrwnsiwn Veterinary Practice Group, Dinorben Cottage, Amlwch, LL689AL, 01407 832367.

To minimise the risk of encountering torpid bats, the sensitive stages of the demolition works will proceed during periods when temperatures have not dropped below 8°C over three consecutive nights, where practicable. If working during this period is unavoidable, and a torpid bat is discovered, it will be captured by hand by the licensed bat worker and temporarily taken into care and fed until such time conditions are suitable (i.e. dry and an evening temperature of 8°C or more), at which point the bat will be released at dusk.

If a bat is discovered at any other, unsupervised times, the contractor will be instructed to cease all works immediately and for the named ecologist or accredited agent to be contacted for advice. This advice may involve leaving the bat to disperse of its own accord, or waiting for the licensed handler to arrive on site to move the bat. Contractors will be instructed to at no point handle bats.

E.1.2 **Trees**

Similarly, if any tree roosts are identified on site during dedicated surveys (in advance of site clearance) the following measures will be employed to ensure the favourable conservation status of tree roosting bats in the WNDA is maintained. Where possible, any known tree roosts or trees with potential roosting features would be retained. Where this is not possible, removal of any trees with bat potential will take place when bats are least vulnerable as they are not hibernating, heavily pregnant or have dependant young i.e. during April and September/October (with the latter favoured to avoid constraints from nesting birds).

Exclusion devices – effectively one-way valves – will be used to safely evict bats from known tree roosts under licence. Exclusion is required when a tree is known to be in current use by roosting bats or when the roost features are too extensive/complex to be fully inspected by endoscope such that there is no confidence that bats are absent and the feature cannot be blocked or the tree felled.

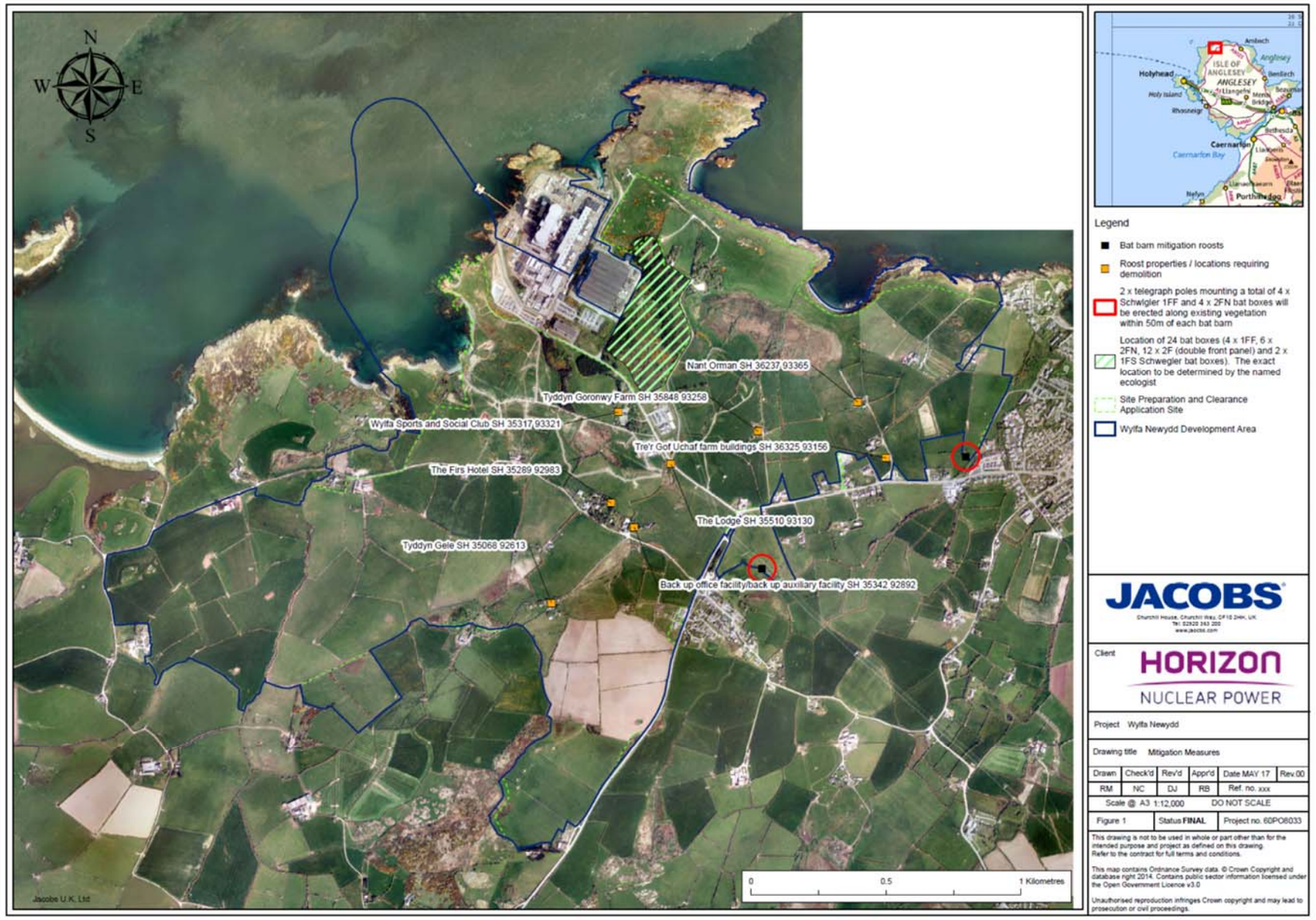
Soft-felling techniques will be utilised for any trees with bat potential that cannot be fully inspected at height by a licensed bat worker with an endoscope immediately prior to felling to give confidence that bats are absent. If it is not possible/practical to fell a tree immediately following a climbing inspection by a licensed bat worker, any features that can be fully inspected and do not contain roosting bats can be blocked off to prevent them being colonised by bats in the interim period; features will be blocked off by a licensed bat worker using a robust sheet material e.g. thick plastic sheeting or fine wire mesh stapled securely in place (this is a reversible method unlike expandofoam or similar fillers).

Further measures to protect any bats encountered during tree felling operations will be the same as those discussed for bats encountered during structure demolition works above e.g. the capture of bats, weather conditions when works take place, the scenario when bats need to be taken in to care and the course of action should bats be encountered by tree felling contractors when an ecologist is not present.

Known tree roost features and/or highly suitable potential roost features will be carefully cut out and securely strapped to healthy trees so they can potentially be used by roosting bats in the future (where this is safe and practical to do so and suitable receptor trees exist in retained

habitat). The loss of any known and potential tree roosts will be further compensated for by the provision of artificial bat boxes as described for structures above. Additional boxes may be deemed necessary to mitigate for the loss of known roost trees; if this were the case the requirement would be detailed in a specific tree roost licence application.

Figure E.1: A plan showing the location of the eight roost property complexes to be demolished and the sites of the proposed bat barn and bat box compensation measures



E.2 Bat roosts and habitat

E.2.1 *In-situ retention of roost(s)*

No existing roosts will be retained, apart from the previously installed mitigation structures.

E.2.2 Modification of existing roost(s)

No existing roosts will be modified as part of the proposals.

E.2.3 New roost creation (including bat houses and bat boxes)

According to the Bat Mitigation Guidelines (Mitchell-Jones, 2004), the mitigation requirements to offset the impacts to roosting bats range from:

1. In the case of low conservation significance transitory roosts: "*Flexibility over provision of bat-boxes, access to new buildings etc. No conditions about timing or monitoring*" to "*Provision of new roost facilities where possible. Need not be exactly like-for-like but should be suitable, based on species' requirements*".
2. In the case of the moderate conservation significance of the Natterer's bat maternity roost at The Lodge: "*Timing constraints. More or less like-for-like replacement. Bats not to be left without a roost and must be given time to find the replacement*".

Set out below is the proposed new roost creation, which is compliant with the Bat Mitigation Guidelines in terms of providing species specific and proportionate conservation measures.

Two new dedicated bat barns will mitigate for the loss of the 16 known roosts covered by this licence application; one completed in February 2018 and the second in summer 2018. The two bat barns are of the same design as that provided to compensate for the loss of the roost at Tyn y maes in 2013 (Plate E-1: The photograph below was taken at the end of construction but prior to the landscape planting around the bat barn. The retained tree 'monoliths' are used for the mounting of bat boxes.). This design has proven its effectiveness at this site as it was being used by over 50 bats from four species (common pipistrelle, soprano pipistrelle, brown long-eared and whiskered/Brandt's bat) in 2015.

Plate E-1: The existing bat barn at Tyn y maes prior to landscape planting

Mitigation buildings will be surrounded by a buffer strip of planting up to 10m wide of native species of local provenance.

Bat barns

One of the two dedicated bat barn mitigation roosts is located in the eastern corner of the WNDA near Cemaes (SH 36603 93167); the other on the WNDA, south of the A5025, north of Tregele (SH 35847 92747). Figure **E.1** (Application Reference Number: 6.4.53) illustrates the locations of the two bat barns.

These locations have been selected to ensure that they will be outside the future development land usage area but within land owned by Horizon Nuclear Power Wylfa Ltd. (Horizon) to ensure long term security of the mitigation. Both bat barns are located in pasture-land adjacent to existing hedgerows and scrub but there is currently a paucity of trees in these locations on which to mount any bat boxes. As with the Tyn y maes bat barn, the land surrounding the two new bat barns will be planted with appropriate tree and shrub vegetation to provide enhanced foraging and commuting habitat for bats. Figure E.2 (Volume D, Application Reference Number: 6.4.53) illustrates the locations of the two bat barns and the associated telegraph pole mounted bat boxes, in the context of the surrounding existing Phase 1 Habitat Survey vegetation types. This information shows the existing habitat connectivity of the two bat barns and the linear vegetation along which the telegraph pole mounted bat boxes would be installed. Bat box designs will vary to provide roosting opportunities for all species of bat recorded within the WNDA and its surrounds.

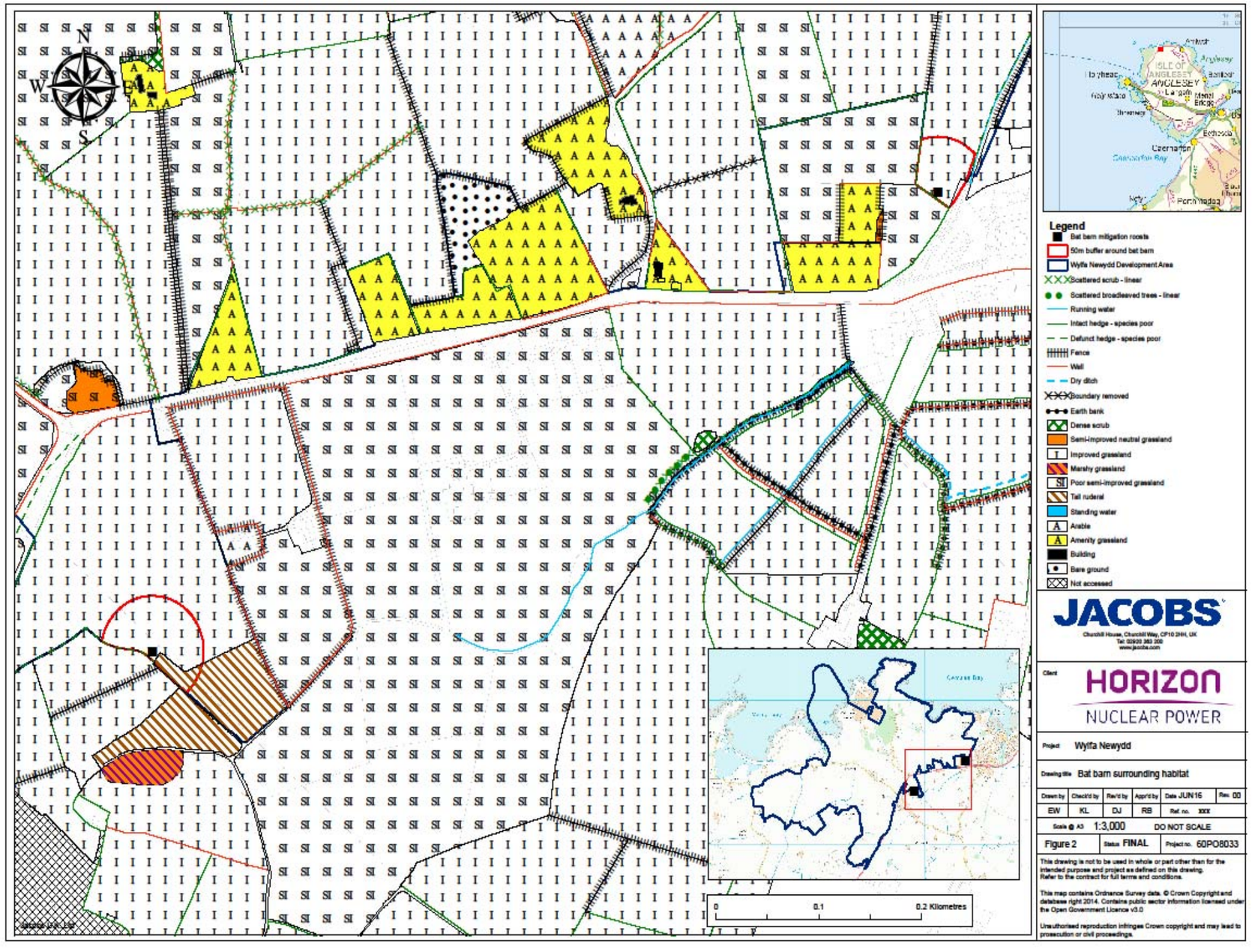
The barns will internally be 4m wide by 6m long. The total height of each building will be 5.175m, allowing the roof void to be 2.975m high. The ground floor of each bat barn will be designed to allow bats the opportunity to hibernate within the building.

The roofs will be clad with slate and the walls will be constructed of block work, clad with reclaimed stone from previous demolition activities.

Within each roof space, a single traditional braced king post truss will be installed at the centre point of the roof to give structural strength without compromising open flight space.

The floor of each roof void will be load bearing and boarded to allow the assessment of its usage by bats and facilitate periodic cleaning if required. The floor of each roof void will be seeded with bat droppings collected from The Lodge and any other roost where large accumulations of droppings can be accessed. This may assist in the replacement roosts being adopted more readily as they will smell more familiar to displaced bats.

Figure E.2: The location of the bat barns, pole mounted bat boxes and their surrounding habitat

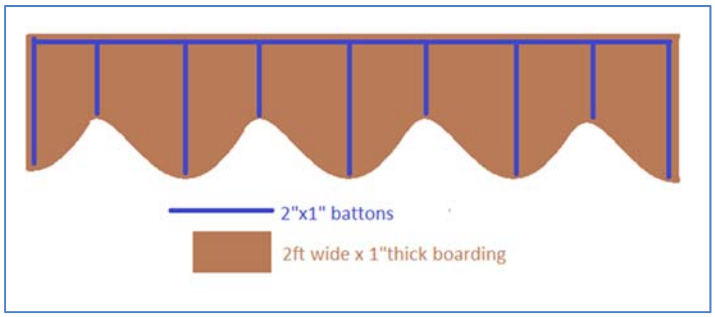


A permanent human access hatch will be provided into the roof roosting area within each building, as the success of the mitigation will need to be monitored. This will also allow internal bat movement between the roof void and the ground floor.

All roofing felt will comprise traditional bitumen felt, and not modern breathable roofing membrane.

Within the roof void of each roost building, three Schwegler 1FR bat tubes will be hung on each gable end and two extra on the central king post of the truss, totalling eight internal Schwegler 1FR bat tubes in each building. In addition to this, on the gable ends further roost boarding will be fitted. Roost-boarding, as shown in figure e.3 (Volume D, Application Reference Number: 6.4.53), is designed to create many different crevices within the roof void as possible giving bats a range of micro-climates to choose from.

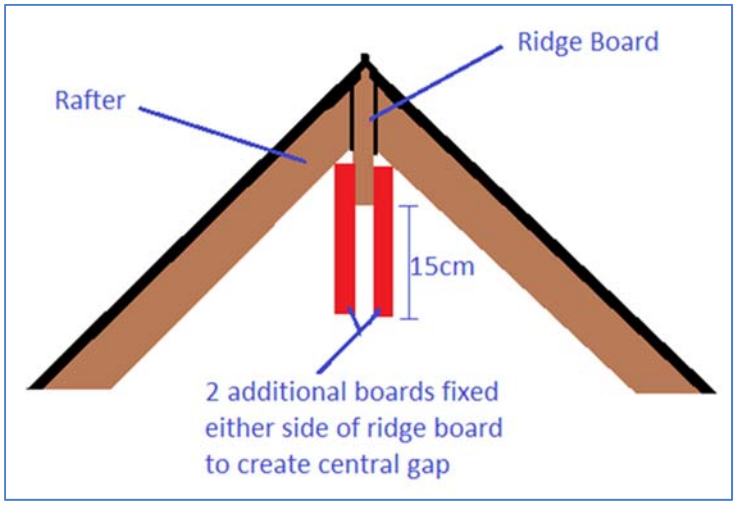
Figure E.3: A representation of the layout and dimensions of roost boarding to be installed within the bat barn roof voids



A hot box will be installed into the roof void by attaching a baffles board to the roof rafters. This will produce a 1m deep hot box. Boarding will be one inch thick marine plywood, scored for grip and painted with black non-toxic paint.

A board will be fixed on either side of the ridge boards as shown in figure e.4 (Volume D, Application Reference Number: 6.4.53) below to form a 15cm central crevice running the length of each building.

Figure E.4: A representation of the positioning and dimensions of ridge board roosting features to be installed within the bat barn roof voids



Entrance points will be formed in the slating of each building via fashioned lead flashing replacing a maximum of two slates on each building, as appropriate, and directed by the

licensed ecologist during slating. Other bat access points will be on gable ends running over wall tops, at the apex and over purlins. Bat entrance points will also be available via exposed rafter ends along the eaves where a gap will be left next to the rafters.

On the ground floor of each bat barn, a chamber will be designed to allow for hibernation. A 'cool tunnel' will be constructed, which will be in the form of a 1.5m wide x 1.0m high tunnel to loop around the ground floor of the building with a 2m x 2m x 2m ‘Avon chamber’ at the end. Construction will be breeze block, with block work inside the tunnel left un-pointed to create one inch wide gaps in between all blocks on the same row i.e. forming many vertical crevices. These crevices can be capped from the outside by the rendering of the external surface of the tunnel. The roof can be made of concrete block beams, again with one inch wide open gaps between each. The external top of the beams should be covered with hessian then covered with cement/mortar to block the tops of the crevices. An alternative building method for this tunnel is a combination of block and prefabricated concrete square ducting. This option may be selected to give greater structural integrity. Should it be selected, a combination of gaps as previously described and roost boarding will be applied to create roosting crevices.

The walls of each hibernation chamber will also have roost boarding applied on all four walls to offer roosting opportunities.

A single entrance point will be installed into the ground floor of each bat barn through the external wall in the form of a 'letter box slot' measuring 30cm wide by 10cm high. The exact location will be determined and agreed on site as the building walls are constructed to ensure the best location possible. The size of entrance has been selected to limit the probability of owls utilising the buildings.

Any timber treatment in areas accessible to bats will be carried out using chemicals from the list approved by NRW. A list of approved timber treatments is cited in Natural England Advice Note TIN092 Ed.2, available for download at: http://publications.naturalengland.org.uk/publication/31005?category=31008.

Two data loggers will be installed within each bat barn, one in the roof hot box and one in the hibernation chamber. The loggers will be EL-USB2 loggers and will be downloaded and analysed annually. The data loggers allow the temperature and humidity within the bat barn features to be monitored to ensure they are suitable for maternity roost (hot box) and hibernation (hibernation chamber) usage. This would allow for remedial action to be taken if required. This monitoring is consistent with that being undertaking for the existing bat barn at Tyn y maes.

Ducting will be installed for potential future CCTV applications, the installation of which will depend upon the success of the bat barn and the locations in which the species roost. If bats cluster in the roof void rather than utilise the crevices then CCTV can be installed once power supplies and site communications have been implemented.

The external walls of each bat barn will have three Schwegler 1FR bat tubes built into the stone cladding on each of the four walls, totalling 12 external Schwegler 1FR bat tubes externally per building. Additional crevices in stone work will be achieved by leaving some gaps un-pointed.

A single external human access door will be installed on each building to allow monitoring of the roosts’ success by licenced bat workers. This door will be designed to be vandal and break-in resistant. A dummy security camera will be installed on the building to discourage antisocial behaviour.

While the results from the monitoring of the existing Tyn y maes bat barn suggest that the design for the building is successful, there is scope for improvement and the following recommendations will be incorporated in the new bat barns to improve their effectiveness:

1. The floors of the buildings will be exposed in earth (or at least in part) to create increased humidity inside the buildings.
2. Guttering design will be modified to trickle water through the inside of the buildings to increase internal humidity.
3. The drawings issued to building contractors will specify all timber to be 'rough sawn'.
4. The drawings will be updated to move the hatchway into the upper roost void away from the hibernation chamber 'avon' as an error on the current drawings would result in no access for monitoring. The access hatch must be located at the coolest end of the building, away from the 'hot box'.
5. As the new bat barns are not in shady locations there will be no requirement for solar panels and heating elements. However, ducting will be installed in walls to allow an electric supply in the future should heating be required.
6. The roof design will be altered if structurally possible to remove the requirement for a central truss. Instead, purlins would be utilised which span the length of the building. If purlins of that length must be of steel, then the steel will be clad with wood after installation.

Bat boxes

As there is a paucity of existing trees at the locations of the two bat barns on which to mount bat boxes, two telegraph poles will be installed as close as possible to the existing hedgelines, each to be within 50m of each bat barn. On each pole two Schwegler 1FF woodcrete bat boxes and two Schwegler 2FN woodcrete bat boxes will be securely mounted. The 1FF boxes will be mounted between four and five metres in height (one pair facing north and south and the other pair facing east and west). The 2FN boxes will be mounted higher up at between five and seven metres high (one pair facing north and south and the other pair facing east and west). This will ensure the pole mounted boxes provide a range of roosting microclimates in close proximity to the bat barns. These 16 boxes will offer further roosting potential and act as receptor sites during the demolition works for any bats needing to be relocated. An example of similar pole mounted bat boxes at a site in Scotland is shown in plate e-2 below.

Plate E-2: An example of the use of pole mounted bat boxes in an area with trees unsuitable for attaching bat boxes

In addition, a further 24 Schwegler bat boxes will be hung within an area of retained woodland to the east of the Power Station (Ordnance Survey grid reference SH 35488 93724) as shown in figure **e**.**1** (Application Reference Number: 6.4.53). The boxes will comprise a mixture of four 1FF, six 2FN, 12 2F (double front panel) and two 1FS Schwegler bat boxes. The exact locations of the bat boxes will be determined by the named ecologist on the licence at the time of their erection but will be positioned to maximise the likelihood of them being used by bats, providing a range of roosting conditions to support the species recorded as active in the WNDA and its surrounds, and allowing for effective monitoring.

The Schwegler woodcrete bat boxes that will be installed have a design life of approximately ten years.

Habitat works

Each building will be surrounded by a buffer strip of tree and shrub planting up to 10m wide using native species of local provenance including oak (*Quercus robur* and/or *Q. petraea*), rowan (*Sorbus aucuparia*), willow (*Salix* spp.), hazel (*Corylus avellana*), holly (*Ilex aquifolium*) and hawthorn (*Crataegus monogyna*).

In addition to the habitat works in the immediate vicinity of each building, the landscape plan for the WNDA will provide connectivity of bat habitat to roost buildings (Landscape and Habitat Management Strategy. Application Reference Number: 8.16).

Lighting

There will be no exterior lighting on or adjacent to the newly constructed bat barns which could spill on to the new roosting locations, the entrances, or into the immediately surrounding connecting habitat.

E.2.4 Maintenance and/or modification of new and existing habitat

It will not be possible to safeguard all bat habitat around existing roosts as some will be lost during Site Preparation and Clearance Works. However, there will be 10m buffer zones around existing roosts in which vegetation would be retained. Horizon has developed a Landscape and Habitat Management Strategy (Application Reference Number: 8.16) which illustrates the coordinated range of environmental mitigation and enhancement measures to be incorporated into the landscape restoration of the WNDA at different phases of construction and during operation. This includes commitments to protect and sensitively manage retained and newly planted vegetation for biodiversity benefits, including the protection and enhancement of bat commuting and foraging habitats.

The Landscape and Habitat Management Strategy (Application Reference Number: 8.16) takes account of the predicted environmental effects at each stage of construction at the WNDA, setting out the way in which mitigation and enhancement proposals are expected to be implemented. These proposals cover ecology, landscape, drainage, recreation and agricultural use, integrated with the progression of the earthworks within the WNDA.

The core principle for the landscape design of relevance to ecology comprises integrating mounding of excavated material, to achieve an appropriate solution to balance potential environmental effects, and incorporate mitigation and enhancement measures and features of biodiversity value.

As part of the landscaping proposals, the mounds would be planted at the earliest opportunity to reflect existing flora and fauna with typical local vegetation including hedgerows, native trees and shrubs.

E.2.5 Scaled maps/plans

Figure **E**.**1** (Application Reference Number: 6.4.53) shows the proposed location of the two new bat barns and groups of bat boxes.

Figure E.2 (Application Reference Number: 6.4.53) shows the Phase 1 Habitat Survey codes of habitats in the vicinity of the two new bat barns and pole-mounted bat boxes.

The architect's plans for the designs of the two bat barns are shown in annex J.1 for reference.

E.3 Mechanisms for ensuring delivery of mitigation and compensation measures

Horizon is committed to the delivery of the mitigation and compensation measures outlined in this document as they are a pre-requisite to permit successful completion of Site Preparation and Clearance Works and to demonstrate their full compliance with protected species legislation and licensing to assist in securing their development consent order for the construction of the new power station.

Horizon fully recognises the legally-binding nature of the commitments and conditions of this method statement upon the granting of any licence.

Contractual obligations between Horizon and its sub-contractors will ensure that all are informed of the legal obligations to fulfil this licence.

A European Protected Species licence return will be sent to both Horizon and NRW.

Planning permission has been granted for the construction of the two bat barns under Planning Permission reference 20C265A. These barns are of the same design as the bat barn built in 2013 and detailed in section 1.2.3. The construction of these two buildings will be completed in spring 2018.

E.4 Mitigation contingencies

In the event that any of the mitigation proposals contained in this application are considered to be undeliverable/unsuitable prior to their implementation (e.g. due to a change of conditions on site or the discovery of additional roosts, rarer species etc.) then a full review of the mitigation proposals will be undertaken by experienced ecologists to determine what measures would adequately address the changes. These changes will be discussed and agreed with NRW and, if required, a formal licence modification request will be made.

E.5 Biosecurity risk assessment

Horizon will ensure that the demolition and construction stages of the Project strictly adhere to a Biosecurity Method Statement (within the Main Power Station Site sub-Code of Construction Practise) (Application Reference Number: 8.7) to prevent, amongst other things, the spread of invasive non-native species such as Japanese knotweed (*Fallopia japonica*). Horizon will be advised throughout the Project by ecologists experienced in the preparation of invasive species management plans and will employ the services of specialist contractors, as required, to undertake any control measures. Similarly, landscape planting will not include the planting of any ash (*Fraxinus excelsior*) trees so as to prevent the further spread of ash dieback (Chalara).

In order to prevent the possible spread of the bat pathogen white-nose syndrome (*Pseudogymnoascus destructans*), the relevant guidance within the Bat Conservation Trust's White-nose syndrome: guidance for bat workers in the UK and the Isle of Man should be complied with, in particular the need to not use equipment and footwear in the UK that has been used in infected roosts in North America, and to properly disinfect any equipment and footwear that has been used when undertaking visits to any underground sites.

Given these control measures it is considered that the residual risk of spreading non-native species, or disease, as a result of these works is negligible.

F. Post-development site safeguard

F.1 Habitat/site management and maintenance

In the context of this bat licence application, post-development means following the completion of demolition activities as part of Site Preparation and Clearance Works rather than referring to the completion of the construction of the new power station.

Management plan

Horizon will have sole responsibility for future maintenance of the bat barn roosts, bat boxes, surrounding habitat and landscaping maintenance.

The Wylfa Newydd Project is supported by a Landscape and Habitats Management Strategy (Application Reference Number: 8.16) which details the commitments to protect and sensitively manage retained vegetation and new landscaping for biodiversity benefits, including the protection and enhancement of bat commuting and foraging habitats.

F.2 Population monitoring, roost usage etc.

Future monitoring of the use of the roosts and the success of the mitigation/compensation measures will be carried out by bat licensed ecologists or their assistants. The Bat Mitigation Guidelines (Mitchell-Jones, 2004) recommend that for maternity sites of rare species (the highest value roost affected by the Wylfa Newydd Project), monitoring should be completed for a minimum of two years.

The monitoring proposed for roosts created as compensation for those lost will be 10 years, and will therefore be in exceedance requirements of the Bat Mitigation Guidelines. This is level of monitoring is considered to be proportionate for the scale of the Wylfa Newydd Project, and would cover the duration of Site Preparation and Clearance Works post roost loss and the main construction of the new power station. Detail of Horizon's ecological monitoring and surveillance, together with its data management, is provided within the ecological monitoring strategy which is part of the Ecology and Habitat Management Strategy, itself a section within the Main Power Station Site sub-Code of Construction Practice (Application Reference Number: 8.7). An annual report will be submitted to NRW.

Annual emergence surveys (throughout Site Preparation and Clearance Works and Main Construction) of the two bat barn mitigation roosts in the months of June or July, along with internal surveys during the summer (August/September) and hibernation period will be undertaken. A programme of transects will be required to show if all previously recorded species are still utilising the site if they are not located within the mitigation roost buildings. Bat boxes will be monitored annually in August/September so as to avoid disturbance during the most sensitive part of the maternity period. The details of the monitoring programme will be agreed with NRW in advance.

Data loggers as specified in section 1.2.3 will be downloaded annually, and analysed to advise future management of the roosts.

During the baseline surveys it was discovered that common pipistrelles, soprano pipistrelles, brown long eared, Natterer's and whiskered/Brandt's bats were roosting within the buildings proposed for demolition. The mitigation/compensation package measures will be judged to have been successful if the following outcomes are achieved:

- Future monitoring shows all previously recorded species are found to be still present on the site during the first season following completion of the construction of the new bat barns and the start of this phase of demolition. Survey transects may be required to establish this.
- All species recorded breeding on the site are found to be breeding in the new mitigation roosts in the season following the final phase of demolition works (Year 2). Emergence surveys will be required to establish this along with internal checks of bat boxes.

During the anticipated ten year monitoring programme (Year 2-11), annual reports will be submitted to NRW. These reports will also form part of baseline data gathered to inform ecological compliance auditing completed for the Wylfa Newydd Project.

At the end of the ten year monitoring period, a report giving details of the monitoring and summarising the results will be submitted to NRW.

F.3 Post-development mitigation contingencies

If the monitoring works demonstrate that mitigation measures have proven to be unsuccessful when compared to the above criteria then appropriate remedial action will take place in an attempt to correct this. This is likely to take the form of the following types of measure but will be decided on a case-by-case basis as determined by an experienced and licensed bat ecologist (including consultation with NRW as necessary):

- Review monitoring data (in particular from site visits and data loggers) to assess whether any on site conditions are/have become unsuitable e.g. temperature, humidity, airflow, lighting, predation, interference, poor connectivity etc.
- Take corrective actions, if appropriate e.g. addition of solar panels to power heating to improve temperature conditions; provide an irrigation system through the ground floor to increase humidity; increase/decrease the porosity of the structure to improve/decrease air flow; undertake additional security measures/staff briefings to prevent future interference; predator control (preferably humane e.g. blocking access points, species-specific scare devices); remove/manage any light-spill; plant additional vegetation if connectivity to the structure is thought to be a limiting factor etc.
- Consider changing the siting of any bat boxes that have not been shown to be used for three seasons following their installation. This should include consideration of the micro-siting of boxes (height, aspect, adjacent vegetation etc.) as well as the tree, pole or structure they are affixed to.

F.4 Mechanism for ensuring delivery of post-development works

Whilst there are currently no legally binding commitments to ensure the delivery of post-development works, Horizon fully recognises the legally binding nature of the commitments and conditions of this method statement upon the granting of any licence. Furthermore, as stated in section E3, Horizon is committed to the delivery of the mitigation and compensation measures outlined in this document as they are a pre-requisite to permit successful completion of the Site Preparation and Clearance Works, and to demonstrate Horizon's full compliance with protected species legislation and licensing to assist in securing the development consent order for the construction of the new power station.

G. Timetable of works

Table G.1: Timetable of works

Action	Dates	Comments
Construction of bat barns	Both barns completed by summer 2018	Two bat barns. One at SH 36603 93167 and one at SH 35847 92747. Includes installation of internal/external bat boxes.
Erection of bat boxes	To be completed by autumn 2018	Includes installation of 16 pole mounted bat boxes within 50m of the two bat barns. A further 24 bat boxes to be erected at woodland at SH 35488 93724.
Building demolition	March – June Year 1	Sensitive/hand-demolition during these periods. Normal demolition can occur outside of these periods once buildings are declared free of bats by licensed ecologist.

Action	Dates	Comments
Monitoring	Year 2 to Year 11	Annual emergence survey of two bat barns (June/July). Annual internal inspection surveys of the two bat barns (August/September) Annual bat box checks (August/September) Annual programme of transects

H. Land ownership – mitigation site

H.1 Mitigation site/compensation site ownership

The compensation roosts and all of the scheme landscaping will be in the ownership of Horizon who will have the responsibility for their future maintenance and monitoring. Horizon has the land under a 999 year lease from the Nuclear Decommissioning Authority. There is no third party involved in this licence application.

H.2 Mitigation site/compensation ownership post construction

The compensation roosts and all of the scheme landscaping will be in the ownership of Horizon who will have responsibility for their future maintenance and monitoring. Horizon has the land under a 999 year lease from the Nuclear Decommissioning Authority. There is no third party involved in this licence application.

I. References

Arup Ltd. 2012a. Wylfa New Nuclear Power Station. *Initial bat activity and building assessment report*.

Arup Ltd. 2012b. Wylfa New Nuclear Power Station. *Report on bat surveys 2010 and 2011*.

Arup Ltd. 2013. Wylfa New Nuclear Power Station. *Bat roost survey report 2012*.

Bat Conservation Trust 2014. *The National Bat Monitoring Programme annual report for 2014*. [Online]. [Accessed 01 December 2015] Available from: http://www.bats.org.uk/pages/nbmp_annual_report.html

Bat Conservation Trust 2015. *White-nose syndrome: guidance for bat workers in the UK and the Isle of Man* [Online]. [Accessed 08 December 2015] Available from: http://www.bats.org.uk/pages/about_bats-white-nose_syndrome-586.html

Hundt, L. 2012. *Bat Surveys – Good practice guidelines*. 2nd Edition. Bat Conservation Trust: London.

Jacobs UK Ltd. 2014. Horizon Nuclear Power (Wylfa) Ltd. *Consultancy report: bat monitoring 2013*.

Jacobs UK Ltd. 2015a. Wylfa Newydd Project. *Consultancy report: bat monitoring 2014*.

Jacobs UK Ltd. 2015b. Wylfa Newydd Project. *Technical summary report – bats*.

Jacobs UK Ltd. 2015c. Wylfa Newydd Project. Bat monitoring survey report 2015 addendum to bat technical summary report. Joint Nature Conservation Committee. 2004. *Bat workers' manual*. 3rd Edition. JNCC: Peterborough.

Joint Nature Conservation Committee. 2010. *Handbook for phase 1 habitat survey - a technique for environmental audit*. 2nd Edition. JNCC: Peterborough.

Mitchell-Jones, A.J. 2004. *Bat mitigation guidelines*. English Nature: Peterborough.

Natural England. 2011. *Bat roosts and timber treatment products (TIN092)*. 2nd Edition. [Online]. [Accessed 08 December 2015] Available from: http://publications.naturalengland.org.uk/publication/31005?category=31008

J. Annexes

J.1 Pre-existing survey reports

To be appended to any formal licence application

Arup. 2012a. *Initial Bat Activity and Building Assessment Report*. Unpublished report on behalf of Horizon Nuclear Power (Wylfa) Ltd.

Arup. 2012b. *Report on Bat Surveys 2010 & 2011*. Unpublished report on behalf of Horizon Nuclear Power (Wylfa) Ltd.

Arup. 2013. *Bat Roost Survey Report 2012*. Unpublished report on behalf of Horizon Nuclear Power (Wylfa) Ltd.

Jacobs. 2014. *Wylfa Newydd Project: Consultancy Report – Bat Monitoring 2013*. Unpublished report on behalf of Horizon Nuclear Power (Wylfa) Ltd. Ref. W202.01-S5-PAC-REP-00021.

Jacobs. 2015a. *Wylfa Newydd Project: Consultancy Report – Bat Monitoring 2014*. Unpublished report on behalf of Horizon Nuclear Power (Wylfa) Ltd. Ref. WN03.01.01-S5-PAC-REP-00011.

Jacobs. 2015b. *Wylfa Newydd Project: Bat Monitoring Survey Report 2015 – Addendum to Bat Technical Summary Report*. Unpublished report on behalf of Horizon Nuclear Power (Wylfa) Ltd. Ref. WN034-JAC-PAC-REP-00020.

Jacobs. 2015c. *Wylfa Newydd Project: Technical Summary Report*. Unpublished report on behalf of Horizon Nuclear Power (Wylfa) Ltd. Ref. WN034-JAC-PAC-REP-00008.

J.2 Raw survey data

N/A – all available data is contained within the pre-existing survey reports contained in annex J.1.