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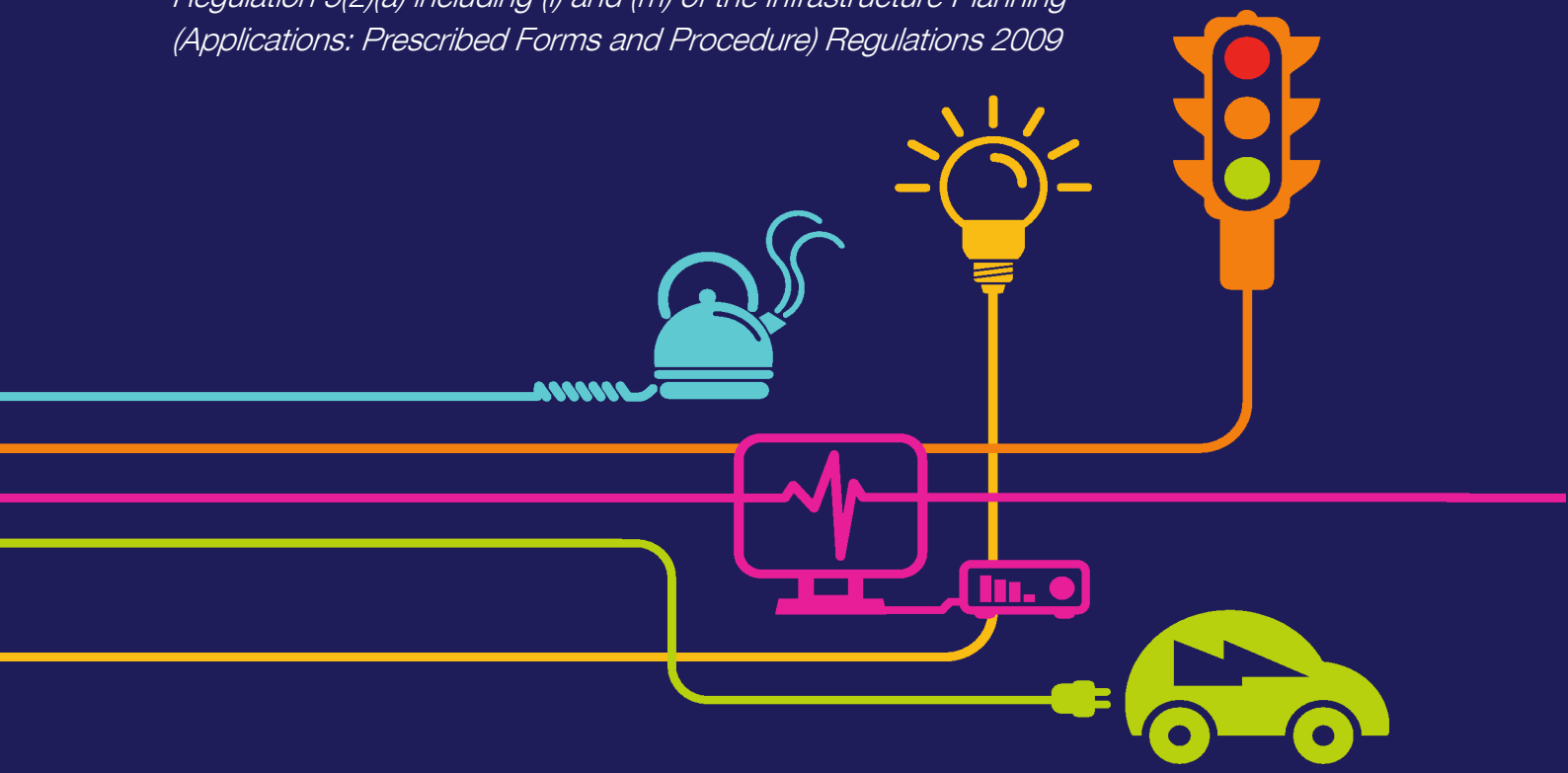
Bat Roost Report

(Confidential Information Removed)

Chapter 9 – Appendix 10

National Grid (North Wales Connection Project)

Regulation 5(2)(a) including (l) and (m) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009



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North Wales Connection Project

Volume 5

Document 5.9.2.10 Appendix 9.10 Bat Roost Report

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1 Introduction

1.1 INTRODUCTION

Description of the Proposed Development

1.1.1 The Proposed Development would provide a new 400 kilovolt (kV) connection between the existing substations at Wylfa and Pentir and includes the following principal components:

- extension to the existing substation at Wylfa;
- sections of new 400 kV overhead line between Wylfa Substation and Braint Tunnel Head House (THH) and Cable Sealing End Compound (CSEC) on Anglesey including modifications to parts of the existing 400 kV overhead line between Wylfa and Pentir;
- Braint THH and CSEC on Anglesey;
- tunnel between Braint and Tŷ Fodol THHs;
- Tŷ Fodol THH and CSEC in Gwynedd;
- new section of 400 kV overhead line between Tŷ Fodol THH and CSEC and Pentir Substation;
- extension to the existing substation at Pentir; and
- temporary construction compounds, access tracks, construction working areas, localised widening of the public highway and third party works that are required to construct the infrastructure listed above.

1.1.2 The Proposed Development has been split into sections (A – F), see Figure 1.

1.1.3 A full description of the Proposed Development is provided in Chapter 3, Description of the Proposed Development (**Document 5.3**) and Chapter 4, Construction, Operation, Maintenance and Decommissioning of the Proposed Development (**Document 5.4**).

Introduction to the Report

1.1.4 This report identifies where confirmed bat roosts and potential roosting features have been recorded within and up to a distance of 2 km from the Order Limits through a desk-based assessment, and in suitable features present within 50 m from the Order Limits through field surveys carried out during 2016 and 2017.

1.1.5 For robustness additional survey work has been conducted in 2018 to maintain up to date results on relevant trees and structures. Some preliminary results from the 2018 surveys have been included in this report where available at the time of writing. Complete 2018 results and conclusions will be presented in an Addendum Report.

1.1.6 This report also identifies relevant legislation and planning policy relating to bats which are outlined in section 2.

Objectives

1.1.7 The objectives of the bat surveys and report are to:

- review and present existing ecological data to identify records of bat species within and up to 2 km from the Order Limits, referred to as the study area in this report (in addition to this, a search for statutory sites for nature conservation designated for bats within 10 km of the Order Limits was also undertaken);
- provide baseline survey results following preliminary bat roost appraisals and follow up bat survey work of trees and specific structures within and up to 50 m from the Order Limits, referred to as the survey area in this report, undertaken during 2016 and 2017;
- evaluate the status of roosting bat species within the survey area;
- use the above information to inform the Ecological Impact Assessment (EcIA) set out in Chapter 9, Ecology and Nature Conservation (**Document 5.9**) to determine whether bat roosting populations could be affected by the Proposed Development; and
- inform the Biodiversity Mitigation Strategy (**Document 7.7**) for the Proposed Development.

2 Legislation and Planning Policy

2.1 LEGISLATION

2.1.1 Several different acts of legislation and regulations refer to the protection of wildlife. Legislation relevant to bats is outlined below.

The Conservation of Habitats and Species Regulations 2017

2.1.2 The Conservation of Habitats and Species Regulations 2017 (referred to as the 'Habitats Regulations') consolidates all the various amendments made to the Conservation (Natural Habitats, &c.) Regulations 1994 in respect of England and Wales. The 1994 Regulations transposed Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) into national law and came into force on 30 October 1994.

2.1.3 The Habitats Regulations provide for the designation and protection of 'European sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European sites.

2.1.4 In summary the Habitats Regulations protect against:

- deliberate capture, injury or killing;
- deliberate disturbance, where this is likely to impair the species ability to survive, breed, reproduce, rear young, hibernate or migrate, or significantly affect the local distribution or abundance of the species;
- deliberate destruction of eggs (where applicable); and
- damage or destruction of a breeding or resting place (bat roost).

2.1.5 It is also an offence to be in possession or control, transport, sell or exchange any live or dead (or part of an) wild animal listed on Schedule 2.

2.1.6 All British bat species are listed on Schedule 2 making them European protected species, protected under the Habitats Regulations.

2.1.7 A bat roost is defined as being 'any structure or place that is used for shelter or protection', and since bats regularly move roost site throughout the year, a roost is protected whether or not bats are present at the time.

2.1.8 It is illegal to carry out work affecting bats or their roosts without a licence to do so. Licences to permit otherwise illegal activities relating to bats and their roost sites can be issued for specific purposes and by specific licensing authorities in each country. These are called European Protected Species Mitigation Licences (EPSML) and are issued under The Conservation of Habitats and Species Regulations 2017. It is an offence not to comply with the terms and conditions of an EPSML.

The Countryside and Rights of Way Act, 2000

2.1.9 The Countryside and Rights of Way Act 2000 applies to England and Wales only. Part III of the Act deals specifically with wildlife protection and nature conservation.

2.1.10 The Act places a duty on Government Departments and the Welsh Government to have regard for the conservation of biodiversity and maintain lists of species and habitats for which conservation steps should be taken or promoted, in accordance with the Convention on Biological Diversity.

2.1.11 Schedule 12 of the Act amends the species provisions of the Wildlife and Countryside Act 1981 (as amended), strengthening the legal protection for threatened species. The provisions make certain offences 'arrestable', include an offence of reckless disturbance, confer greater powers to police and wildlife inspectors for entering premises and enable heavier penalties on conviction of wildlife offences.

Wildlife and Countryside Act 1981 (as amended)

2.1.12 All species of bat are fully protected under the Wildlife and Countryside Act 1981 (as amended). Under this legislation it is illegal to:

- intentionally or recklessly kill, injure or capture a bat;
- intentionally or recklessly disturb a bat when it is occupying a roost;
- intentionally or recklessly damage, destroy or obstruct access to a bat roost; and
- deliberately disturb bats, in particular any disturbance which is likely to (i) impair their ability to survive, breed, reproduce or to rear or nurture their young, hibernate or migrate; or (ii) to affect significantly the local distribution or abundance of the species to which they belong.

Environment (Wales) Act 2016

2.1.13 Section 6 of the Environment (Wales) Act 2016 places a duty on public authorities to 'seek to maintain and enhance biodiversity' so far as it is consistent with the proper exercise of those functions. In so doing, public authorities must also seek to 'promote the resilience of ecosystems'. The duty replaces the section 40 duty in the Natural Environment and Rural Communities Act 2006 (NERC Act 2006), in relation to Wales, and applies to those authorities that fell within the previous duty (Ref 1).

2.1.14 To assist in complying with this duty, public authorities must have regard to relevant evidence provided in the State of Natural Resources Report and any relevant area statement for an area in which the authority exercises functions, as well as having regard to the list of living organisms and habitats published under Section 7 of the Act (which replaces the section 42 list for Wales provided in the NERC Act 2006) (Ref 1).

2.1.15 Barbastelle (*Barbastella barbastellus*), Bechstein's bat (*Myotis bechsteinii*), noctule (*Nyctalus noctula*), common pipistrelle (*Pipistrellus pipistrellus),* soprano pipistrelle (*Pipistrellus pygmaeus*), brown long-eared bat (*Plecotus auritus*), greater horseshoe bat (*Rhinolophus ferrumequinum*), and lesser horseshoe bat (*Rhinolophus hipposideros*) are currently listed under Section 7 of the Act. Section 7 is a list of species of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales. This list is currently under review by the Welsh Government in consultation with National Resources Wales (NRW).

2.2 PLANNING POLICY

National Policy

2.2.1 Government planning policy guidance throughout the UK requires local planning authorities to take account of the conservation of protected species when determining planning or development consent applications. This makes the presence of a protected species a material consideration when assessing a development proposal. In the case of a European Protected Species, such as all UK bat species, planning policy emphasises the strict statutory provisions to which a planning authority must have due regard.

2.2.2 In Wales this is implemented through Planning Policy Wales – Edition 9, November 2016, supplemented by a series of Technical Advice Notes (TANs) (Ref 2) which sets out the land use planning policies of the Welsh Government. Consultation is currently being held on the draft Planning Policy Wales – Edition 10 which was issued in February 2018; the consultation period ends in May 2018.

2.2.3 Chapter 5 of PPW (9) sets out the Welsh Government's objectives for the natural heritage of Wales which includes the safeguarding of protected species. It states that '*the presence of a species protected under European or UK legislation is a material consideration when a local planning authority is considering a development proposal which, if carried out, would be likely to result in disturbance or harm to the species or its habitat'*. It also states that '*an ecological survey to confirm whether a protected species is present and an assessment of the likely impact of the development on a protected species may be required in order to inform the planning decision'*.

2.2.4 Further information on the detail of Planning Policy Wales is provided in Chapter 9, Ecology and Nature Conservation (**Document 5.9**).

Local Policy

2.2.5 There are a number of local planning policies set out in the Anglesey and Gwynedd Joint Local Development Plan 2017 (Ref 3) that relates to ecology and nature conservation which in combination with other planning policies will guide local authority expectations in relation to the Proposed Development;

- Strategic Policy PS 19 relates to conserving and enhancing the natural environment;
- Policy AMG 4 relates to coastal protection;
- Policy AMG 5 relates to the protection and enhancement of local biodiversity; and
- Policy AMG 6 relates to protecting sites of regional or local significance.

Biodiversity Policy

2.2.6 As a result of devolution, and new country-level and international drivers and requirements, much of the work previously carried out by the UK Biodiversity Action Plan (BAP) is now focussed at a country-level rather than a UK-level. The UK BAP was succeeded by the 'UK Post-2010 Biodiversity Framework' in July 2012. The UK list of priority species and habitats, however, remains an important reference source and has been used to help draw up statutory lists of priorities in England, Scotland, Wales and Northern Ireland. In Wales the current lists are those under Section 7 of the Environment (Wales) Act 2016 which includes several British bat species as priority species requiring conservation.

2.2.7 The national strategy for biodiversity is delivered at local level via Local Biodiversity Action Plans (LBAPs). Species and habitats of local conservation concern or value are included in the LBAP and an action plan is created for each species.

2.2.8 The LBAPs relevant to the study area for the Proposed Development are the Anglesey LBAP published by Isle of Anglesey County Council (IACC) and the Natur Gwynedd LBAP for Gwynedd developed by a partnership of organisations and individuals. Lesser horseshoe bat is included in the Natur Gwynedd LBAP. Noctule, pipistrelle and lesser horseshoe bat are included within the Anglesey LBAP, with brown long-eared bat listed as a Species of Conservation Concern which should benefit through the Anglesey LBAP Broadleaved Woodland Habitat Action Plan (HAP).

2.2.9 The Wales Biodiversity Partnership (WBP) brings together key members from the public, private and voluntary sectors to promote and monitor biodiversity and ecosystem action in Wales. WBP provides a leadership role and an expert steer on priorities for action on biodiversity and ecosystems in Wales. The WBP Steering Group has now formally disbanded and the biodiversity action work programme taken on by the Wales Biodiversity Strategy Board (WBSB) and the WBP working groups.

3 Methodology

3.1 DESK STUDY

Existing Bat Species Records

3.1.1 A desk study was carried out to identify existing information concerning the presence of roosting bats within the study area.

3.1.2 Protected species record data (including bat roost records) were requested from Cofnod, the local environmental record centre, in February 2018; this provided an update to data obtained in November 2016 and May 2015.

Statutory Designated Sites

3.1.3 A search was conducted on the magic.gov.uk and NRW websites for statutory sites for nature conservation designated for bats within 10 km of the Order Limits.

Previous Bat Survey Work within the Order Limits

3.1.4 The proposed Wylfa Newydd Power Station and the surrounding area (some of which overlaps the proposed Order Limits) has been subject to bat survey work between 2009 and 2012 and between 2012 and 2014 (Ref 4 and Ref 5). The reports prepared for this survey work have been reviewed and relevant information has been summarised within the results section 4.

3.1.5 Monitoring results for the bat barn constructed as part of the mitigation for the Wylfa Newydd Power Station project were collated; the location of the bat barn is shown on Figure 1.

3.2 FIELD SURVEY

3.2.1 Bat assessments and surveys were undertaken in general accordance with current best practice guidance for bat surveys (Ref 6 and Ref 7).

Preliminary Bat Roost Appraisal - Trees

3.2.2 All trees located within the survey area (where access was possible) were subject to a preliminary roost appraisal between May 2016 and May 2017 by suitably experienced ecologists.

3.2.3 The initial appraisal was undertaken at ground level using binoculars and a high powered torch.

3.2.4 Each tree was assigned a bat roost potential category of negligible, low, moderate, high or confirmed roost as defined in Appendix A.

3.2.5 When assigning a category, the preliminary roost appraisal considered the geographic location, surrounding habitat and connectivity to the wider landscape of each tree.

Aerial Inspection (Tree Climbing)

3.2.6 Any tree identified as being of moderate or high bat roost potential was subject to aerial inspection at height by a certified tree climber, where safe to do so. Any trees which could not be climbed due to health and safety reasons were instead subject to dusk emergence and dawn re-entry surveys (these methods are presented within the section below). Trees confirmed as having a roost present following aerial inspection were also subject to a minimum of three dusk emergence and/or dawn re-entry surveys.

3.2.7 Aerial inspection at height (or tree climbing) was undertaken between 21 and 23 June and 15 and 17 August 2016 by two NRW licensed bat ecologists who are certified tree climbers.

3.2.8 The trees listed in Table 3.1 were subject to aerial inspection, these are shown on Figure 2.

Table 3.1: Summary of Trees Subject to Aerial Inspection

Tree Reference	Date of Aerial Inspection
W-1991-7-D	16 August 2016
W-1991-7-E	16 August 2016
G-5077-24-A	21 June 2016
G-5035-8-A	15 August 2016
T-5035-2	23 June 2016
G-5035-7-C	15 August 2016
G-5035-7-D	15 August 2016
G-5032-11-A	22 June 2016
G-5032-11-B	22 June 2016
T-6021-12	17 August 2016

3.2.9 Tree climbing allows further inspection of potential roost features at height which have previously been identified from the ground to ascertain whether bats are present, to locate evidence of bats such as droppings and to re-assess whether the feature is suitable for roosting bats. Where appropriate, the roost suitability of each tree was re-categorised (see Table 4.3 for further information) following the aerial inspection (the original category given prior to climbing is shown on Figure 2).

Preliminary Bat Roost Appraisal – Structures

3.2.10 Within the Order Limits, four buildings (Building References B1, B2, B3 and B4) and one bridge (Bridge Reference 687 B1) were assessed. The bridge could be subjected to resurfacing works if required, one building is not presently used as a residence (B3) and three of the buildings could no longer be used as a residence as a result of the Proposed Development (B1, B2 and B4). Between June and September 2017 a preliminary bat roost appraisal of these buildings and the bridge was undertaken by NRW licensed bat ecologists. The locations of the buildings and bridge are shown on Figure 3.

3.2.11 During the appraisal, binoculars and a high powered torch were used to determine whether any features were present with suitability to support bats in accordance with the criteria within the standard guidance (Ref 6).

3.2.12 Internal access to the buildings was not possible during the preliminary roost appraisals; this is further explained within the assumptions and limitations section 3.3.

3.2.13 All external features of the buildings that may have suitability to be used by roosting bats, including the roof tiles, cracks and crevices within the brick/stone work and missing mortar were examined during the surveys.

3.2.14 All features of the bridge that had potential to be used by roosting bats such as holes, cracks and crevices leading to voids/cavities, expansions joints, drainage pipes and ducts, cracks and crevices within the stone and brick work and missing mortar, were examined during the survey. The underside of the bridge was not inspected as this lies over an operational railway. As access to the structure was restricted during the preliminary bat roost appraisal, two surveys, one dusk emergence and one dawn re-entry survey were undertaken.

3.2.15 Each structure was assigned a bat roost potential category of negligible, low, moderate, high or a confirmed roost using the criteria set out in Appendix A.

3.2.16 When assigning a category, the preliminary roost appraisal considered the geographic location, surrounding habitat and connectivity to the wider landscape of each structure.

Dusk and Dawn Emergence Surveys – Trees

3.2.17 Trees identified as having moderate or high potential which could not be climbed due to health and safety constraints (i.e. dead/decaying or that were close to overhead lines) were subject to dusk emergence and dawn re-entry surveys. Surveys were undertaken between May 2016 and September 2016 and May 2017 to August 2017.

3.2.18 Table 3.2 provide a summary of trees subject to dusk emergence and dawn re-entry surveys. The location of the trees is shown on Figure 2.

Table 3.2: Trees Subject to Dusk Emergence and Dawn Re-entry Surveys

Tree Reference	Survey Type and Date	Bat Roost Potential
T-2133-26	Dusk – 8 June 2016 Dawn – 12 July 2016	Moderate
T-2133-39-A	Dusk – 8 June 2016 Dawn – 12 July 2016	Moderate
W-2039-12-A	Dawn – 22 June 2016 Dusk – 9 August 2016	Moderate
W-2039-12-B	Dusk – 2 June 2016 Dusk – 9 August 2016 Dawn – 7 September 2016	Moderate then confirmed roost (confirmed on second survey visit)
W-2039-12-C	Dusk – 2 June 2016 Dusk – 10 August 2016	Moderate
W-2039-16-A	Dusk – 9 June 2016 Dawn – 9 August 2016	Moderate
W-2039-16-B	Dusk – 9 June 2016 Dawn – 9 August 2016	Moderate
W-1991-7-A	Dusk – 8 June 2016	Moderate

Table 3.2: Trees Subject to Dusk Emergence and Dawn Re-entry Surveys		
Tree Reference	Survey Type and Date	Bat Roost Potential
	Dawn – 18 August 2016	
W-1991-7-B	Dusk – 8 June 2016 Dawn – 18 August 2016	Moderate
W-1991-7-C	Dawn – 25 August 2016 Dawn – 1 September 2016 Dusk – 6 September 2016	Confirmed roost (following preliminary bat roost appraisal)
W-1991-7-E	Dawn – 25 August 2016 Dawn – 1 September 2016 Dawn – 6 September 2016	Moderate then confirmed roost (following aerial inspection)
G-4010-19-A	Dusk – 31 May 2017 Dawn – 21 June 2017	Moderate
T-4001-11	Dusk – 28 June 2016 Dusk – 3 August 2016	Moderate
G-4024-19-A	Dusk – 14 June 2017 Dawn – 13 June 2017	Moderate
G-4024-19-B	Dusk – 14 June 2017 Dawn – 13 July 2017	Moderate
G-4024-19-C	Dusk – 14 June 2017 Dusk – 28 June 2017 Dawn – 13 July 2017	High
W-4074-13-A	Dusk – 6 June 2016 Dawn – 11 August 2016	Moderate
W-4074-8-B	Dawn – 7 June 2016 Dawn – 3 August 2016	Moderate
W-4074-8-E	Dawn – 8 June 2016 Dawn – 4 August 2016	Moderate
W-4074-8-F	Dusk – 6 June 2016 Dusk – 4 August 2016	Moderate
W-5032-1-A	Dusk – 28 July 2016	Moderate

Table 3.2: Trees Subject to Dusk Emergence and Dawn Re-entry Surveys		
Tree Reference	Survey Type and Date	Bat Roost Potential
	Dusk – 15 August 2016 Dusk – 1 September 2016	Possible roost recorded during first survey visit but not confirmed or recorded on further visits.
W-5032-1-B	Dusk – 30 May 2017 Dawn – 14 June 2017 Dusk – 20 June 2017 Dawn – 29 June 2017	Moderate then confirmed roost (during first survey)
T-5032-13E	Dawn – 1 June 2017 Dusk – 15 June 2017	Moderate
G-5032-16-B	Dawn – 1 June 2017 Dusk – 15 June 2017	Moderate
G-6025-14-D	Dawn – 19 July 2017 Dusk – 2 August 2017	Moderate
G-6025-14-E	Dawn – 19 July 2017 Dusk – 2 August 2017	Moderate
W-384-39-A	Dusk – 17 July 2017 Dusk – 1 August 2017	Moderate
W-384-39-B	Dawn – 18 July 2017 Dusk – 1 August 2017	Moderate
G-668-52-A	Dawn – 29 June 2016 Dusk – 5 September 2016	Moderate

3.2.19 The time, location, number, species (where possible) and direction of flight were recorded for each bat pass (either echolocation heard or activity seen) encountered during each survey visit.

3.2.20 The surveys were carried out using frequency division bat detectors (Batbox Duets) and recorded in WAV format using digital recorders (Edirol R05), and also Batlogger M (heterodyne, with automatic tuning) to allow sonogram analysis (BatSound Version 4.2 and AnalookW 4.2d). Notes

were made on the weather conditions during each survey and are included within the results section 4.

3.2.21 The dusk emergence surveys were undertaken in the evening commencing approximately 15 minutes before sunset and continuing for a further 90 minutes after sunset.

3.2.22 The dawn re-entry surveys commenced 90 minutes to two hours before sunrise and ended until sunrise or until bats were no longer active.

Dusk and Dawn Emergence Surveys – Structures

3.2.23 The protocol described for the tree surveys above was used for the dusk emergence and dawn re-entry surveys on buildings B1, B2 and B3 and bridge 687 B1. A number of surveyors were present during the surveys to ensure full coverage of the potential roosting features identified during the preliminary roost appraisal assessment; all surveyors were suitably experienced and at least one NRW bat survey licence holder was present during each survey.

3.2.24 Building B1 was subject to a dusk emergence survey on 29 August 2017 by four surveyors.

3.2.25 Building B2 was subject to a dusk emergence survey on 28 September 2017. Four surveyors were present during the survey.

3.2.26 Building B3 was subject to a dusk emergence survey on 19 July 2017 and a dawn re-entry survey on 2 August 2017. A minimum of two surveyors were present during both surveys.

3.2.27 Bridge 687 B1 was subject to a dusk emergence survey on 31 July 2017 and a dawn re-entry survey on 17 August 2017. Two surveyors were present during both surveys.

3.2.28 Building B4 was not subject to dusk emergence or dawn re-entry surveys. Surveys have been undertaken in spring 2018.

Preliminary 2018 Dusk/Dawn Results

3.2.29 Preliminary results for the 2018 bat surveys conducted on relevant structures and trees have been summarised within this report (presented within section 4.2). As 2018 surveys are currently ongoing and not yet complete, the results presented within this report are therefore preliminary and will be updated and confirmed along with the full methods, limitations, results and conclusions within an Addendum Report.

3.3 ASSUMPTIONS AND LIMITATIONS

Desk Study

3.3.1 The aim of a desk study is to help characterise the baseline context of a proposed development and provide valuable background information that would not be captured by site surveys alone. Information obtained during the course of a desk study is dependent upon people and organisations having made and submitted records for the area of interest. As such, a lack of records for a particular species does not necessarily mean that the species do not occur in a study area. Likewise, the presence of records for particular species does not automatically mean that these still occur within the area of interest or are relevant in the context of a proposed development.

3.3.2 The detail and accuracy of the desk study records rely on those provided to Cofnod from a variety of sources. The results of the updated desk study undertaken in February 2018 have been considered for the baseline assessment. The latest desk study search was conducted on the Proposed Development layout which now covers a smaller area resulting in some records being excluded that had previously been considered. The search also uses the latest priority and conservation lists which has also resulted in some further additions and exclusions of certain species.

Weather Conditions

3.3.3 The following dusk emergence and dawn re-entry surveys were affected by rain:

- during the dusk survey on 6 June 2016 of tree W-4074-8-F there was intermittent heavy rain, however as there was constant bat activity throughout, the survey was not cancelled or re-scheduled and the weather was not thought to affect the outcomes of this report.
- during the dawn survey on 7 June 2016 of trees W-4074-8-A and W-4074-8-B, there was intermittent heavy rain, however as there was constant bat activity throughout, the survey was not cancelled or re-scheduled and the weather was not thought to affect the outcomes of this report.
- during the dawn survey on 19 July 2016 of tree G-6025-14-D and G-6025-14-E there was a brief heavy rain shower that lasted for ten minutes, due to the short duration of the rain, the survey was not cancelled and bat activity levels remained and the weather was not thought to affect the outcomes of this report.

- the dusk survey undertaken on 28 July 2016 on tree W-5032-1-A was aborted 30 minutes after sunset due to heavy rain. To account for this and the possible presence of a bat roost an extra survey was undertaken in September 2016.

- during the dusk emergence survey undertaken on 10 August 2016 on tree W-2039-12-C there was light rain shower for a short period of time, there was a constant level of bat activity recorded and observed throughout the survey, therefore the survey was not cancelled or re-scheduled and the weather was not thought to affect the outcomes of this report.

- a light rain shower was recorded for ten minutes during the dawn re-entry survey of tree G-4010-19-A on 21 June 2017. Due to the short period of time this was not thought to affect the outcome of the results.

Access

3.3.4 There are a small number of land parcels/areas within the Order Limits and within 50 m of the Order Limits that could not be accessed or where access was intermittent throughout the survey period, therefore any trees within these areas could not be surveyed.

3.3.5 Parts of the bridge (687 B1) could not be fully assessed for potential features suitable to support roosting bats due to the live railway line. It was initially categorised as having low bat roost potential. As full access to the structure was not possible during the preliminary bat roost appraisal, two surveys, one dusk emergence and one dawn re-entry survey were undertaken.

3.3.6 Buildings B1, B2 and B4 were not examined internally, due to them being occupied residential properties. The purpose of the preliminary bat roost appraisal was to determine potential roost features and identify whether follow up survey work would be required.

3.3.7 B3, a derelict building, was not accessed internally as the building was considered unsafe to enter and parts of the roof were unstable. A thorough external assessment and follow up dusk emergence and dawn re-entry surveys were undertaken.

3.3.8 Buildings B1 and B2 were both assessed as being of moderate bat roost potential and were subject to one dusk emergence survey in 2017. To be compliant with the current best practice bat survey guidelines (Ref 6), further survey work was undertaken during the 2018 survey season to ascertain whether these buildings support roosting bats.

Health and Safety

3.3.9 Any tree which could not be safely climbed due to dead/decaying limbs located over water or roads, close to overhead lines or within dense, impenetrable vegetation were instead subject to dusk emergence and dawn re-entry surveys.

3.3.10 The presence of livestock within some areas of the Order Limits hindered the survey effort which resulted in some surveys being aborted and re-scheduled, this is further explained below.

Dusk Emergence and Dawn Re-entry Surveys

3.3.11 Health and safety and access issues as outlined above influenced the type of survey undertaken. In line with the published survey guidelines, (Ref 6) trees with moderate potential are required to have two separate surveys comprising one dusk and one dawn re-entry survey and trees with high potential should have three separate surveys comprising one or two dusk emergence surveys combined with one or two dawn re-entry surveys. The surveys completed for trees T-4001-11, W-4074-8-A, W-4074-8-B, W-4074-8-E, W-4074-8-F, W-1991-7-E, W-1991-7-C, W-2039-12-C and W-384-39-A did not meet these recommended survey combinations however this was not thought to affect the outcomes of this report as the required number of surveys was undertaken for each tree.

3.3.12 Dusk emergence and dawn re-entry surveys were not completed at tree G-5035-7-C due to the presence of livestock. Surveys could not be undertaken in 2018 as this tree has since blown over and is therefore no longer considered to offer potential for roosting bats.

3.3.13 Dusk emergence and dawn re-entry surveys were not completed at Building B4 in 2017 however surveys commenced in spring 2018.

Collection of Bat Droppings

3.3.14 A small number (less than five) of very old (previous year or later) bat droppings were found in the bottom of a cavity located within tree W-1991-7-C. Due to their friability these droppings could not be collected without them falling apart. The cavity was examined on subsequent survey visits in 2016 and no fresh droppings were recorded.

3.3.15 A small number (less than five) of very old (previous year or later) bat droppings were also found in a cavity located within tree W-1991-7-E. Again, due to their age, these droppings could not be collected. The cavity

was examined on subsequent survey visits in 2016 and no fresh droppings were recorded.

3.3.16 Trees W-2039-12-B and W-5032-1-B were not climbed for health and safety reasons therefore it was not possible to collect droppings from roost features.

4 Results

4.1 DESK STUDY

Existing Bat Species Records

4.1.1 The desk study identified existing bat roost records within the study area. Cofnod returned a total of 110 records of bat roosts dating between 1985 and 2017. Bats are known to re-use the same roost and often re-visit the same roost site over many years, therefore all roost records provided have been reviewed for this baseline assessment. The bat species recorded roosting in the study area were: Myotis sp., Natterer's, whiskered, soprano pipistrelle, common pipistrelle, lesser horseshoe, noctule and brown long-eared.

4.1.2 The detailed roost record results are provided in Appendix B and are shown on Figure 1. A summary of the most recent records dated from between 2013 and 2017 (inclusive) is provided in Table 4.1 (ordered by distance to the Order Limits); these include 15 records of soprano pipistrelle, common pipistrelle, lesser horseshoe and brown long-eared bat roosts and also three unknown bat species roosts.

4.1.3 Four of the roost records provided were located within the Order Limits or within the 50 m buffer of the Order Limits, these records were dated between 2011 and 2015 (Records 14, 18, 81 and 95 on Figure 1).

4.1.4 Additionally, records of non-roosting bats were provided by Cofnod, these can be found in the Bat Activity Report (**Document 5.9.2.11**).

Statutory Designated Sites

4.1.5 There are no international or national conservation sites designated for bats within 10 km of the Order Limits.

Table contains confidential information. This Table is only available on request to those who have a legitimate need to view the Information

Previous Bat Survey Work within the Order Limits

4.1.6 Bat surveys undertaken between 2009 and 2014 were commissioned to inform the proposals for the Wylfa Newydd Power Station. The surveys covered a 380 hectare area around Wylfa. The survey results have been summarised and only include relevant information from within the study area.

4.1.7 Surveys were undertaken to identify and monitor bat roosts within the 380 hectare survey area. From these survey results a number of buildings supporting bats were identified within the study area; these comprised soprano and common pipistrelle, *Myotis* species and brown long-eared roosts.

4.1.8 An internal inspection of the bat barn was undertaken in July 2018 by a third party. The results of the inspection confirmed that the bat barn does not currently support roosting bats; the location of the bat barn is shown on Figure 1.

4.2 FIELD SURVEY

Preliminary Bat Roost Appraisal – Trees

4.2.1 Trees identified as having bat roost potential within the survey area are shown on Figure 2. Trees with low bat roost potential are shown in green, moderate in orange, high in red and confirmed roosts in purple. These categories were assigned following the preliminary roost appraisal.

4.2.2 Trees identified as having moderate and high potential are summarised in Table 4.2. Trees with low potential have been mapped on Figure 2 but have not been described in Table 4.2 as they do not require further survey work (Ref 6). All other trees/groups of trees marked on Figure 2 can be assumed to have negligible bat roost potential at the time of the appraisal survey.

4.2.3 Thirty-six trees with moderate bat roost potential, one tree with high potential and one confirmed roost were identified following the preliminary roost appraisal. The confirmed roost was within tree W-1991-7-C, bat droppings characteristic of pipistrelle species were found within a cavity at 1.5 metres from ground level.

Table 4.2: Trees with Moderate and High Bat Roost Potential

Tree Reference	Bat Roost Potential Category	Description/Potential Roost Features

Table 4.2: Trees with Moderate and High Bat Roost Potential		
Tree Reference	Bat Roost Potential Category	Description/Potential Roost Features
T-2133-26	Moderate	Mature ash *(Fraxinus excelsior)*, decayed/broken limbs/branches.
T-2133-39-A	Moderate	Mature ash, two holes present on trunk could lead to cavities.
W-2039-12-A	Moderate	Dead, rotten, unidentified tree with a 2 m cavity on the trunk.
W-2039-12-B	Moderate	Tall ash tree with moss growing on the north face, split on first limb orientated north.
W-2039-12-C	Moderate	An alder (*Alnus glutinosa)* with a kink at a height of 7 m. Two woodpecker holes on east and west faces are present at 7 m.
W-2039-16-A	Moderate	Mature ash with a kink in the trunk at 2 m. Woodpecker hole north east facing from 5 m.
W-2039-16-B	Moderate	Ash which is multi-stemmed from 1.5 m and above. Three woodpecker holes are present on the south face, 10 - 15 m high.
W-1991-7-A	Moderate	Semi-mature alder with seven woodpecker holes facing north-east and south.
W-1991-7-B	Moderate	Semi-mature pine (*Pinus* sp.) tree with a single woodpecker hole south facing at a height of 13 m.
W-1991-7-C	Confirmed roost	Sycamore (*Acer pseudoplatanus*) with a trunk cavity at 1.5 m high, east facing with bat droppings present.
W-1991-7-D	Moderate	Sycamore with a trunk cavity at a height of 7 m, south-west facing.
W-1991-7-E	Moderate	Sycamore with a trunk cavity (tear out) at a height of 1.5 m, west facing.
G-4010-19-A	Moderate	Mature ash with two woodpecker holes at 8 - 10 m.
T-4001-11	Moderate	Mature ash, multiple features - callous roll, splits, broken branches all around tree.
G-4024-19-A	Moderate	Mature ash with splits and holes in the trunk, a broken limb and a single woodpecker hole.

Table 4.2: Trees with Moderate and High Bat Roost Potential		
Tree Reference	Bat Roost Potential Category	Description/Potential Roost Features
G-4024-19-B	Moderate	Mature ash with several woodpecker holes above a 14 m height. Callous rolls are also present.
G-4024-19-C	High	Mature sycamore with a large cavity in the main trunk and a vertical hole.
W-4074-13-A	Moderate	Mature alder with a cavity 4 m high on the north side and a cavity at the same height, south facing.
W-4074-8-B	Moderate	Mature oak (*Quercus* sp.), with two woodpecker holes at a height of 7 m.
W-4074-8-E	Moderate	Mature alder with one woodpecker hole present at 7 m.
W-4074-8-F	Moderate	Alder tree with a single woodpecker hole at a height of 9 m.
G-5077-24-A	Moderate	Mature sycamore of 10 m in height with a large cavity 3 m up the tree, approximately 10 x 30 cm in size.
G-5035-8-A	Moderate	Ash with some ivy and small broken branches. A callous roll at a 3 m height, north-west facing potentially leads to a cavity.
T-5035-2	Moderate	Mature ash with a split trunk and dead trunk stem. South facing trunk cavity reaches up to 1 m from the ground. Small knotholes are present in higher branches.
G-5035-7-C	Moderate	Mature ash with two knotholes, 5 m high.
G-5035-7-D	Moderate	Mature ash with a hollow base. West facing hollow with a large cavity reaches far up inside the tree.
W-5032-1-A	Moderate	Mature ash with multiple holes in multiple limbs, all north facing.
W-5032-1-B	Moderate	Large tear out which has rotted away into cavity extending up into tree 3 m off ground.

Table 4.2: Trees with Moderate and High Bat Roost Potential		
Tree Reference	Bat Roost Potential Category	Description/Potential Roost Features
T-5032-13E	Moderate	Dead Scots pine approximately 8 m in height, almost completely bare of bark. Four woodpecker holes, south facing, extend up to approximately 6 m. North facing trunk crack is also present at an 8 m height.
G-5032-16-B	Moderate	Mature ivy (*Hedera helix*) covered oak, with a very large tear out which has rotted away into a cavity extending from the ground to a 3 m height.
G-5032-11-A	Moderate	Mature sycamore covered in lichen and moss. Several small knotholes are present between 5 - 11 m height.
G-5032-11-B	Moderate	Mature sycamore covered in moss. Several small knotholes are present, all north-west facing.
G-6025-14-D	Moderate	Mature ash with twin stem. Two cavities at 4 m height present on west face.
G-6025-14-E	Moderate	Ash with twin stems and densely covered in ivy.
W-384-39-A	Moderate	Partially dead ash, covered in ivy.
W-384-39-B	Moderate	Mature ash with some fallen dead branches, loose bark under ivy cover.
G-668-52-A	Moderate	Mature sycamore with a north-east facing large cavity extending 0.5 – 1 m up and down.
T-6021-12	Moderate	Ash with a hole on the lower limb, approximately 5 m high.

Aerial Inspection – Tree Climb

4.2.4 Table 4.3 presents the results of the aerial inspection surveys. Following the aerial inspections trees G-5032-11-A, G-5032-11-B, G-5035-8-A, G-5035-7-D, W-1991-7-D and T-6021-12 were downgraded to negligible bat roost potential. Trees T-5035-2 and G-5077-24-A were downgraded to low bat roost potential meaning that a potential feature which could support roosting bats was present, however, no evidence of bat use was detected. Bat droppings were found within a cavity of tree W-1991-7-E so this was confirmed as a roost. Tree G-5035-7-C was retained as moderate potential

as several features were present that were suitable for supporting roosting bats.

Table 4.3: Summary of Trees Subject to Aerial Inspection

Tree Reference	BRP Prior to Aerial Inspection	BRP After Aerial Inspection	Notes/Reasoning
W-1991-7-D	Moderate	Negligible	Cavity examined and found unsuitable, too open and exposed.
W-1991-7-E	Moderate	Confirmed Roost	Old bat droppings (less than 5) found within cavity at 1.5 m characteristic of pipistrelle species (due to size).
G-5077-24-A	Moderate	Low	Large cavity 3 m up the tree, examined, feature may be suitable but no droppings or bats present.
G-5035-8-A	Moderate	Negligible	Callous roll examined at height, no cavity or roosting feature present.
T-5035-2	Moderate	Low	All potential roost features examined at height using endoscope, does not extend upwards or below, no bats or droppings present.
G-5035-7-C	Moderate	Moderate	Knotholes examined - no bats or evidence of bat use; however features may be suitable to support roosting bats.
G-5035-7-D	Moderate	Negligible	Cavity examined and considered unsuitable to support bats, as open from above and exposed.
G-5032-11-A	Moderate	Negligible	Knotholes examined at height, features not suitable, open and exposed; no cavity present.
G-5032-11-B	Moderate	Negligible	Knotholes examined at height, features not suitable, open and exposed; no cavity present.
T-6021-12	Moderate	Negligible	Hole on limb examined at height,

Table 4.3: Summary of Trees Subject to Aerial Inspection			
Tree Reference	BRP Prior to Aerial Inspection	BRP After Aerial Inspection	Notes/Reasoning
			feature does not extend, open and exposed.

Preliminary Bat Roost Appraisal – Structures

4.2.5 The locations of the buildings (B1, B2, B3 and B4) and bridge (687 B1) are shown on Figure 3; a photograph of the bridge is provided in Appendix C. Structures with low bat roost potential are coloured green and those with moderate bat roost potential as orange.

4.2.6 The bridge (687 B1) is an arched stone and brick road bridge spanning over a railway. The structure underneath has no visible gaps, however parts of the underside could not be examined fully. Network Rail provided structural information on the bridge which included details of potential features and photographs. No other features were identified that could support roosting bats.

4.2.7 The bridge (687 B1) was assessed as having low bat roost potential. In accordance with the survey guidelines (Ref 6), one dusk emergence or dawn re-entry survey was therefore required. However as parts of the structure could not be fully accessed, two surveys of the bridge were undertaken as a precaution.

4.2.8 B1 is a single storey residential property with a pitched slate roof. The walls are rendered and a potential gap/crevice was recorded on the eastern elevation. There are also several raised roof tiles. The building was assessed in 2017 as having moderate bat roost potential.

4.2.9 B2 is a two storey residential property with a pitched slate roof. The walls are rendered and offer no roosting opportunities for bats. The roof structure contains features which could support roosting bat, namely; gaps under the ridge and roof tiles, around the chimney and within the soffit boxes. The building was assessed in 2017 as having moderate bat roost potential.

4.2.10 B3 is a two storey derelict stone building. All of the former windows are broken and the roof structure is absent. There are several holes in the wall and chimney which could support roosting bats and the building was assessed in 2017 as having moderate bat roost potential.

4.2.11 B4 is a single storey residential property comprising pebble dash walls and a pitched slate roof. The roof offers potential roosting opportunities with missing/slipped roof tiles, gaps under the lead flashing and potential access points into the roof. The building was assessed in 2017 as having moderate bat roost potential.

Dusk Emergence and Dawn Re-Entry Surveys - Trees

4.2.12 Table 4.4 provides a summary of trees subject to dusk emergence and dawn re-entry surveys where a bat roost has been confirmed. The locations of these trees are shown on Figure 4.

Table 4.4: Dusk and Dawn Survey Results - Trees

Tree Reference	Confirmed Roost	Bat Species Recorded
W-2039-12-B	Yes – single soprano pipistrelle.	Single soprano pipistrelle observed emerging from tree on 9 August 2016 at 20:56. No bats were observed emerging or re-entering on other survey visits.
W-1991-7-C	Yes – unknown species, but likely to be pipistrelle species.	Bat droppings found at the base of cavity located at 1.5 m during roost appraisal survey (these were not suitable for analysis, see limitations 3.3). No bats were recorded emerging or re-entering the tree during subsequent dusk emergence and dawn re-entry surveys.
W-1991-7-E	Yes – unknown species, but likely to be pipistrelle species.	Bat droppings found within cavity of tree during aerial inspection (these were not suitable for analysis, see limitations 3.3). No bats were recorded emerging or re-entering the tree during subsequent dusk emergence and dawn re-entry surveys.
W-5032-1-B	Yes – unknown species, single bat.	Unidentified bat species (not echo-locating) emerging from tree on 30 May 2017 at 21:31. No bats observed emerging or re-entering tree on subsequent surveys.

4.2.13 Table 4.5 provides a summary of each tree surveyed; the date, survey start/end times, sunset/sunrise times and the weather conditions are

provided. Bat species recorded during the surveys were soprano pipistrelle, common pipistrelle, noctule, and *Myotis* species.

Table 4.5: Weather Conditions - Dusk Emergence and Dawn Re-entry – Trees

Tree Reference	Survey Date	Start/End Time and Sunset/Sunrise Time	Weather Conditions
T-2133-26	Dusk – 8 June 2016	Start Time: 21:25 End Time: 23:10 Sunset: 21:40	Breezy, dry, overcast 13°C.
	Dawn – 12 July 2016	Start Time: 03:22 End Time: 05:03 Sunrise: 05:03	Dry, rain earlier that evening, 13°C.
T-2133-39-A	Dusk – 8 June 2016	Start Time: 21:25 End Time: 23:10 Sunset: 21:40	Breezy, dry, overcast 13°C.
	Dawn – 12 July 2016	Start Time: 03:22 End Time: 05:03 Sunrise: 05:03	Dry, rain earlier that evening, 13°C.
W-2039-12-A	Dawn – 22 June 2016	Start Time: 03:15 End Time: 04:50 Sunrise: 04:50	Dry and humid, 13°C.
	Dusk – 9 August 2016	Start Time: 20:35 End Time: 22:25 Sunset: 20:56	Mostly dry with some light rain at 19:00 finishing before start of survey, 13.5°C.
W-2039-12-B	Dusk – 2 June 2016	Start Time: 21:00 End Time: 23:10 Sunset: 21:35	Dry, no wind, sunny, 11°C.
	Dusk – 9 August 2016	Start Time: 20:35 End Time: 22:25 Sunset: 20:56	Mostly dry with some light rain at 19:00 finishing before start of survey, 13.5°C.

Table 4.5: Weather Conditions - Dusk Emergence and Dawn Re-entry – Trees			
Tree Reference	Survey Date	Start/End Time and Sunset/Sunrise Time	Weather Conditions
	Dawn – 7 September 2016	Start Time: 05:06 End Time: 06:36 Sunrise: 06:36	Dry and mild, 18°C.
W-2039-12-C	Dusk – 2 June 2016	Start Time: 21:00 End Time: 23:10 Sunset: 21:35	Dry, no wind, sunny, 11°C.
	Dusk – 10 August 2016	Start Time: 20:30 End Time: 22:25 Sunset: 20:54	Dry mostly with a light shower at the start, 15°C.
W-2039-16-A	Dusk – 9 June /2016	Start Time: 21:10 End Time: 23:10 Sunset: 21:41	Cloudy, sunny, dry, 17°C.
	Dawn – 9 August 2016	Start Time: 04:12 End Time: 05:48 Sunrise: 05:48	Dry with light breeze, 12°C.
W-2039-16-B	Dusk – 9 June 2016	Start Time: 21:10 End Time: 23:10 Sunset: 21:41	Cloudy, sunny, dry, 17°C.
	Dawn – 9 August 2016	Start Time: 04:12 End Time: 05:48 Sunrise: 05:48	Dry with light breeze, 12°C.
W-1991-7-A	Dusk – 8 June 2016	Start Time: 21:10 End Time: 23:10 Sunset: 21:40	Sunny, dry, humid, 15°C.
	Dawn – 18 August 2016	Start Time: 04:27 End Time: 06:10 Sunrise: 06:03	Dry, mild, 17°C.
W-1991-7-	Dusk – 8 June	Start Time: 21:10	Sunny, dry,

Table 4.5: Weather Conditions - Dusk Emergence and Dawn Re-entry – Trees			
Tree Reference	Survey Date	Start/End Time and Sunset/Sunrise Time	Weather Conditions
B	2016	End Time: 23:10 Sunset: 21:40	humid, 15°C.
	Dawn – 18 August 2016	Start Time: 04:27 End Time: 06:10 Sunrise: 06:03	Dry, mild, 17°C.
W-1991-7-C	Dawn – 25 August 2016	Start Time: 04:46 End Time: 06:16 Sunrise: 06:16	Mild, fine conditions during survey, 16°C.
	Dawn – 1 September 2016	Start Time: 04:58 End Time: 06:28 Sunrise: 06:28	Clear but cold, 10°C.
	Dawn – 6 September 2016	Start Time: 05:07 End Time: 06:40 Sunrise: 06:37	Overcast, foggy, and breezy but mild. 18°C
W-1991-7-E	Dawn – 25 August 2016	Start Time: 04:46 End Time: 06:16 Sunrise: 06:16	Mild, fine conditions during survey, 16°C.
	Dawn – 1 September 2016	Start Time: 04:58 End Time: 06:28 Sunrise: 06:28	Clear but cold, 10°C.
	Dawn – 6 September 2016	Start Time: 05:07 End Time: 06:40 Sunrise: 06:37	Overcast, foggy, and breezy but mild. 18°C
G-4010-19-A	Dusk – 31 May 2017	Start Time: 21:19 End Time: 23:10 Sunset: 21:34	Dry, cloudy with some wind, 14°C.
	Dawn – 21 June 2017	Start Time: 02:43 End Time: 04:49	Warm, with very light shower occurring at

Table 4.5: Weather Conditions - Dusk Emergence and Dawn Re-entry – Trees			
Tree Reference	Survey Date	Start/End Time and Sunset/Sunrise Time	Weather Conditions
		Sunrise: 04:49	04:29 which stopped after ten minutes, 19°C.
T-4001-11	Dusk – 28 June 2016	Start Time: 21:24 End Time: 23:21 Sunset: 21:49	Warm and dry, no wind 12°C.
	Dusk – 3 August 2016	Start Time: 20:38 End Time: 22:38 Sunset: 21:08	No wind and dry 15°C.
G-4024-19-A	Dusk – 14 June 2017	Start Time: 21:30 End Time: 23:30 Sunset: 21:46	Dry, breezy cloudy 13°C.
	Dawn – 13 June 2017	Start Time: 03:13 End Time: 05:06 Sunrise: 05:06	Mild, dry, some mist, 10°C.
G-4024-19-B	Dusk – 14 June 2017	Start Time: 21:30 End Time: 23:30 Sunset: 21:46	Dry, breezy cloudy 13°C.
	Dawn – 13 July 2017	Start Time: 03:13 End Time: 05:06 Sunrise: 05:06	Mild, dry, some mist, 10°C.
G-4024-19-C	Dusk – 14 June 2017	Start Time: 21:30 End Time: 23:30 Sunset: 21:46	Dry, breezy cloudy 13°C.
	Dusk – 28 June 2017	Start Time: 21:31 End Time: 23:19 Sunset: 21:49	Dry, no rain, 14°C.
	Dawn – 13 July 2017	Start Time: 03:13	Mild, dry. Some mist, 10°C.

Table 4.5: Weather Conditions - Dusk Emergence and Dawn Re-entry – Trees			
Tree Reference	Survey Date	Start/End Time and Sunset/Sunrise Time	Weather Conditions
		End Time: 05:06 Sunrise: 05:06	
W-4074-13-A	Dusk – 6 June 2016	Start Time: 21:10 End Time: 23:10 Sunset: 21:40	Dry, slightly overcast, warm humid 16°C.
	Dawn – 11 August 2016	Start Time: 04:15 End Time: 05:52 Sunrise: 05:52	Dry, breezy, 13°C.
W-4074-8-B	Dawn – 7 June 2016	Start Time: 03:20 End Time: 05:10 Sunrise: 04:55	Sunny, humid, periodic heavy rain, 14°C.
	Dawn – 3 August 2016	Start Time: 04:02 End Time: 05:43 Sunrise: 05:38	Dry, breezy, cloudy, 15°C.
W-4074-8-E	Dawn – 8 June 2016	Start Time: 03:20 End Time: 04:50 Sunrise: 04:50	Misty, humid, cold, 11°C.
	Dawn – 4 August 2016	Start Time: 04:11 End Time: 05:55 Sunrise: 05:40	Dry and mild 16°C.
W-4074-8-F	Dusk – 6 June 2016	Start Time: 21:05 End Time: 23:10 Sunset: 21:40	Sunny, periodic heavy rain, humid, 16°C.
	Dusk – 4 August 2016	Start Time: 20:36 End Time: 23:36 Sunset: 21:06	Dry and warm, 16°C.
W-5032-1-	Dusk – 28 July	Start Time: 21:03	Cloudy, 16°C.

Table 4.5: Weather Conditions - Dusk Emergence and Dawn Re-entry – Trees			
Tree Reference	Survey Date	Start/End Time and Sunset/Sunrise Time	Weather Conditions
A	2016	End Time: 21:45 Sunset: 21:18	Survey aborted due to rain.
	Dusk – 15 August 2016	Start Time: 20:31 End Time: 22:30 Sunset: 20:44	Clear, warm with slight breeze, 19°C.
	Dusk – 1 September 2016	Start Time: 19:32 End Time: 21:35 Sunset: 20:05	Cloudy, breezy, dry, 16°C.
W-5032-1-B	Dusk – 30 May 2017	Start Time: 21:12 End Time: 23:10 Sunset: 21:32	Dry and mild, 16°C.
	Dawn – 14 June 2017	Start Time: 02:46 End Time: 04:50 Sunrise: 04:50	Slightly overcast, dry, 12°C.
	Dusk – 20 June 2017	Start Time: 19:42 End Time: 23:18 Sunset: 21:48	Dry, humid, warm, with light air. 19°C.
	Dawn – 29 June 2017	Start Time: 02:52 End Time: 04:53 Sunrise: 04:53	Cool, dry, 11°C.
T-5032-13E	Dawn – 1 June 2017	Start Time: 03:00 End Time: 05:00 Sunrise: 04:57	Dry and clear, 14°C.
	Dusk – 15 June 2017	Start Time: 21:30 End Time: 23:30 Sunset: 21:46	Dry and clear, 14°C.
G-5032-16-B	Dawn – 1 June 2017	Start Time: 03:00 End Time: 05:00	Dry and clear, 14°C.

Table 4.5: Weather Conditions - Dusk Emergence and Dawn Re-entry – Trees			
Tree Reference	Survey Date	Start/End Time and Sunset/Sunrise Time	Weather Conditions
		Sunrise: 04:57	
	Dusk – 15 June 2017	Start Time: 21:30 End Time: 23:30 Sunset: 21:46	Dry and clear, 14°C.
G-6025-14-D	Dawn – 19 July 2017	Start Time: 03:15 End Time: 05:10 Sunrise: 05:10	Mostly dry and warm, but with brief heavy shower, 18°C.
	Dusk – 2 August 2017	Start Time: 20:55 End Time: 23:10 Sunset: 21:10	Slight breeze, dry and clear 16°C.
G-6025-14-E	Dawn – 19 July 2017	Start Time: 03:15 End Time: 05:10 Sunrise: 05:10	Mostly dry and warm, but with brief heavy shower for ten minutes, 18°C.
	Dusk – 2 August 2017	Start Time: 20:55 End Time: 23:10 Sunset: 21:10	Slight breeze, clear and warm 16°C.
W-384-39-A	Dusk – 17 July 2017	Start Time: 21:20 End Time: 23:30 Sunset: 21:35	Warm, calm and dry, 18°C.
	Dusk – 1 August 2017	Start Time: 21:20 End Time: 21:35 Sunset: 23:35	Warm, light air, dry, 17°C.
W-384-39-B	Dawn – 18 July 2017	Start Time: 03:10 End Time: 05:10 Sunrise: 05:10	Warm, calm and dry, 13°C.

Table 4.5: Weather Conditions - Dusk Emergence and Dawn Re-entry – Trees			
Tree Reference	Survey Date	Start/End Time and Sunset/Sunrise Time	Weather Conditions
	Dusk – 1 August 2017	Start Time: 20:55 End Time: 23:10 Sunset: 21:10	Warm and dry 13°C.
G-668-52-A	Dawn – 29 June 2016	Start Time: 03:23 End Time: 04:53 Sunrise: 04:53	Dry, overcast, slight breeze, 10°C.
	Dusk – 5 September 2016	Start Time: 19:24 End Time: 21:26 Sunset: 19:56	Dry and mild, 18°C.
	Dawn – 13 July 2017	Start Time: 03:13 End Time: 05:06 Sunrise: 05:06	Mild, dry. Some mist, 10°C.

Dusk Emergence and Dawn Re-Entry Surveys – Structures

4.2.14 The bridge (687 B1) assessed as having low bat roost potential was subject to one dusk emergence and one dawn re-entry survey. Although the bridge was assessed as having low bat roost potential, due to access restrictions during the preliminary bat roost appraisal, as a precaution the bridge was subject to two follow up surveys.

4.2.15 B1 was assessed as having moderate bat roost potential. As access to the property was granted late in the bat survey season only one dusk emergence survey was undertaken in 2017.

4.2.16 B2 was assessed as having moderate bat roost potential. As access to the property was granted late in the bat survey season only one dusk emergence survey was undertaken in 2017.

4.2.17 B3 assessed as having moderate bat roost potential was subject to one dusk emergence and one dawn re-entry survey.

4.2.18 Table 4.6 provides a summary of each structure surveyed; the date, survey start/end times, sunset/sunrise times and the weather conditions are provided.

Table 4.6: Weather Conditions – Dusk Emergence and Dawn Re-Entry Surveys – Structures

Structure	Survey Date	Start/End Time and Sunset/Sunrise	Weather Conditions
B1	29 August 2017	Start Time: 20:03 End Time: 21:45 Sunrise: 20:15	Dry, slight breeze, 13°C.
B2	28 September 2017	Start Time: 18:45 End Time: 20:35 Sunrise: 19:02	Dry, warm, calm, 14°C.
B3	19 July 2017	Start Time: 21:20 End Time: 23:35 Sunrise: 21:35	Dry, slight breeze, 14°C.
	2 August 2017	Start Time: 03:40 End Time: 05:30 Sunrise: 05:30	Dry, warm, calm, 14°C.
Bridge 687 B1	31 July 2017	Start Time: 20:55 End Time: 23:10 Sunset: 21:10	Dry, light breeze, 12°C.
	17 August 2017	Start Time: 04:00 End Time: 06:00 Sunrise: 06:00	Dry, light breeze, 15°C.

4.2.19 During the dusk emergence survey on 31 July 2017 and dawn re-entry survey on 17 August 2017 of 687 B1 no bats were observed emerging or re-entering the bridge. Bats recorded (but not roosting) during the surveys were pipistrelle, noctule, and *Myotis* species. The bat passes recorded were generally brief feeding, commuting and social calls.

4.2.20 During the dusk emergence survey of B1 on 29 August 2017 no bats were observed emerging from the building. Bats recorded (but not roosting) during the survey were noctule, soprano and common pipistrelle. The bat passes recorded were generally brief feeding, commuting and social calls.

4.2.21 During the dusk emergence survey of B2 on 28 September 2017 no bats were observed emerging from the building. Soprano pipistrelle and noctule bats were recorded during the survey period. The bat passes recorded were generally brief feeding, commuting and social calls.

4.2.22 During the dusk emergence survey of B3 on 19 July 2017 and dawn re-entry survey on 2 August 2017 no bats were observed emerging or re-entering the building. Bat species recorded during the surveys were noctule, *Myotis* sp., soprano and common pipistrelle. The bat passes recorded were generally brief feeding, commuting and social calls.

Incidental Survey Results

4.2.23 During the dawn survey of tree G-4024-19-A on 13 July 2017, approximately seven soprano pipistrelle bats were observed returning to roost within a residential building, the location of this building is shown as B5 on Figure 4.

4.2.24 This building will not be directly impacted by the Proposed Development or subject to disturbance as a result of the Proposed Development therefore further survey work is not required.

Preliminary 2018 Dusk/Dawn Results

4.2.25 The following provides a summary of the preliminary results of dusk emergence/dawn re-entry surveys conducted on structures and trees in 2018. Only key results where roosting bats have been identified have been presented. Complete results of the 2018 surveys will be provided in an Addendum Report.

4.2.26 During a dusk emergence survey of B2 in May 2018, two soprano pipistrelle bats were observed emerging from the building. Two bats were then seen, but were not picked up echolocating on the bat detector, to re-enter at the same location when rain became heavier during the survey. A second dusk emergence survey was undertaken in June 2018 and one soprano pipistrelle bat was observed emerging from the building.

4.2.27 During a dusk emergence survey of B4 in June 2018, one soprano pipistrelle bat was observed emerging from the building. A second dawn re-entry survey was undertaken in June 2018 and.one soprano pipistrelle bat was observed re-entering the building.

4.2.28 During a dusk emergence survey of tree W-5032-1-B in May 2018, two soprano pipistrelle bats were observed emerging.

4.2.29 During a dusk emergence survey of W-1991-7-E in June 2018, ten soprano pipistrelle bats were observed emerging from the tree.

5 Conclusion

5.1.1 Based on the survey work undertaken on building B3 and the bridge 687 B1 in 2017 it is reasonable to conclude that bat roosts were absent from these structures at the time of the surveys.

5.1.2 Further survey work has been undertaken during the 2018 bat survey season for buildings B1, B2 and B4 to comply with current best practice survey guidance (Ref 6).

5.1.3 The full results of the surveys undertaken in 2018 during the bat survey season will be presented in an Addendum Report

5.1.4 A preliminary review of data collected during the 2018 bat surveys indicates that buildings B2 and B4 support a soprano pipistrelle bat roost.

5.1.5 In total, four trees within the survey area were identified as supporting roosting bats:

- W-2039-12-B (within the Order Limits) - single soprano pipistrelle roost;
- W-1991-7-C (located outside of the Order Limits but within 50 m of Order Limits) – single or low numbers of pipistrelle sp. bats, transitionary roost;
- W-1991-7-E (located outside of the Order Limits but within 50 m of Order Limits) – soprano pipistrelle maternity roost (based on the preliminary 2018 survey data); and
- W-5032-1-B (within the Order Limit) – single soprano pipistrelle roost.

5.1.6 Based on the evidence collected, three of the above trees are not thought to support a maternity colony due to the low numbers (or presence of a single bat) of bats recorded. Based on the preliminary 2018 survey data, tree W-1991-7-E is considered to support a soprano pipistrelle maternity roost based on the presence of ten bats observed emerging from the tree during a dusk survey.

5.1.7 The number of bats roosting within tree W-1991-7-C is unconfirmed. Less than five droppings were recorded in this tree, and no bats were recorded during aerial inspection/use of endoscope in June 2016 and subsequent survey visits during the summer in 2016, 2017 and 2018. The data

suggests that this tree is not used by roosting bats during the summer breeding season and is more likely to be used on a transitional basis.

5.1.8 None of the trees surveyed are considered to be suitable for hibernating bats as none of the identified features or trees are likely to provide stable cool temperatures required for hibernation.

5.1.9 Trees W-2039-12-B, W-1991-7-C and W-5032-1-B are assessed as being of **Low Value** based on criteria within the Bat Mitigation Guidelines (2004) (Ref 8) as these trees support single or small numbers of bats of common species.

5.1.10 Tree W-1991-7-E is assessed as being of **Moderate Value** based on criteria within the Bat Mitigation Guidelines (2004) (Ref 8) as this tree supports a maternity roost of soprano pipistrelle bats.

5.1.11 An EPSML issued by NRW would be required should any of these trees be removed or be subject to disturbance as a result of proposed works within the Order Limits. Disturbance to a bat roost is defined within this assessment as any proposed works within 30 m of a tree supporting roosting bats. Work causing disturbance would be construction activities i.e. noise, dust, vibration, heavy machinery, working at night, use of lighting.

5.1.12 In granting an EPSML, NRW must be satisfied that there are imperative reasons of over-riding public interest or reasons of health of safety. NRW must also be satisfied that there is no (satisfactory) alternative and the licensed activity (loss or disturbance of roosts) will not be detrimental to the maintenance of these species at favourable conservation status. These requirements are widely referred to as the “three tests”. Further survey work would be required prior to a licence application for any roost that would be lost or disturbed.

5.1.13 Effects as a result of the Proposed Development and mitigation measures are detailed in Chapter 9, Ecology and Nature Conservation (**Document 5.9**). Further details on the mitigation measures are provided in the Biodiversity Mitigation Strategy (**Document 7.7**). Potential enhancement opportunities are detailed within the Enhancement Strategy (**Document 7.13**) which includes opportunities for enhancements for bats, and also for habitats that would in turn also benefit this species group.

6 References

Ref 1: Welsh Government. The Environment (Wales) Act Part 1 Interim Guidance https://www.biodiversitywales.org.uk/Environment-Wales-Act

Ref 2: Welsh Government (2016) Planning Policy Wales Edition 9 – November 2016. http://gov.wales/docs/desh/publications/161117planning-policy-wales-edition-9-en.pdf

Ref 3: IACC and Gwynedd Council (2017) Anglesey and Gwynedd Joint Local Development Plan 2011-2026

Ref 4: Jacobs (2015) 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.

Ref 5: Arup (2013) Horizon Nuclear Power Wylfa Ltd. Wylfa New Nuclear Power Station, Bat Roost Survey Report 2012. WYL-ARP-PAC-REP-00006.

Ref 6: Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.

Ref 7: British Standard (2015) Surveying for bats in trees and woodland – Guide BSI Standards Publication BS 8596:2015

Ref 8: English Nature (2004) Bat Mitigation Guidelines. English Nature.

Websites

http://www.magic.gov.uk/ MAGIC website

http://www.cofnod.org.uk/Home Cofnod website

http://www.anglesey.gov.uk/ Anglesey Council website

https://www.gwynedd.llyw.cymru Gwynedd Council website

http://gov.wales/?lang=en Welsh Government website

https://naturalresources.wales/?lang=en Natural Resources Wales website

http://www.bats.org.uk/pages/nbmp.html Bat Conservation Trust

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Figures

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Appendix A: Preliminary Roost Assessment Survey Method

Table A1: Survey Methodology for Assessing the Potential Roost Features (PRFs) of Buildings/Trees

Buildings (also applicable to some other structures)

Bats utilise many different features in buildings for places of shelter and roosting. Features that should be observed, noted and graded (in accordance with criteria in Table A2) during the external and internal survey of buildings includes:

External

External features associated with each building are visually inspected for their suitability for use by roosting bats. Equipment including close focusing binoculars and powerful spot-lamps are used to study the walls, eaves and roofs of the buildings. Inspection mirrors and endoscopes are used as required.

Bats are able to enter a roosting cavity through small gaps at least 20 mm wide. However, bats usually also require an area to land that is adjacent to the entrance hole and has a rough surface. Such features are looked for during the inspection.

Features include: gaps in ridge tiles (where mortar is missing) gaps under roof tiles or slates, lead flashing around chimney stacks and around dormer windows, gaps under the fascias and soffits, weatherboarding, missing mortar from joints in stone/ brickwork, roof valleys and hips.

Special attention is paid to the areas directly below any potential access/egress point in an attempt to identify any accumulation of bat droppings.

No work involving multi-sectional ladders over 5 m in height should be undertaken as part of the external survey.

Internal

The most effective method of determining the presence of bat activity within a building is by the presence of their droppings. Bats deposit droppings in both roost and social areas, but the use of such sites by bats can change due to prevailing weather conditions or the time of year.

The internal inspection involves surveying all surfaces, window ledges, rough wall surfaces, floors, cobwebs, cupboard tops and any relatively undisturbed surface.

Areas of particular interest (but not restricted to) are the tops of gable end walls, top of the ridge beam, hip and other roof beams, mortise joints, junction of roof beams, areas around chimney breasts, between roof tiles and felting.

Other features, such as accumulations of discarded wings of moths or butterflies

Table A1: Survey Methodology for Assessing the Potential Roost Features (PRFs) of Buildings/Trees
are also recorded where present. Certain bat species are more likely than others to deal with prey items and leave evidence such as this, and so such features can help identify the species present. Similarly, the location of the droppings would be recorded as this can provide an indication of both the species and the type of roost that is present.
Trees Surveys can be undertaken at any time of year, but should preferably be carried out when the trees are not in full leaf, to aid the viewing of PRFs. Any constraints to surveys should always be noted. The scoping survey to identify the existence of PRFs should include checks for the presence of the following features that bats might be able to use to determine features with the potential to support bats in accordance with criteria in Table A2: a) natural holes (e.g. knot holes) arising from naturally shed branches, or branches previously pruned back to the branch collar; b) man-made holes (e.g. cavities that have developed from flush cuts) or cavities created by branches tearing out from parent stems; c) woodpecker holes; d) cracks/splits in stems or branches (both vertical and horizontal); e) partially detached or loose, platy bark; f) cankers (caused by localised bark death) in which cavities have developed; g) other hollows or cavities, including butt rots; h) compression forks with included bark, forming potential cavities; i) crossing stems or branches with suitable space between for roosting; j) ivy stems with diameters in excess of 50 mm with suitable roosting space behind (or where a roosting space can be seen where a mat of thinner stems has left a gap between the mat and the trunk); k) bird and bat boxes on trees; or l) other features that offer a place of shelter. NOTE: Roosts of some species can occur very low on trees so PRFs can be found at all heights.

Table A2: Criteria used to describe the level of risk/habitat suitability of a Potential Roost Feature (PRF) to support roosting bats.	
Suitability / Risk	Description of Roosting Habitats
Negligible	Structure or tree with no or very limited roosting opportunities for bats. Feature may be isolated from foraging habitat.
Low	Structure or tree with one or more potential roost sites that could be used by single bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain PRF(s) but with none seen from the ground or features seen with only very limited roosting potential with a limited number of roosting opportunities. Low proximity and connectivity to low or moderate quality foraging habitat.
Moderate	Structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed). Often will have some connectivity and proximity to moderate or high quality foraging habitat.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially longer periods of time due to their size, shelter one or more species of bat. With good connectivity to high quality foraging habitat.
Confirmed Roost	Presence of bats or evidence of bats. Confirmation of roost status may require further Roost Classification Survey.

Notes:

1. Collins, 2016 (Ref 6) uses the terms negligible, low, moderate and high to assess suitability for bats as per the information presented in Table A2. The 'BS 8596:2015 Surveying for bats in trees and woodland' (Ref 7) uses the term 'Risk' when assigning these categories to PRFs. Suitability is the preferred term to use.
2. The NEGLIGIBLE category is used where a feature has been inspected and found not to contain any features of use to bats, and hence provides confirmation that a feature has been inspected or considered.
3. For **buildings/structures** PRFs assessed at LOW to HIGH Suitability, further surveys are likely to be required in accordance with standard survey guidance to attempt to determine roost presence/likely absence. There is provision for the professional bat ecologist to decide on whether further surveys are needed for low risk buildings.
4. For **tree** PRFs assessed at MODERATE to HIGH Suitability further surveys are likely to be required (in accordance with standard survey guidance to attempt to determine roost presence/absence (Ref 6).
5. CONFIRMED ROOSTS may require Roost Characterisation Surveys to inform planning/mitigation requirements.

Appendix B: Cofnod Data Search Results

Appendix contains confidential information. This Appendix is only available on request to those who have a legitimate need to view the Information

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Appendix C: Photographs

Table C1: Photographs	
Plate No. / Structure No.	Plate
Plate 1 / Bridge, 687 B1 (photograph provided by Network Rail)	

Note: Photographs of trees identified as having bat roost potential have not been included in this Appendix due to the large number of photographs, should a photograph be required then this can be provided. Photographs of buildings are also not included.