Legacy Gas Peaking Plant
on behalf of Harbour Energy Limited
Ecological Assessment

avianecology

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CONTENTS

1 INTRODUCTION

1.1 Background

1.1.1 This report has been prepared by Avian Ecology Ltd. on behalf of Harbour Energy, and provides an assessment of ecological effects in relation to a proposed development on land at Legacy National Grid Substation (the survey area).

1.1.2 The proposed development comprises of a gas peaking plant to include 11, 4.5MW engines within a 12m stack and a concreted enclosure, with the site area totalling less than 0.5ha. The proposed development (hereafter referred to as the 'Site') is located within the curtilage of the existing Legacy Substation, as shown on the Site Location Plan: Figure 1.

1.1.3 The objectives of the Assessment are to:

- Provide baseline information on the current habitats and ecological features both within the Site and immediate surrounding area;
- Identify the proximity of any designated sites for nature conservation interest and provide an assessment of any potential effects the proposed development may have on these;
- Identify the presence or potential presence of any protected species or habitats and provide an assessment of any potential effects the proposed development may have on these; and,
- Provide recommendations for further pre-construction checks and / or mitigation measures, if required, and provide an outline of proposed habitat enhancements, if applicable.

1.1.4 The report is based on a desk based review, Extended Phase 1 habitat survey and a Habitat Suitability Index (HSI) survey of ponds for great crested newt *Triturus cristatus* (GCN) within and adjacent to the Site.

1.2 Site Overview

1.2.1 The Site is situated immediately to the north of Legacy National Grid Substation. The Site is bordered by the substation to the south and a large vegetated bund to the north, created during the construction of the Substation. Beyond the bund and the land associated with the Substation there is agricultural land to the north, west and east. Woodland borders the Site and extends south around the Substation boundary, creating a visual screen.

1.2.2 The wider area comprises mainly agricultural land interspersed with residential housing and solar developments; with the village of Talwrn located to the south.

1.3 Legislative Framework, Planning Policy and Guidance

1.3.1 Reference has been made to the following key pieces of legislation, planning policy and guidance listed in **Table 1.1**.

Table 1.1: Key legislation, planning policy and guidance.

European
Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (hereafter referred to as the 'Habitats Directive'); and, Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds (codified version of Directive 79/409/EEC as amended) (hereafter referred to as the 'Birds Directive'). Regulation (EU) No 1143/2014 of the European Parliament and of the Council of 22 October 2014 on the prevention and management of the introduction and spread of invasive alien species (hereafter referred to as the species of Union concern)
National
The 'Conservation of Habitats and Species Regulations 2017 (as amended)'. Note this may also be referred to as the 'Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. Guidance from the Chartered Institute of Ecology and Environmental Management (CIEEM)[1] is to continue with the 2017 reference at this time. For the purposes of this report these two references are interchangeable and hereafter referred to as the 'Habitat Regulations' The Environment Bill 2020 (currently in passage and therefore not yet adopted); The Wildlife and Countryside Act 1981 (as amended); Environment (Wales) Act 2016; Countryside and Rights of Way Act 2000; TAN5: Nature Conservation and Planning (2009). Protection of Badgers Act 1992; The Hedgerows Regulations 1997; Planning Policy Wales; The United Kingdom Biodiversity Action Plan (UK BAP); The Bat Conservation Trust – Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Ed.). (Collins et al., 2016); BS 42020:2013 Biodiversity – Code of Practice for Planning and Development; Birds of Conservation Concern 4 (Eaton et al., 2015)
Local
Wrexham's Biodiversity Action Plan[2] Local Planning Guidance Note 32: Biodiversity and Development

1.3.2 The 'UK Post-2010 Biodiversity Framework'[3] succeeds the UK Biodiversity Action Plan (UK BAP) and 'Conserving Biodiversity – the UK Approach'. The lists of priority species and habitats agreed under UK BAP still form the basis of much biodiversity work and are therefore considered within this report in the context of the objectives of the Biodiversity Framework. BAPs identify habitats and species of nature conservation priority on a UK (UK BAP) and Local (LBAP) scale. UK BAPs formed the basis for statutory lists of priority species and habitats in Wales under Section 7 of the Environment (Wales) Act 2016, and so are also relevant in the context of this legislation.

[1] https://cieem.net/referencing-environmental-eu-legislation-post-brexit/
[2] http://www.wrexham.gov.uk/assets/pdfs/planning/framework_en.pdf
[3] http://jncc.defra.gov.uk/page-6583

2 METHODOLOGY

2.1 Desktop Study

2.1.1 A desktop study was undertaken to identify any known existing features or species of ecological importance within the study area (as defined below).

2.1.2 The desk study included a review of relevant policy and guidance and sought to identify any statutory designated sites for nature conservation through a review of the Natural Resources Wales, JNCC and Multi Agency Geographic Information for the Countryside (MAGIC)[4] websites. A 5km search radius was adopted for all statutory designated sites (centred on grid reference: SJ 294486).

2.1.3 Records of non-statutory designated sites and protected and notable species were requested for a 2km radius centred on grid reference SJ 294486; information was provided by North Wales Environmental Information Service (COFNOD).

2.1.4 Reference was also made to Ordnance Survey maps of the wider area and online aerial images (www.google.co.uk/maps) in order to determine any features of nature conservation interest in the wider area.

2.2 Field Survey

Extended Phase 1 Habitat Survey and Botanical Survey

An Extended Phase 1 habitat survey of the Site and surrounding land within the Legacy Substation was undertaken on the 30th September 2019 by S. Turner BSc (Hons.) an experienced ecologist, who also undertook a further botanical walkover survey in May 2020 in order to fully assess the interest of grassland habitat within the development footprint. The survey methodology followed UK industry standard Joint Nature Conservation Committee (JNCC) Phase 1 Habitat Methodology (JNCC, 2010).

2.2.1 Habitats within and adjacent to the Site were mapped and described using a series of 'target notes' (TNs), to provide an overview of the study area. The survey was extended to include the additional recording of specific features indicating the presence, or likely presence, of protected species, invasive species and other species of conservation significance.

2.2.2 The objective of the botanical walkover survey was to provide a species list with relative abundance, providing additional information on species composition and relative abundance of grassland species. Photographs are provided in **Appendix 1** and a botanical species list is presented in **Appendix 2**. The DAFOR scale (Table 2.1) was used for semi-quantitative botanical sampling, to provide an assessment of the relative abundance of plant species in a given habitat. Plant species were recorded along with approximate percentage cover.

[4] http://www.magic.gov.uk

Table 2.1: DAFOR Scale

Value	Percentage Cover	Notes
D – Dominant	> 75%	Very rarely used, a species which covers at least 75% of a survey area; most often found in plantations or highly improved grassland.
A - Abundant	51 – 75%	Very common in many parts of the survey area, often no species will be found to be abundant.
F - Frequent	26 – 50%	A plant found in several places, with usually a number of individual plants in each place **or** a plant found in one place but covering a substantial area.
O - Occasional	11 – 25%	Occurring in several places but populations are only small **or** a species that is common in one small area.
R - Rare	1 – 10%	Species that occur in small numbers in one area or scattered over several different locations.

Preliminary Roost Assessment for Bats

2.2.3 The Extended Phase 1 habitat survey included a preliminary roost assessment (PRA) for bats to identify and record any structures or trees that may be suitable for roosting bats, and any habitats suitable for commuting or foraging.

2.2.4 Suitability for roosting bats was classified as follows (from Collins *et al*., 2016[5], Table 4.1):

- Negligible: Negligible habitat features on site likely to be used be roosting bats.
- Low: A structure with one of more potential roost sites that could be used by individual bats opportunistically. Structures do not provide enough space, shelter, protection, appropriate conditions and/or suitability surrounding habitat to be used on a regular basis or by larger numbers of bats. A tree of sufficient size and age to contain potential roost features but with none seen from the ground or with only very limited potential.
- Moderate: A 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.
- 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 for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

Great Crested Newt (GCN) Survey

2.2.5 Ponds within 250m of the Site were identified from aerial imagery and OS mapping (**Figure 6**), with two ponds found to be present within the Site as shown on **Figure 3** and **6**. These were surveyed for their habitat suitability for great crested newts *Triturus cristatus* (GCN)

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

Habitat Suitability Index (HSI)

2.2.6 A Habitat Suitability Index (HSI) assessment for great crested newts was undertaken of two ponds accessible for survey. The assessment methodology followed the Amphibian and Reptile Groups of the United Kingdom (ARG UK) methodology (ARG UK, 2010)[6], which is a refined version of the Oldham *et al.* 2000[7] method. The assessment calculates a habitat suitability score for each pond based on a series of indices generated from variables including pond size and the presence/absence of wildfowl. Final scores relate to suitability and range from 'poor' to 'excellent' suitability.

2.2.7 The results of the HSI assessment can be used to provide a useful indication of great crested newt presence and help assess any likely impacts of a development, but do not represent a substitute for full surveys.

Environmental DNA Survey (presence/absence)

2.2.8 Environmental DNA (eDNA) is nuclear or mitochondrial DNA that is released from an organism into the environment. Sources of eDNA include secreted faeces, mucous, gametes, shed skin and carcasses. In aquatic environments, eDNA is diluted and distributed in the water where it persists for 7–21 days, depending on the conditions (Biggs *et al*., 2014a[8]). The technique for determining presence/absence of great crested newt uses Polymerase Chain Reaction (PCR) laboratory techniques to detect the species eDNA within water samples.

2.2.9 Research by the Department for Environment Food and Rural Affairs (Defra) Project WC1067, concludes that the sampling of waterbodies collecting eDNA appears to be a highly effective method for determining whether great crested newts are present or absent during the breeding season, even where eDNA is present in very low concentrations (Biggs *et al.,* 2014a[9]).

2.2.10 Natural England accepts the use of environmental DNA surveys as evidence of presence or absence of great crested newts, provided samples are taken when newts are likely to be present (this depends on location and conditions like the weather). Generally this is considered to be between mid-April and 30th June; however in ponds which have been used for breeding there is also some potential to record efts/larvae in July and August. Surveys in these months cannot prove absence, but can provide useful information for confirmation of breeding.

Field Sampling Techniques

2.2.11 Environmental DNA surveys were undertaken by suitably trained and licensed surveyors S Turner and A. Morley. Surveys were undertaken on 12th May 2020.

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[6] ARG UK. (2010). *ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index.* Available at: https://www.arguk.org/info-advice/advice-notes/9-great-crested-newt-habitat-suitability-index-arg-advice-note-5/file.

[7] Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). *Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus).* Herpetological Journal 10(4), 143-155.

[8] Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F. (2014). *Analytical and methodological development for improved surveillance of the Great Crested Newt. Defra Project WC1067.* Freshwater Habitats Trust: Oxford.

[9] Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F. (2014). *Analytical and methodological development for improved surveillance of the Great Crested Newt Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA.*

2.2.12 The protocol for sampling followed that outlined within Biggs *et al*., 2014b[10] , which required the collection of 20 x 30ml subsamples from each pond, spaced as evenly as possible around the pond margin.

2.2.13 Each sample was then placed within a Whirl-Pak bag and shaken for 10 seconds, before a 15ml sample was pipetted from the bag and placed in a specimen tube for laboratory analysis. Samples were refrigerated prior to laboratory dispatch.

2.2.14 This process was repeated for each sampled pond.

Laboratory Analysis

2.2.15 Laboratory analysis was undertaken by SureScreen Scientifics. The laboratory follows the analysis methodology outlined within the Defra Project WC1067 research note (Biggs *et* al., 2014) using the q-PCR test conducted in two phases.

2.2.16 The sample first goes through an extraction process to acquire as much eDNA as possible to produce a pooled sample. The pooled sample is then tested via 1-PCR.

2.2.17 Each pooled sample is replicated 12 times to ensure results are accurate. If one of the twelve replicates tests positive the sample is declared positive. The sample is only declared negative if no replicates show amplification. Inhibition and degradation checks are also carried out on each sample using a known DNA marker. Results of these quality control tests are recorded with each sample

Limitations of Survey

2.2.18 An Extended Phase 1 habitat survey does not constitute a detailed botanical survey or faunal species list or provide a full protected species survey but, enables competent ecologists to ascertain an understanding of the ecology of the study area in order to:

- Broadly identify the nature conservation value of the study area and assess the significance of any potential impacts on habitat/species recorded; and/or,
- Confirm the need and extent of any additional specific ecological surveys that are required to identify the nature conservation value of the study area.

2.2.19 The Extended Phase 1 habitat survey was undertaken on the 30th September, which is just outside of the optimal botanical survey season for grassland habitats, but was followed by a further survey in May 2020. The great crested newt eDNA survey was completed within the appropriate survey period. Hence no limitations were encountered to the surveys.

[10] Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F. (2014). *Analytical and methodological development for improved surveillance of the Great Crested Newt Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA.*

3 BASELINE

3.1 Designated Sites for Nature Conservation

Statutory Designated Sites

3.1.1 A review of MAGIC confirmed that the Site is not located within any statutory designated sites for nature conservation.

3.1.2 The search identified seven statutory designated sites within a 5km radius of the survey boundary, described in **Table 3.1**.

Table 3.1: Statutory designated sites. *(SAC: Special Area of Conservation; SSSI: Site of Special Scientific Interest).*

Designated site	Distance and direction	Details
Stryt las a'r hafod SSSI	2.1km south east	Stryt las a'r hafod is a composite site located close to Johnstown and is designated for its population of great crested newts, which is one of the largest known breeding populations in Great Britain. It also supports a range of commoner amphibian species.
Johnstown Newt Sites SAC	2.1km south east	Linked with Stryt las a'r hafod, this SAC is located within Johnstown and is designated for its population of great crested newts.
Ruabon/Llanntysilio Mountains and Minera SSSI	2.5km west	The site is designated for its range of habitats and species that it supports including, heather moor, limestone, neutral grassland, upland breeding birds, rare plants and bats.
Berwyn a Mynyddoedd De Clwyd/ Berwyn and South Clwyd Mountains SAC	2.5km west	A large area of moorland that supports a wide range of species including internationally significant numbers of hen harriers *Circus ovaneus*, merlin *Falco columbarius*, peregrine *Falco peregrines* and red kite *Milvus milvus*. It also supports rare plant and moth species such as the Welsh clearwing moth *Synanthedon scoliaeformis*.
Gatewen Marsh SSSI	3.6km north east	Gatewen marsh is a significant example of "southern mesotrophic mires wetland type".
Sontley Marsh SSSI	4.4km east	Similar to Gatewen marsh, Sontley marsh is designated as a significant example of "southern mesotrophic mires wetland type".
Coedwig Ffosil Brymbo Fossil Forest SSSI	4.8km north	Geological site – no applicable ecological features

Non-statutory designated sites

3.1.3 The data request from COFNOD identified that the survey area falls within a non-statutory designated site, and an additional five non-statutory designated sites are located within 2km as described in **Table 3.2** and shown on **Figure 2**.

Table 3.2: Non-statutory Designated Sites. (LWS: Local Wildlife Site).

Designated site	Distance and direction	Details
Legacy Substation LWS	Covers the entirety of Legacy Substation, and encompasses the proposed development Site.	An electricity substation surrounded by embankments and a range of habitats including scrub, semi-improved grassland and semi-natural broad-leaved woodland. Notable species present include bee orchid *Ophrys apifera*, yellow-wort *Blackstonia perfoliata* and common centuary *Centaurium erythraea*.
Crematorium LWS	560m south east	The LWS contains a variety of habitats including species rich neutral semi-improved grassland, broadleaved woodland, parkland and ponds.
Bronwylfa Wood LWS	630m west	Semi-natural broad-leaved woodland dominated by sycamore *Acer pseudoplatanus* that runs along Pentre Bychan Brook. Contains some areas of coniferous woodland which have been planted.
Nant Mill - Grasslands	700m north	Area of grassland, 5.9 hectares in size. No other information available.
Big Wood LWS	1km north	A range of woodland habitats including broad-leaved semi-natural dominated by sycamore, beech plantation *Fagus sylvatica* and conifer plantation. The woodland is under management.
Nant Mill Bat Sites LWS	1.3km north west	Bat interests - no detailed information available

3.2 Habitats and Flora

3.2.1 This section should be read in conjunction with the Phase 1 Habitat and Botanical survey plans presented as **Figures 4** and **5.** Target Notes (TNs) are presented in **Table 3.3** and photographs in **Appendix 1**.

3.2.2 The Site occupies approximately 0.45ha within the Substation area and comprises an area of neutral semi-improved grassland (TN5), with small areas of willow *Salix* sp. scrub at the western boundary. The grassland was relatively diverse, with species noted at the time of the survey including yarrow

Achillea millefolium, ribwort plantain *Plantago lanceolata*, imperforate St John's wort *Hypericum maculatum*, common ragwort *Senecio jacobaea*, creeping bent *Agrostis stolonifera*, Yorkshire fog *Holcus lanatus*, sweet vernal grass *Anthoxanthum odoratum*, glaucous sedge *Carex flacca*, self heal *Prunella vulgaris*, tufted vetch *Vicia cracca*, crested dog's-tail *Cynosurus cristatus*, common centaury *Centaurium erythraea* and field forget me not *Myosotis arvensis*.

3.2.3 The botanical survey in May confirmed that the development footprint would occupy an area of neutral grassland, damp in places but much drier towards the east and north. This has developed as secondary grassland on an area previously subject to earthworks during the construction of the adjacent substation, when earthworks and soil movement along with bund creation took place. There appears to have been limited management of this grassland in recent years, with scrub encroachment across the grassland in places.

3.2.4 The grassland is relatively species-rich, with 43 species of grass, herbs and moss (excluding scrub species) recorded during the May botanical survey. Two species of orchid were noted in the sward: bee orchid *Ophrys apifera* and common spotted orchid *Dactylorhiza fuchsii*, broad locations for these are shown in Figure 5.

3.2.5 In the drier areas there are a number of anthills created by yellow meadow ants *Lasius flavus*, typical of this type of rough grassland. These support flowers such as eyebright *Euphrasia spp*. and early forget-me-not *Myosotis ramosissima* (an example is shown in Photo 10, Appendix 1).

3.2.6 Whilst this type of diverse grassland developing on disturbed and industrial sites does not have a specific UK habitat management plan, it does feature as one of the constituent habitat types within the Priority Habitat "*Open Mosaics on Previously Developed Land*", described as follows: "*Flower-rich grassland is a more typical, mature community with fewer gaps and characterised by more robust mesotrophic forbs such as Centaurea nigra, Lotus corniculatus, Ranunculus acris or Trifolium pratense*". However, the Site does not qualify as Open Mosaic Habitat, lacking the required scale and variety of habitat features including insufficient bare or partly bare areas.

3.2.7 Immediately adjacent, to the north and west, are further areas of scrub and grassland, leading on to broad-leaved plantation woodland which covers the bund slopes. A gas pipe connection runs west-east between the main plant and a small area of land required for the Pressure Reducing Station (PRS), across land occupied by further semi-improved grassland and scrub. This grassland is less diverse than the area subject to the botanical survey (within footprint of main development), containing abundant knapweed, false brome, barren brome, ribwort plantain, yarrow and ragwort interspersed with scrub including young colonising birch *Betula pendula* and ash *Fraxinus excelsior* trees.

3.2.8 To the south of the Site there is the main Substation, comprising structures hardstanding and bare ground.

3.2.9 A large bund or embankment forms the north, east and west boundaries of the Legacy Substation the lower slopes of which is grassland and scrub, leading in to semi-mature broad-leaved plantation woodland which has colonised the bund (TN1). The woodland contains a variety of species including ash *Fraxinus excelsior*, birch *Betula* sp, beech *Fagus silvatica* and sycamore *Acer pseudoplatanus.* The woodland contains frequent young self-seeded trees and supports a limited ground flora, with species present predominantly mosses, bramble *Rubus fruticosus*, and ivy *Hedera helix*.

3.2.10 The south facing inner slope of the bund and lower-lying land adjacent to the Substation, including the land within and surrounding the Site, consist of a mosaic of scrub and unmanaged grassland. The scrub is predominantly hawthorn *Crataegus monogyna* with some willow *Salix sp*, seedling birch and ash, dog rose *Rosa canina* and bramble. In some areas, particularly to the east, this mosaic includes tall ruderal species such as nettle *Urtica dioica* and willowherb *Chamerion angustifiolium*. Occasional bushes of *Cotoneaster horizontalis* are present within the steeply sloping scrub / grassland area

(TN4), this is an invasive species listed in Schedule 9 of the Wildlife and Countryside Act 1981. There is also a small area of partly bare ground with ephemeral/short perennial vegetation.

3.2.11 A pond (P1, TN8, Photo 8) is present to the south of the pipe route as shown on Figures 4 and 6. This is approximately 10m by 10m in size containing a variety of marginal species including purple loosestrife *Lythrum salicaria*, bulrush *Typha latifolia*, bryophytes as well as occasional willow scrub and a small amount of New Zealand pygmy weed *Crassula helmsii* (a non-native invasive aquatic species listed under Schedule 9 of the Wildlife and Countryside Act 1981, as amended).

3.2.12 Another pond (P2, Photo 9) is present approximately 250m south of the Site (Figure 6). This was approximately 3m by 10m and associated species includes bramble and willow scrub. This pond contained minimal amounts of water (less than 5cm) in September 2019 and was completely dry when surveyed in May 2020, appearing completely silted up and filled with leaf litter and plant debris.

Table 3.3: Target Notes

Target Note	Comment	Photograph
TN1	Semi mature broadleaved plantation woodland on steeply sloping manmade embankment. Dense with frequent self-seeded saplings and young trees. Abundant ash *Fraxinus excelsior*, birch *Betula sp*, beech *Fagus sylvatica*, hawthorn *Crataegus monogyna* and sycamore *Acer pseudoplatanus*, also oak *Quercus sp*, hawthorn and hazel *Corylus avellana*. The south eastern corner has some Scots pine *Pinus sylvestris* and Japanese larch *Larix karmpferi*, and there are some slightly more mature sycamores in the far south west corner. Ground flora is sparse with moss, bramble, ivy and grass in lighter areas. The trees are insufficiently mature to have anything other than negligible/low bat roost potential. No signs of badger were noted.	1
TN2	Recent owl box in good condition, no evidence of use.	2
TN3	Mosaic habitat on south side of steeply sloping embankment. Long, unmanaged neutral grassland forms a mosaic with scattered scrub, the scrub becoming denser in places. In the grassy area, common knapweed *Centaurea nigra*, false brome *Brachypodium sylvaticum* and barren brome *Anisantha sterilis* are abundant with frequents including a range of other grasses, ribwort plantain and yarrow. The scrub vegetation is dominated by hawthorn, however bramble, dog rose, gorse *Ulex europaeus* and young birch and ash trees are also present.	3
TN4	Occasional bushes of *Cotoneaster horizontalis* are present within the steeply sloping scrub / grassland area, this is an invasive species listed in Schedule 9 of the Wildlife and Countryside Act 1981.	4
TN5	Flat, low-lying grassland area immediately to north of sub-station perimeter fence. Unmanaged species-rich neutral grassland with occasional willow scrub, with damp ground in some places.	5

Target Note	Comment	Photograph
	Abundant and frequent species include yarrow, ribwort plantain, imperforate St John's wort, creeping bent, Yorkshire fog, sweet vernal grass, crested dogs-tail, hard rush *Juncus inflexus*, glaucous sedge, self-heal, birds-foot trefoil *Lotus corniculatus*, field buttercup *Ranunculs acris*, tufted vetch and the moss *Calliergonella cuspidata*. Other species of interest include common centaury, eyebright, *Euphrasia sp,* field forget-me-not, and orchids (identification of which was at the time of survey). Frequent ant hills are present across the area, which coupled with the diversity of plant species recorded at the time of survey, suggest a longer-established grassland.	
TN6	Mosaic of scrub and tall ruderal vegetation, in low-lying area north of the perimeter fence, also with landscaping features including an embankment and pond. Bramble dominant, with abundant willowherb, common knapweed, creeping thistle, dog rose, and occasional willow, dogwood *Cornus* sp and oak *Quercus* scrub.	6
TN7	Small area of sparsely vegetated ground (approx. 50 square metres) with ephemeral / short perennial type vegetation including abundant carnation sedge *Carex panicea* and cats-ear *Hypochaeris radicata*, and also common centaury, self-heal and acrocarpous mosses.	7
TN8	Small pond with open water fringed with marginal vegetation including purple loosestrife, bulrush, greater reed mace and mosses. Some willow scrub on bank. Small amount of Schedule 9 invasive species New Zealand pygmyweed present in water.	8
TN9	Ground within substation area is completely clear of vegetation and consists of gravel or concrete.	

3.3 Protected and Notable Species

Birds

3.3.1 The data search returned records of both protected and notable bird species within 2km of the Site, including species protected under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), priority species listed on the UK Biodiversity Action Plan (UKBAP), species listed as a priority species under Section 42 of the Natural Environment and Rural Communities (NERC) Act 2006 and/or red or amber listed 'Birds of Conservation Concern' (BoCCs) (Eaton *et al*., 2015). The Site does not lie within or adjacent to an 'Important Bird Area' as defined on the MAGIC interactive website.

3.3.2 The closest records were approximately 130m south for green woodpecker *Picus viridis*, linnet *Linaria cannabina* and pied flycatcher *Ficedula hypoleuca*,all of which (if present) could utilise habitats within the Legacy Substation area, in particular the woodland on the bund.

3.3.3 Habitats including woodland, scrub and tall ruderal provide opportunities for a range of nesting birds typical of rural and farmland areas during the breeding bird season.

3.3.4 A owl box was found within close to the Site area which is considered to offer suitable nesting habitat for barn owl *Tyto alba* listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended); the local farmland fields also provide foraging habitat and a local record of this species was returned by COFNOD. Barn owl may be present in the locality and the Site may be used as part of a foraging territory, however the Site itself does not provide suitable nesting habitat.

Bats

3.3.5 The Site does not provide any roosting opportunities for bats, lacking suitable trees of other structures. Similarly the trees and woodland on the bund lack features likely to provide moderate or high roost suitability, and the majority of the trees were assessed as having negligible or low roost potential. The grassland and woodland on and around the Site are likely to provides opportunities for foraging and commuting bats as part of the wider foraging resources and connected habitat in the locality.

3.3.6 COFNOD returned twelve bat records within 2km of the survey area, with the closest roost record a common pipistrelle *Pipistrellus pipistrellus* roost 1.2km south-west of the Site relating to thirty five bats which emerged from underneath roof slates of a house in 2016.

3.3.7 Other bat species returned in the data search included; brown long-eared *Plecotus auritus, pipistrelle sp,* lesser horseshoe *Rhinolophus hipposideros*, whiskered *Myotis mystacinus* and a few records were unknown.

3.3.8 The woodland was assessed for bat roost potential with the majority of the trees in the survey area considered to have negligible bat roost potential.

Badger

3.3.9 The COFNOD data search returned eighteen records of badger *Meles meles* within 2km. The closest of which is located approximately 100m west of the Legacy Substation in 2016, sufficiently distant not to be affected by the proposed development.

3.3.10 No badger setts or other signs of activity were identified during the Extended Phase 1 habitat survey and the Site and Substation area is not considered to currently support badgers; however, habitats within and immediately surrounding the survey area offer suitable habitats for badgers and this species is likely to be widely present in the local area.

Otter and Water Vole

3.3.11 COFNOD returned no records for water vole *Arvicola amphibius* and four records of otter *Lutra lutra* located over 1.4km north of the Site.

3.3.12 No evidence of otter or water vole was observed during the Extended Phase 1 habitat survey, and the surveyed area lacked ditches and watercourses which could support these species.

3.3.13 The only aquatic habitat within and adjacent to the survey area (ponds) are considered sub-optimal for both otter and water vole. These are not well connected with other suitable watercourses in the wider landscape and, although suitable terrestrial habitat is present such as woodland, more optimal habitat with functional links to aquatic habitats is present in the wider area.

3.3.14 It is highly unlikely that water voles or otters are present within the survey area or likely to be affected by the proposed development and these species are not considered further within this report.

Amphibians & Reptiles

3.3.15 COFNOD returned twenty amphibian records, including 15 records of great crested newt within 2km of the Site. The closest great crested newt was recorded within the pond to the south of Legacy Substation, beyond the survey area.

3.3.16 Fourteen records of reptiles, including adder *Vipera berus* were returned within 2km.

3.3.17 The habitats within the survey area, particularly the scrub, woodland and tall ruderal provides suitable terrestrial habitat for amphibian species, including great crested newt. This species may also forage and disperse across the unmanaged grassland areas, including habitats within the Site.

3.3.18 The surrounding landscape supports a low density of ponds; a review of aerial images identifies two ponds in addition to the two identified within 250m of the Site, as shown on **Figure 6**. These have direct habitat connectivity with the Site. A further pond, approximately 500m south, is separated from the Site by the Bronwylfa Road and appears to be a man-made concrete constructed reservoir which is not considered likely to be suitable to support great crested newts.

3.3.19 Pond P1 close to the Site and P2 to the south of the Substation were assessed using the HSI methodology to determine the suitability of the pond habitats for great crested newts. No other ponds were accessed at the time of the survey.

3.3.20 The HSI assessment identified ponds P1 and P2 as providing average and below average habitat suitability respectively for great crested newt. The suitability indices where both ponds scored lowest relate to pond area and their limited macrophyte cover. HSI results are presented in **Table 3.3.**

Table 3.3: Habitat Suitability Index (HSI) Assessment

Pond Ref	**P1**	**P2**
SI1 – Location	1	1
SI2 - Pond area	0.1	0.05
SI3 - Pond drying	1.0	0.5
SI4 - Water quality	0.67	0.67
SI4 – Shade	1.0	0.2
SI6 - Fowl	1	1
SI7 - Fish	1	1
SI8 - Ponds	0.95	0.95
SI9 - Terrestrial habitat	0.67	0.67
SI10 - Macrophytes	0.55	0.6
HSI	**0.69**	**0.51**
Habitat Suitability	**Average**	**Below average**

3.3.21 The eDNA survey of pond P1 returned a **positive** result for the presence of great crested newts as confirmed below in the Surescreen laboratory results (Table 3.4).

3.3.22 Pond P2 being dry, was not sampled foe eDNA.

Table 3.4: Laboratory eDNA analysis results

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
1225	Legacy Pond 1		Pass	Pass	Pass	Positive	12

3.3.23 No reptiles or signs indicating presence were identified during the Extended Phase 1 habitat survey. The habitats within the survey area are considered to be suitable for most reptile species. Grass snake *Natrix helvetica* could potentially be present, with the local ponds offering foraging opportunities.

Other Notable Species

3.3.24 The habitats on and around the Site offer potential for the presence of other notable species (as defined under Section 7 of the Environment (Wales) Act). These may, for example, include hedgehog *Erinaceus europaeus* and invertebrates including grayling *Hipparchia semele*, small heath *Coenonympha pamphilus* and wall *Lasiommata megera*. COFNOD returned records of these four species as well as brown hare *Lepus europaeus* within 2km of the Site.

Invasive Non-native Species

3.3.25 Cotoneaster *Cotoneaster horizontalis* and New Zealand Pygmyweed were both recorded within the survey area, but outside the Site boundaries.

4 DISCUSSION

4.1.1 This section seeks to identify the potential for effects on protected and notable habitats and species. The Site's proximity to statutory and non-statutory designated sites and potential effects on their qualifying interests is discussed. Measures are proposed for the protection of sensitive habitats and species throughout the construction phase of development and recommendations are made for further pre-construction surveys and mitigation.

4.1.2 Consideration of ecological impacts and subsequent effects arising from the development has been prepared with reference to the Chartered Institute of Ecology and Environmental Management (CIEEM) '*Guidelines for Ecological Impact Assessment in the UK and Ireland*' (CIEEM, 2019)[11].

4.2 Designated Sites for Nature Conservation

Land Take and Habitat Loss

4.2.1 The Site does not form part of any statutory designated site for nature conservation. All seven statutory designed sites identified as part of the desk study were located over 2km from the Site, and as a result of the separation distance, restricted habitat present within the Site and the lack of identified functional linkage pathways, no direct or indirect impacts are anticipated as a result of land take, habitat loss or associated construction activities.

4.2.2 Six non-statutory designated sites are located within 2km, one of which, Legacy Substation LWS encompasses the entirety of the Site as shown on Figure 3. The LWS will be directly impacted by the proposed development, with an area of direct habitat loss (comprising species-rich grassland, semi-improved grassland of lower diversity and a small area of scrub). The LWS is designated for its range of habitats and constituent species rather than for a single feature. Hence habitat loss within the LWS is considered in relation to the relative biodiversity interests of the affected habitats, and potential for retention and enhancement of remaining areas to ensure no net loss of biodiversity value in line with NPPF2 (2019).

4.2.3 The grassland within the Site is predominantly species rich, with areas of lower diversity grassland located along the route of the gas pipe and at the PRS. The layout of the proposed development has been designed to minimise land take within the LWS, however an area of species rich grassland habitat will be lost. Measures are therefore are proposed to compensate for loss of grassland habitat, which will ensure that the overall extent of diverse grassland habitat within the LWS is not lost and additionally, can be maintained over the long term through suitable management.

4.2.4 A series of habitat mitigation and enhancement measures will be implemented, to be set out in a Biodiversity Management Plan and agreed with Wrexham County Borough Council Ecologist.

4.2.5 Mitigation will include measures to enhance refuge, foraging and breeding opportunities for species associated with the habitats present within the LWS, and for biodiversity more generally. The development will include habitat creation to enhance the LWS for great crested newts (see **Appendix 3** Outline Great Crested Newt Mitigation Strategy). The habitat creation and enhancement measures are proposed within the National Grid land ownership and with the agreement of National Grid, thereby guaranteeing the long-term security of the habitat provisions.

4.2.6 While suitable food or foraging resources are essential for species diversity, the populations of invertebrates, birds, bats, amphibians and other species are also commonly limited by the

[11]CIEEM (2019) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine.* Chartered Institute of Ecology and Environmental Management, Winchester

availability of safe refuge, overwintering shelter and suitable breeding locations. The Legacy Substation LWS provides a secure site due to its operational functions and is subject to limited disturbance and human activity. It therefore offers particular opportunities to provide new refuge and overwintering features suitable for a range of species.

4.2.7 Such measures will include:

1. Selective translocation of species-rich grassland turves from within the construction footprint to prepared receptor areas within the LWS. Turf from the construction footprint, particularly the areas containing orchids, would be carefully lifted and translocated, for example to reinstate ground temporarily affected during construction of the pipe route to the east of the gas peaking plant.

2. Selective scrub management to encourage the spread of species-rich grassland and protect existing grassland currently being overgrown by scrub. Grassland extends up the steep slope adjacent to the Site and remains reasonably diverse, although not to the extent of the grassland within the proposed development footprint. This grassland is however gradually being lost due to considerable scrub encroachment. Scrub control to maintain would improve the diversity of this grassland, which could then be maintained through ongoing management.

3. Invasive species control and eradication plan across the LWS.

4. Implementation of a Habitat Management Plan to ensure the successful establishment of the translocated grassland and subsequent grassland management regime to encourage a diverse sward to be maintained.

5. Provision of an additional barn owl box and 5 further bird boxes and 6 bat boxes, to be suitably positioned on trees under the advice of an ecologist.

6. Three insect hotels/refugia (for range of species from solitary bees to ground dwelling species);

7. Three hedgehog refuge/hibernation boxes; and,

8. New bee hives (subject to beekeeper management and ongoing judgement on local foraging capacity to ensure wild pollinators are not out-competed by additional hives)

4.2.8 These measures are intended to address biodiversity within the LWS and to deliver mitigation and enhancement to support ecologically resilient networks as set out in Section 6 of the Environment Wales Act 2016 and local policy.

4.2.9 The remaining five non-statutory designated sites are notified for habitats present within them and being over 500m distant with no functional habitat connectivity to the Site, it is considered that these will not be directly or indirectly impacted by the proposed works.

Air Quality Effects

4.2.10 An Air Quality Assessment (AQA) has been undertaken (Smith Grant 2020[12]) which has addressed the potential for the proposed development to indirectly affect ecological receptors (statutory and non-statutory designated sites) as a result of aerial emissions from the gas peaking plant stacks. The facility will be operated in accordance with an Environmental Permit issued by Natural Resources Wales, which will include controls on permitted emission limits from the gas engine stacks.

[12] *Proposed Energy Generation Facility, Legacy, Wrexham. Air Quality Assessment*. Smith Grant LLP March 2020

4.2.11 The assessment of ecological impacts has comprised a Critical level and Critical Load assessment, where relevant Critical Load information is available. It is concluded that the Proposed Development would not result in likely significant effects at any of international designated sites, including Johnstown Newt Sites SAC, Berwyn and South Clwyd Mountains SAC and River Dee and Bala Lake SAC.

4.2.12 The assessment concludes that in relation to the closest statutory designated site, comprising Johnstown Newts Sites SAC/SSSI, the predicted long-term (annual mean) NO_x concentrations at the closest part of the SAC are at the screening criteria. The resulting total annual mean NO_x concentrations peak at 48% of the AQAL. This is experienced at the closest part of the SAC to the Site, with concentrations reducing away from the Site. As the Predicted Environmental Concentration (PEC) remains below the Air Quality Assessment levels (AQAL) it is concluded there would be *no likely significant effect* from the development. The predicted short-term NO_x concentration (daily mean) peaks at 16% at the SAC, with the resulting PEC being well below 70% of the AQAL, at 38%. This again is experienced at the closest part of the SAC to the Site with concentrations reducing away from the Site; it is concluded there would be *no likely significant effect* from the development. No Critical Loads are provided by APIS for nitrogen and acid deposition for the SAC and no further assessment has been undertaken.

4.2.13 For Berwyn and South Clwyd Mountains SAC the predicted long-term (annual mean) and short-term (daily mean) NO_x concentrations, and nitrogen and acid deposition fluxes, at the closest parts of the SAC are below the screening criteria and are insignificant. It is concluded there would be *no likely significant effect* from the development.

4.2.14 For River Dee and Bala Lake SAC the predicted long-term (annual mean) and short-term (daily mean) NO_x concentrations, and nitrogen deposition fluxes, at the closest parts of the SAC are below the screening criteria and are insignificant. It is concluded there would be *no likely significant effect* from the development. No Critical Loads are provided by APIS for acid deposition for the SAC and no further assessment has been undertaken.

4.2.15 For the Midland Meres and Mosses Phase 2 RAMSAR the predicted long-term (annual mean) and short-term (daily mean) NO_x concentrations at the closest parts of the SAC are below the screening criteria and are insignificant. It is concluded there would be *no likely significant effect* from the development. No Critical Loads are provided by APIS for nitrogen and acid deposition for the SAC and no further assessment has been undertaken.

4.2.16 In relation to Legacy Substation LWS, within which the proposed development Site is located, the predicted long-term (annual mean) NO_x concentrations and nitrogen deposition fluxes within the LWS are below the screening criteria and are *insignificant.* It is concluded there would be *no significant pollution* from the development.

4.2.17 Predicted short-term (daily mean) concentrations of NO_x are above the screening criteria across parts of the LWS to the north and east. It is concluded there is potential *significant pollution* due to short-term NO_x concentrations from the development. The assessment has been undertaken with reference to a non-statutory AQAL in relation to potential short-term NO_x impacts. In addition, the assessment has assumed operational hours of 8,760 hours per annum and refers to the maximum daily mean predicted across each modelled year.

4.2.18 As stated in the AQA, these modelled hours are far higher than the actual operational period, which would only be for *up to* 2,500 hours per annum (i.e. a little over a third of the modelled hours), with the actual operations unlikely to be over a full 24 hour period in any one day. Hence the maximum daily mean would be expected to be less than that modelled. Furthermore, the long-term effects on vegetation are thought to be more significant than short-term, and long term effects have been confirmed as causing *no significant pollution*. Exceedance of the screening threshold does not therefore infer that significant pollution would occur.

4.2.19 Based on the conclusions of the AQA, it is not considered that aerial emissions are likely to have a discernible or long term adverse effect on the habitat within the LWS. The habitats present comprise species-rich grassland, scrub and woodland, the latter having grown up on the constructed bund around the Substation and not representing ancient or long established woodland, nor supporting a complex or fragile woodland community and hence relatively resilient. The grassland within the Site is however locally valuable for its diversity of species and associated invertebrate community, including ants. This grassland is directly affected by the proposed development, and mitigation measures for direct habitat loss and disturbance will therefore be required in any case. Such mitigation, designed to compensate for habitat loss within Site by enhancing habitats within the wider LWS, will also serve to offset any air quality effects (however small and not significant) by delivering long term habitat enhancements through positive management measures as already described.

4.2.20 For other Local Wildlife Sites the predicted long-term (annual mean) and short-term (daily mean) NO_x concentrations and nitrogen deposition fluxes at the closest parts of the other LWSs are below the screening criteria and are *insignificant.* It is concluded there would be *no significant pollution* from the development. No Critical Loads are provided by APIS for acid deposition for the habitats identified at the other LWSs and no further assessment has been undertaken.

4.3 Habitats and Flora

4.3.1 The grassland within the Site is predominantly species rich, with areas of lower diversity grassland located along the route of the gas pipe and at the PRS. A small area of this habitat will be lost due to the proposed development and will require mitigation within the LWS, as described above in Section 4.2.

4.3.2 Woodland situated on the bund to the north, east and west will not be significantly affected, with minor areas of vegetation removal required, affecting semi-mature and young trees. All retained trees within the vicinity of construction areas will be protected during construction works in-line with BS 5837:2012 *Trees in relation to design, demolition and construction*.

4.3.3 Bare ground and ephemeral/short perennial habitats present within the survey area were of low value to wildlife, supporting little structural or species diversity. The temporary loss of areas of such habitat during construction is considered negligible in the context of likely value to wildlife and botanical value.

4.3.4 Pond P1 is not directly affected by the proposed development. It has limited botanical value but is likely to support a range of species, including great crested newts which have been confirmed present. Specific measures will be set in pace during the construction phase as part of the Construction Environment Management Plan (CEMP) to avoid and protect the pond and its surrounding habitat from disturbance or indirect effects from runoff or pollution. Suitable fencing and signage will be employed to keep all construction activity away from the pond area.

4.3.5 Standard good practice pollution prevention and runoff management measures will be implemented during the construction and operation of the proposed development to safeguard aquatic habitats and their associated species.

4.4 Protected and Notable Species

Birds

4.4.1 All wild birds, their nests and eggs are, with few exceptions, protected under the Wildlife and Countryside Act 1981 (as amended). Schedule 1 of the Act, confers special protection with increased

penalties for certain species. Additional protection is provided to species listed under Directive 2009/147/EC on the conservation of wild bird (the 'Birds Directive') codified version.

4.4.2 Depending on the timing of construction, there is potential for breeding birds present within and adjacent to the survey area to be affected by the construction of the development. Habitats including woodland and scrub within and bordering the survey area provide some nesting potential for species typical of semi-rural areas.

4.4.3 In order to avoid impacts on nesting birds and to ensure compliance with the provisions of the Wildlife and Countryside Act 1981 (as amended), it is recommended that removal takes place outside of the bird breeding season (March-August inclusive). If vegetation works are necessary during the breeding season, suitable nesting habitat should be hand-searched by a suitably experienced ecologist prior to works commencing. Only when the ecologist is satisfied that no offence will occur under the legislation will works be permitted to proceed.

4.4.4 An owl box is situated within the woodland to the east of the PRS which could be utilised by the Schedule 1 protected species, barn owl but this did not appear to be in use at the time of the survey (no external signs from observation at a suitable distance). This will not be impacted by the proposed works, and the surrounding woodland will be retained and protected. The lighting of the Site during construction and operation of the proposed development will be designed to avoid light spill into the woodland to avoid any risk of disturbance to nesting or foraging birds. Additional bird nesting provision will be provided within the LWS with 5 bird boxes of suitable design and an additional barn owl box being placed on trees in suitable positions under the advice of an ecologist.

Bats

4.4.5 All species of British bat are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended). The Act and Regulations make it an offence to kill, injure or take a bat; damage, destroy or obstruct access to any place that a bat uses for shelter or protection; and intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection

4.4.6 Potential impacts on bats are restricted to loss and disturbance of potential foraging habitat (e.g. through removal of woodland habitat as well as increased lighting within the Site). The Site and surrounds are likely to be used by foraging bats and woodland, scrub and grassland habitats all provide connected commuting habitat, linking to suitable habitat in the surrounding landscape.

4.4.7 The trees on or bordering the Site were considered to offer negligible bat roost potential due to their age and lack of features such as cracks, rot holes etc. No further surveys are required in relation to roosting bats and the proposed development will not affect any potential roost locations.

4.4.8 As the woodland, scrub, pond and majority of grassland within the Substation curtilage will be retained and there will be no loss of connectivity with suitable habitats in the wider area, bats will to continue to be able to use the Legacy Substation LWS for foraging and commuting purposes.

4.4.9 The lighting of the Site during construction and operation of the proposed development will be designed to avoid light spill into the adjacent habitats, including woodland, to avoid disturbance to bat flightlines and foraging activity. As a result the proposed development is not likely to have any adverse effect on individual bats or local bat populations.

4.4.10 Additional bat roost provision will be provided within the LWS with 6 bat boxes of suitable design being placed on trees in suitable positions under the advice of an ecologist.

Badger

4.4.11 Badgers are protected under the Protection of Badgers Act 1992; this makes it an offence to kill, injure or take a badger, internationally or recklessly damage or destroy a badger sett, or obstruct access to it or disturb a badger when occupying a sett.

4.4.12 No setts or other evidence of badger activity was identified within or immediately adjacent to the survey area but eighteen records were returned for the species, the closest of which was 100m from the survey area boundary. The survey area does provide suitable habitats which badgers could utilise and it is possible that badgers may be present in the surrounding landscape and could therefore be move into the survey area.

4.4.13 A pre-construction survey will be undertaken to confirm no new badger setts have been created before commencement of works. Should badger presence be confirmed, suitable protection, avoidance or mitigation measures will be implemented under the advice of an ecologist.

Amphibians & Reptiles

4.4.14 Great crested newts and their habitats are protected under the Wildlife and Countryside Act 1981 (as amended) and the Habitats Regulations 2017 (as amended). The Act and Regulations make it an offence to kill, injure or take a great crested newt; damage, destroy or obstruct access to any place that a great crested newt uses for shelter or protection; and intentionally or recklessly disturb a great crested newt while it is occupying a structure or place that it uses for shelter or protection.

4.4.15 Widespread reptile species are protected against killing, injuring and sale under the Wildlife & Countryside Act 1981 (as amended). Great crested newt, common toad *Bufo bufo* and widespread reptile species (common lizard *Zootoca vivipara*, slow worm, grass snake and adder *Vipera berus*) are listed as priority species under Section 42 (Wales) of the NERC Act 2006 and UK BAP.

4.4.16 The HSI assessment found the pond nearest to the Site (P1) to be of average suitability for great crested newts and the pond situated to the south (P2) to be below average (this pond was dry in May 2020). A number of great crested newt records were returned within 2km, with the closest being approximately 250m from the Substation boundary. Ponds are also likely to offer breeding habitat for common and widespread amphibian species (e.g. common frog *Rana temporaria*, common toad and smooth newt *Lissotriton vulgaris*).

4.4.1 Grassland, scrub, and woodland habitats provide suitable terrestrial habitat for shelter, refuge and hibernation within the Site.

4.4.2 As great crested newts have been confirmed as present within the LWS, and are known to be present on ponds in the local area, for the development (if consented) to proceed lawfully, a European Protected Species Mitigation Licence will be required from Natural Resource Wales, which would include an appropriate mitigation strategy. This will require great crested newts to be relocated away from the development footprint prior to construction commencing. An outline great crested newt mitigation strategy is provided as **Appendix 3.** The proposed development will result in the loss of a limited area of grassland habitat, suitable for foraging. There will be no loss of breeding habitat, and there are opportunities to enhance aquatic (breeding) habitat within the LWS through the restoration of pond P2 which is currently overgrown and dry.

4.4.3 The Site is considered to have suitability for foraging reptiles, but provides limited refuge opportunities. As for amphibians, more suitable refuge and foraging habitat is present within the bund woodlands and areas of dense scrub nearby. Much of the Legacy Substation area comprises hardstanding and structures which are not suitable for reptiles. Records of reptiles were returned within 2km, however there are some barriers such as kerbed roads present between the survey area and these earlier records and there are more extensive suitable habitats present in the wider

landscape. It is considered unlikely that the Site would support anything other than small numbers of individuals of common reptile species as occasionally present. The proposed development is not likely to have any discernible effect on local populations.

4.4.4 Due to the limited scale of the development and availability of suitable reptile habitat in the wider area, adverse effects on habitat connectivity and or foraging/refuge opportunities for reptiles can be avoided through the implementation of suitable Reasonable Avoidance Measures (RAMs), which will form part of the CEMP during the construction phase. The RAMs will be extended to include good practice measures for the protection of other wildlife potentially present.

Other species

4.4.5 Species such as hedgehogs and brown hare as well as invertebrates including small heath, wall and grayling could potentially be using the survey area. The loss of a small area of grassland habitat, will be mitigated through habitat creation, enhancement and management measures elsewhere within the Legacy Substation LWS to ensure that a variety of suitable habitats are available and maintain opportunities for a range of species along with connectivity with habitats in the wider landscape.

4.4.6 No other species are considered pertinent in relation to the proposed development.

Invasive Non-native Species - Biosecurity

4.4.7 Cotoneaster was present within the survey area at three locations (TN4) and New Zealand pigmyweed was present within the pond habitat surveyed. These plants are listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) which states that it is an offence to plant or otherwise cause the species to grow in the wild.

4.4.8 Although the locations containing these species will not be affected by the proposed development, as a good practice habitat management measure to protect the LWS, biosecurity measures will be set in place both during construction and operation to:

a) prevent their accidental spread during works or the accidental introduction of other invasive species to the Site as part of the CEMP; and,

b) safeguard the diversity of habitats and species within the LWS by undertaking a programme of control and removal of these species as far as practicable.

5 SUMMARY - ECOLOGY PRIORITY MATRIX

5.1.1 **Table 5.1** summarises the ecological constraints and opportunities associated with the development, and makes recommendations for pre-construction survey work and/or mitigation measures as required.

Table 5.1: Ecological Constraints and Opportunities

Feature		Details
Statutory and Non-statutory designated sites for Nature Conservation	Constraints & Opportunities	a. The site does not form part of any statutory designed site but falls within Legacy Substation LWS. Habitat loss within the LWS will comprise species-rich grassland and scrub habitat along with small areas of ephemeral/short perennial vegetation. b. No impacts on any other designated sites for nature conservation are anticipated by virtue of separation distance and the restricted scale and nature of the proposed development.
	Protection Measures	c. Consultation with the County Ecologist will be undertaken to agree suitable mitigation/enhancement measures as proposed.
Habitats & Flora	Constraints & Opportunities	d. The habitats present and affected within the Site comprise neutral semi improved species-rich grassland and small areas of scrub. This habitat as well as woodland around the periphery of the survey area is considered to offer local wildlife interest and potentially support a diverse range of species. Land take for the proposed development has been minimised as far as possible as a result. e. Other habitats around the Site will not be affected and will be retained.
	Protection Measures	f. All retained trees within the vicinity of construction areas will be protected during construction works in-line with BS 5837:2012 *Trees in relation to design, demolition and construction*. g. Standard measures to ensure runoff control and pollution prevention will be implemented; these measures will safeguard habitats on and immediately surrounding the Site. h. Off-Site habitats including the nearby pond (P1) will be safeguarded during construction through the CEMP and with appropriate fencing and signage..
Birds	Constraints & Opportunities	i. The habitats within the Site and wider Substation area provides some suitable nesting habitat and may support breeding birds typical of the habitat and the region, including some of local conservation concern and WCA Schedule 1 species. j. The loss of a small area of grassland habitat is not considered to have any adverse effect on local bird populations. Given the relatively secluded and undisturbed nature of the Legacy Substation, there are opportunities to provide enhanced nesting features through the provision of suitable bird boxes erected within the woodland on the bund.
	Legislative Compliance – WCA**	k. Vegetation works should be undertaken outside of the bird breeding season (01 March to 31 August inclusive). If vegetation works are necessary during the breeding season, suitable nesting habitat should be searched by a suitably experienced ecologist prior to works commencing. Only when the ecologist is satisfied that no offence will occur under the legislation will works be permitted to proceed.
Bats	Constraints & Opportunities	l. Habitats such as woodland, scrub and grassland provide foraging and commuting habitat and these be largely retained and protected. Small scale loss of grassland habitat will occur within the Site itself but is not likely to affect local bat populations in any way. Commuting routes and habitat connectivity and the majority of foraging resources are maintained. m. Suitable mitigation measures will be implemented including careful use of lighting to avoid light spill into the woodlands and the installation of new bat boxes.

	Legislative Compliance – WCA**, HR***	n. No trees were found within the survey area, that have the potential to support roosting bats, so no further survey are required relating to roosting bats. o. Any lighting required during construction and/or operation should be directed away from trees and hedgerows, (further information is provided in Lighting in the UK, Bats and the Built Environment Series, Bat Conservation Trust and Institute for Lighting Engineers).
Badger	Constraints & Opportunities	p. No evidence of badgers found on Site.
	Legislative Compliance – PBA****	q. A pre-construction badger survey should be completed by a suitable qualified ecologist immediately prior to the commencement of development to check for any newly constructed setts in and surrounding the Site r. If an active badger sett is identified within proximity to development, then a mitigation strategy will be produced and if necessary, works in proximity to a sett will only proceed under a licence from Natural Resources Wales.
Otter and Water Vole	Constraints & Opportunities	s. No evidence of otter or water vole on Site. These species are not considered to be present or affected.
	Legislative Compliance – WCA**, HR***	n/a
Amphibians	Constraints & Opportunities	t. Suitable aquatic and terrestrial habitat is present within and around the Site to support great crested newts. u. GCN presence has been confirmed within a pond adjacent to the proposed development area. Opportunities exist to restore a currently dried out pond as part of mitigation for this species.
	Legislative Compliance - WCA*, HR**	v. If consented, the development will require a EPSM licence from Natural Resources Wales which will include an appropriate GCN mitigation strategy. This will require GCN to be relocated from within the development footprint to a suitable receptor area within the wider Substation (likely around the nearby on-Site pond).
Reptiles	Constraints & Opportunities	w. Reptiles are considered unlikely to be present within the survey area.
	Legislative Compliance – WCA**	x. As a precaution, Reasonable Avoidance Measures (RAMs) will be implemented as part of the CEMP to safeguard any individuals potentially present
Other Species	Constraints & Opportunities	y. n/a
Invasive Non-native Species	Constraints & Opportunities	z. Cotoneaster *Cotoneaster horizontalis* and New Zealand Pygmyweed *Cressula helmsii* are present within the Substation curtilage, but not within the proposed development Site.
	Legislative Compliance – WCA**	aa. It is recommended that as a mitigation/enhancement measure for the LWS, a control and eradication programme is set in place where practically possible. bb. Biosecurity measures to be put in place to avoid accidental introduction or spread of these or other invasive species during the construction phase as part of the CEMP.

Legislative Compliance Key
* The Hedgerows Regulations 1997
**Wildlife & Countryside Act 1981 (as amended)
***The Habitats Regulations 2017 (as amended)
****Protection of Badgers Act 1992

Figure 1: Location Plan

Figure 2: Statutory Designated Sites

Figure 3: Non Statutory Designated Sites

Figure 4: Phase 1 Habitat Plan

Figure 5: Botanical Survey Plan

Figure 6: Pond Location Plan

Figure 1: Site Location

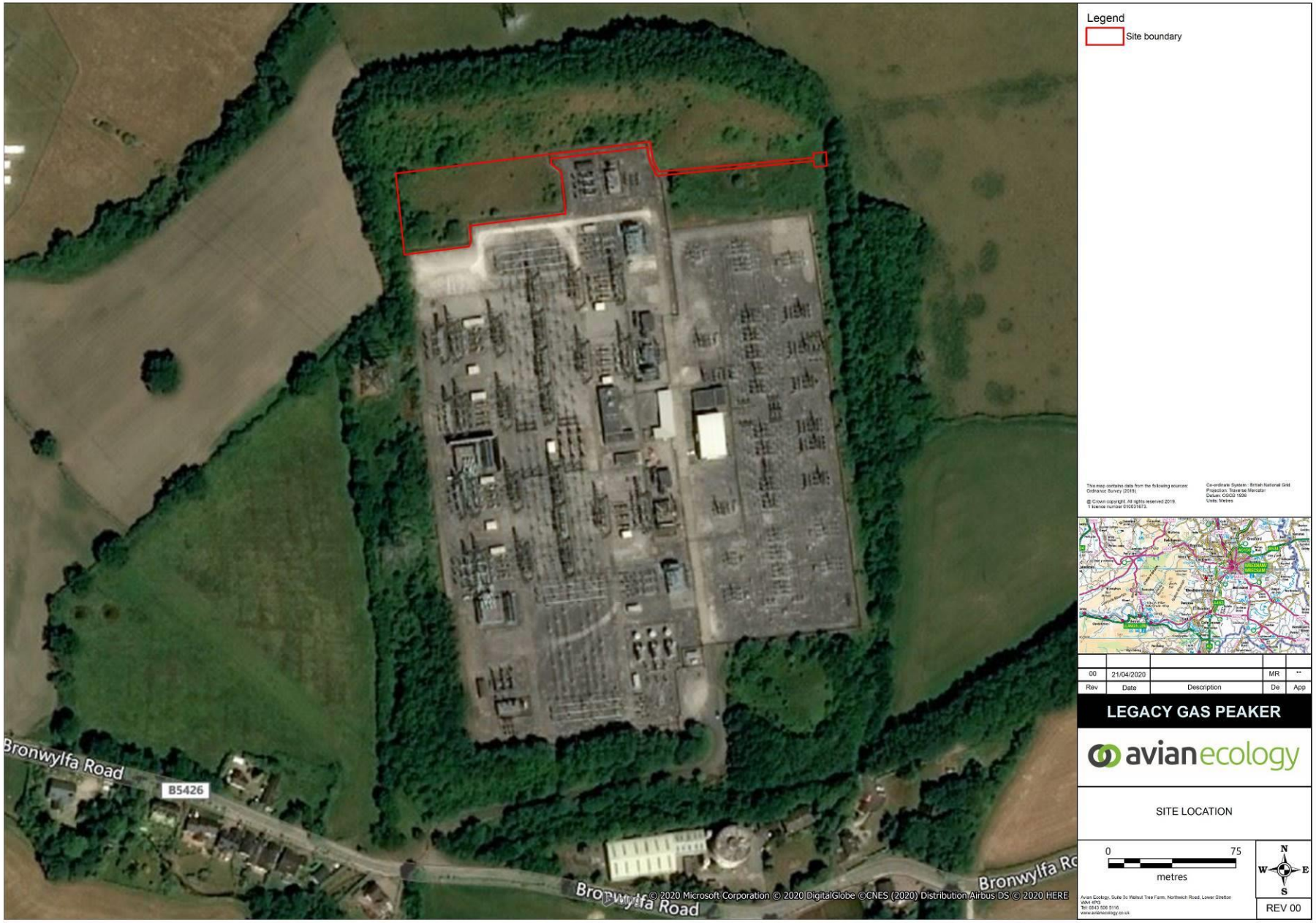


Figure 2: Statutory Designated Sites

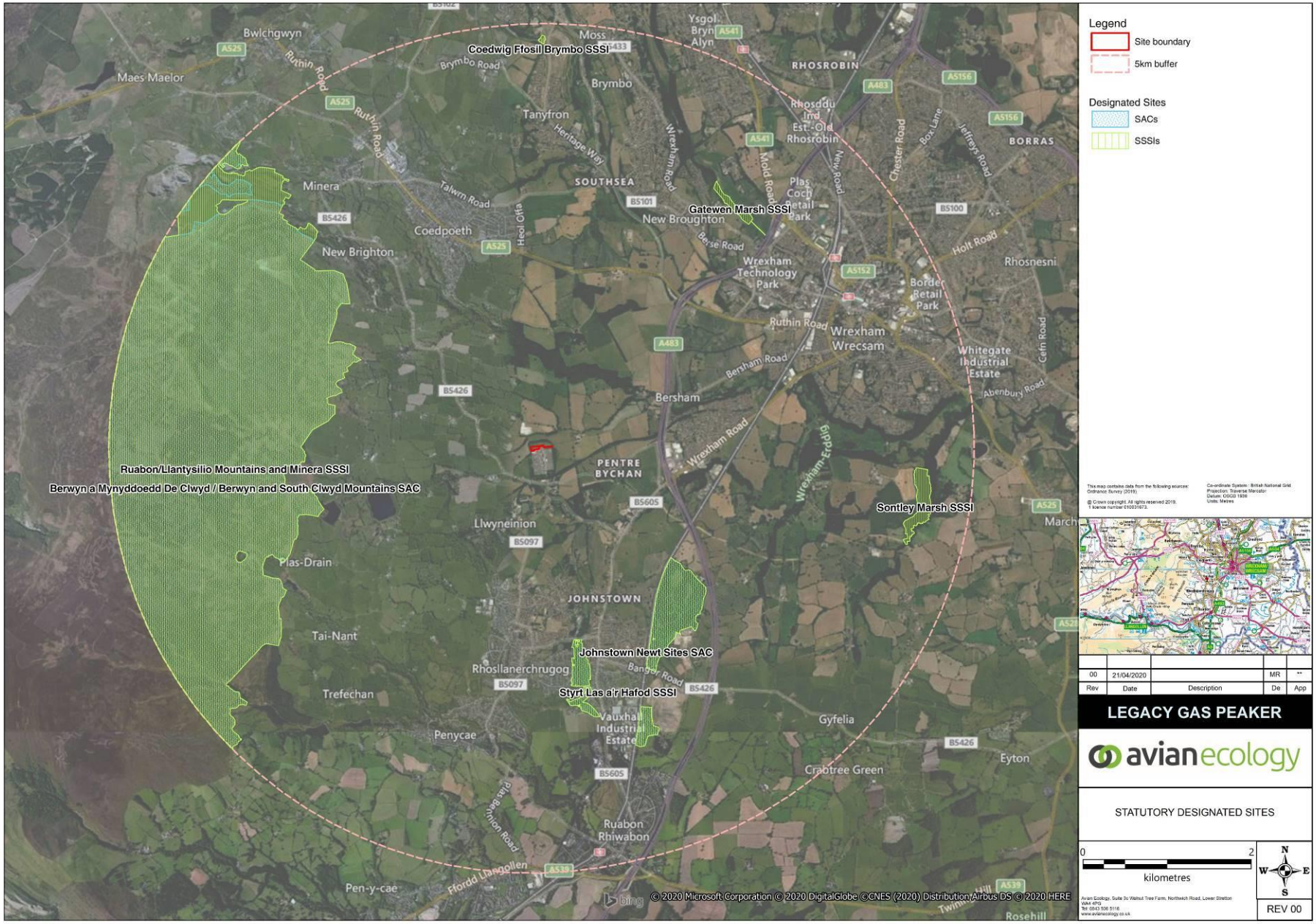
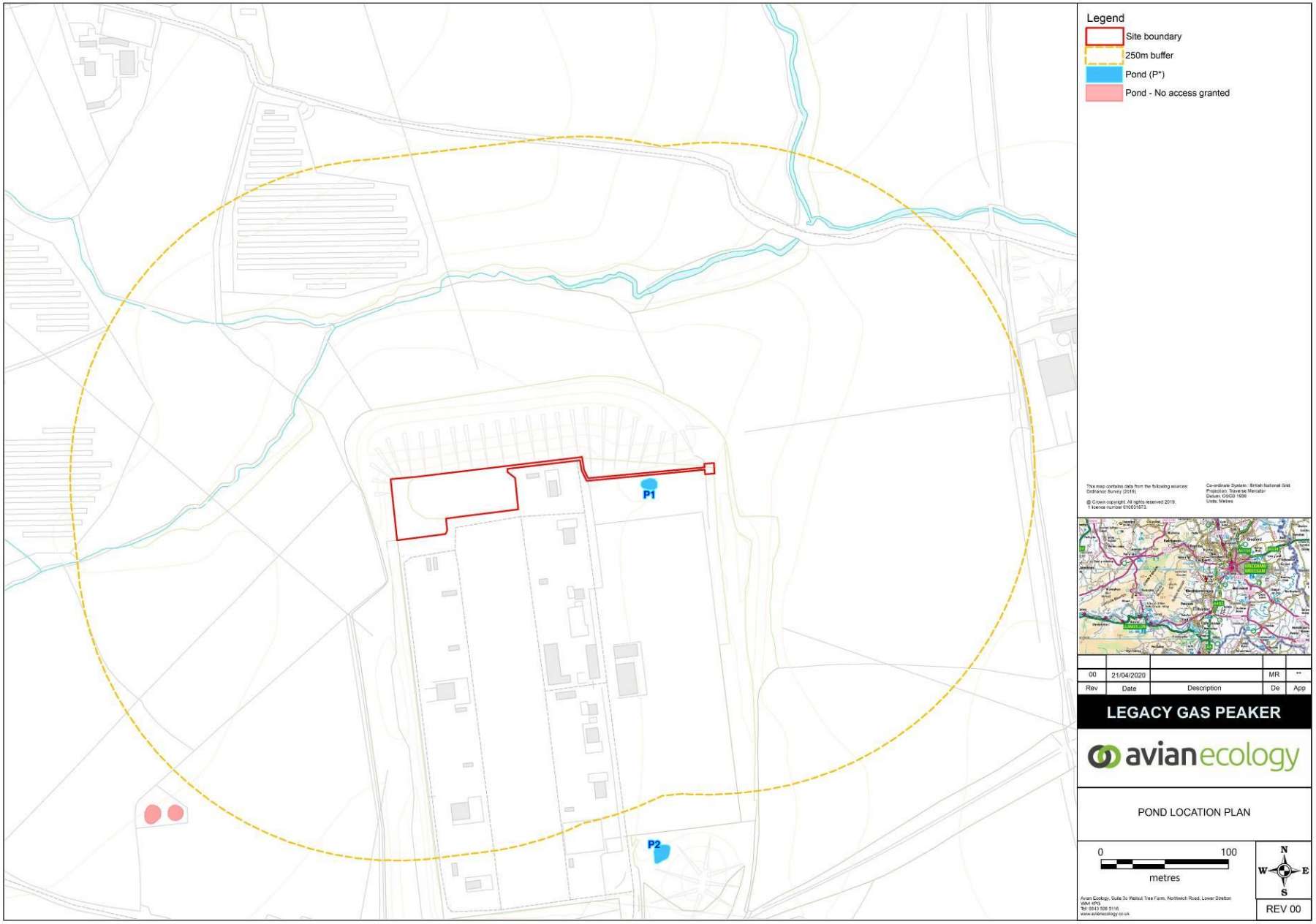


Figure 3: Non-Statutory Designated Sites

Figure 4: Phase 1 Habitat Plan

Figure 5: Botanical Survey Area

Figure 6: Pond Location Plan



APPENDIX 1: Photographs

	**Photograph 1** Young broad leaved plantation woodland on bund slopes, TN1.
	**Photograph 2** Owl box, TN2.
	**Photograph 3** Grassland and scrub mosaic, TN3.

	**Photograph 4** Invasive species *Cotoneaster horizontalis*, TN4.
	**Photograph 5** Species rich grassland, TN5.
	**Photograph 6** Scrub and tall ruderal mosaic, TN6.
	**Photograph 7** Ephemeral/short perennial, TN7.

	**Photograph 8** Pond P1, TN8.
	**Photograph 9:** Pond P2 (dry)
	**Photo 10** – Ant hill in drier area of grassland with early forget-me-not.
	**Photo 11** – Common spotted orchid rosette

	**Photo 11** Bee orchid rosette

Appendix 2: Botanical Survey Species List

Common Name	Latin Name	DAFOR scale
Yarrow	*Achillea millefolium*	F
Ribwort plantain	*Plantago lanceolata*	F
Perforate St John's wort	*Hypericum perforatum*	F
Creeping bent	*Agrostis stolonifera*	F
Yorkshire fog	*Holcus lanatus*	F
Sweet vernal grass	*Anthoxanthum odoratum*	A
Hard rush	*Juncus inflexus*	O
Glaucous sedge	*Carex flacca*	O
Crested dog's tail	*Cynosurus cristatus*	O
Self-heal	*Prunella vulgaris*	O
Bird's-foot trefoil	*Lotus corniculatus*	F
Field buttercup	*Ranunculus acris*	O
Tufted vetch	*Vicia cracca*	O
Pointed spear moss	*Calliergonella cuspidata*	F
Common centaury	*Centaurium erythraea*	O
Eyebright	*Euphrasia sp.*	O
Springy turf-moss	*Rhytidiadelphus squarrosus*	F
Common vetch	*Vicia sativa*	O
Meadow vetchling	*Lathyrus pratensis*	F
Field wood rush	*Luzula campestre*	O
Creeping cinquefoil	*Potentilla reptans*	O
Neat feather-moss	*Pseudoscleropodium purum*	R
Cuckoo flower	*Cardamine pratensis*	O
Common daisy	*Bellis perennis*	O
Common sorrel	*Rumex acetosa*	F
Common Ragwort	*Jacobaea vulgaris*	O
Curled dock	*Rumex crispus*	O
Creeping thistle	*Cirsium arvense*	F
Marsh thistle	*Cirsium palustre*	O

Common Name	Latin Name	DAFOR scale
Marsh bedstraw	*Galium palustre*	O
Early forget-me-not	*Myosotis ramosissima*	O
Yellow-wort	*Blackstonia perfoliata*	R
Hairy bittercress	*Cardamine hirsuta*	O
Common hogweed	*Heracleum sphondylium*	O
Common spotted orchid	*Dactylorhiza fuchsii*	R
Common knapweed	*Centaurea nigra*	O
Willowherb	*Epilobium spp*	O
Cock's-foot	*Dactylus glomerata*	O
Red fescue	*Festuca rubra*	F
Common mouse ear	*Cerastium fontanum*	R
Dandelion	*Taraxacum agg.*	O
Common comfrey	*Symphytum officinale*	R
Bee orchid	*Ophrys apifera*	R

Appendix 3:

Outline Great Crested Newt Mitigation Strategy

(Provided as a separate document)