



ARCUS

**PRELIMINARY ECOLOGICAL APPRAISAL
SWANSEA NORTH ENERGY MANAGEMENT FACILITY
FOR STATKRAFT UK LTD**

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1 INTRODUCTION

Arcus Consulting Ltd was commissioned by Statkraft UK Ltd to undertake an ecological appraisal of the land to the east of the existing Swansea North Substation (approximate National Grid Reference SN 65297 01073) (henceforth referred to as the 'survey area'). The survey area is shown within the blue area in Figure 1 below.

Figure 1: Survey Area Location



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This report is submitted as part of a planning application for an energy management facility (the Development) within the survey area. Further detail on the Development is included in other documents submitted as part of the planning application, specifically the Planning and Design and Access Statement. The Site Layout Plan is included in Appendix D.

This report details ecological baseline conditions and potential ecological impacts from the Development, taking into account relevant planning policy and legislation. Further surveys and mitigation have been described, where applicable, in order to provide additional information for assessing impacts and to inform recommendations to avoid or reduce potential impacts.

The planning application also includes a Green Infrastructure Statement and Biodiversity Metrics Assessment; a document which assesses the net change in biodiversity following the Development and includes details on the landscape and biodiversity enhancement plan which is being proposed and is assessed in the Landscape and Visual Appraisal (LVA).

2 METHODS

2.1 Desk Study

Natural England's Multi Agency Geographic Information for the Countryside (MAGIC) website was consulted to obtain information about any local or national statutory designated sites such as Sites of Special Scientific Interest (SSSI) within 2 km of the Site. A search of European statutory designated sites such as Special Areas of Conservation (SAC) or Special Protection Areas (SPA) within 5 km of the survey area was also undertaken.

A desk study was undertaken to obtain local records of features of ecological interest with a search for records of non-statutory designated sites within 2 km of the survey area such as Local Wildlife Sites (LWSs) and notable and protected species were requested from South East Wales Biodiversity Records Centre (SEWBRc).

A review of historic aerial satellite imagery¹ was undertaken for the survey area to gain an understanding of past land-use.

2.2 Ecological Walkover Survey

Ecological walkover survey visits were conducted on 23rd September 2019, with a smaller area assessed on the 11th June 2020 by a suitably qualified ecologist. The survey included all land within the Survey Area (Figure 1 and Appendix A). The aim of this survey was to identify potential ecological constraints to inform the design and planning process. The survey was carried out following the Guidelines for Preliminary Ecological Appraisal², with an assessment of habitat suitability for protected species, including mammals, nesting birds and herptiles (amphibians and reptiles).

2.3 Bat Survey

During the ecological walkover survey, a preliminary assessment of the potential of onsite features to support bat roosts and/or provide suitable commuting or foraging habitat was completed by the surveyor. The bat assessment work and recommendations followed guidelines produced by the Bat Conservation Trust (BCT)³. This initial bat assessment would inform whether or not further surveys would be required by assessing the potential effects of the Development on bats. Features subject to assessment included the adjacent habitats, the grassland and individual trees. The individual trees were classified according to their 'Roost Suitability'. Should evidence of bats be recorded or the features assessed provide suitability for bats, further surveys may be required.

¹ Google Earth, Available at: <https://earth.google.com/web/> [Accessed September, 2019]

² CIEEM (2017), *Guidelines for Preliminary Ecological Appraisal, 2nd Edition*. Available [online] https://www.cieem.net/data/files/Publications/Guidelines_for_Preliminary_Ecological_Appraisal_Dec2017.pdf

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

3 RESULTS

3.1 Desk Study

3.1.1 Designated Sites

There is a national statutory designated site recorded within 2 km of the survey area; Nant-y-crimp Site of Special Scientific Interest (SSSI), but no international designated sites within 5 km of the survey area.

However, the nearest internationally designated site, Carmarthen Bay and Estuaries Special Area of Conservation (SAC), is found within 7 km of the survey area at its closest point. The Carmarthen Bay and Estuaries SAC, is itself connected to Burry Inlet Special Protection Area (SPA) and Carmarthen Bay SPA and RAMSAR, to form a European Marine Site circa 10 km from the survey area. Given the nature of the Development and its effects, and the large distance from survey area, these two designations are not considered further within this report. Further details on the Carmarthen Bay and Estuaries SAC and Nant-y-Crimp SSSI designated sites are given in Table 3.1.

There are 18 non-statutory designated sites recorded within 2 km of the survey area, which are also recorded in Table 3.1.

Table 3.1: Designated sites and their proximity to the survey area.

Site	Status	Minimum Distance and Direction (km) from Survey Area	Description/Reason for Designation
Statutory designated sites			
Nant-y-Crimp	SSSI	2 km west	Site designated for its wet pastures, species-rich neutral grasslands and semi-natural woodland including wet woodland, now a scarce habitat in south Wales, along with associated scrub, which are host to a number of notable plant species including <i>Genista anglica</i> , cranberry, <i>Vaccinium oxycoccus</i> , narrow buckler fern <i>Dryopteris carthusiana</i> and <i>Carum verticillatum</i> . In addition, a colony of marsh fritillary <i>Euphydryas aurinia</i> butterfly is present on the site, which is a declining species confined in South Wales mainly to unimproved wet pastures where its food plant devil's-bit scabious <i>Succisa pratensis</i> grows in abundance.

Site	Status	Minimum Distance and Direction (km) from Survey Area	Description/Reason for Designation
Carmarthen Bay and Estuaries	SAC	7 km southwest	Site is designated for its sandbanks, estuaries and extensive area of intertidal mudflats and sandflats. Twaité shad (<i>Alosa fallax</i>) are known to migrate and feed in the inshore waters of Carmarthen Bay. Other species known to be present include sea lamprey (<i>Petromyzon marinus</i>), river lamprey (<i>Lampetra fluviatilis</i>), allis shad (<i>Alosa alba</i>) and otter (<i>Lutra lutra</i>).
Non-statutory designated sites			
Llety-Morfil	SINC ⁴	0 W	Not Provided
Middle Llan	SINC	0.45 km SE	Not Provided
Pant Lasau	SINC	0.50 km S	Not Provided
Waun Garn Wen	SINC	0.50 km NW	Not Provided
Rhyd-Y-Pandy Valley and Grasslands	SINC	0.95 km NNE	Not Provided
Rhos Fawr	SINC	1.25 N	Not Provided
Felindre Grasslands	SINC	1.30 km W	Not Provided
Cefn Forest Stream	SINC	1.35 km W	Not Provided
Cilfaen	SINC	1.35 km NW	Not Provided
Penllergaer Forest	SINC	1.40 W	Not Provided
Middle Lliw	SINC	1.50 km WNW	Not Provided
Penllergaer to Llangefelch Tunnel railway line	SINC	1.60 km SW	Not Provided
M4 corridor	SINC	1.60 km SE	Not Provided
Llangyfelach Common	SINC	1.65 km S	Not Provided
Llangyfelach Golf Course & Surrounds	SINC	1.65 km S	Not Provided
Mynydd Gelli-wasted	SINC	1.80 km E	Not Provided
Lower Lliw Reservoir	SINC	1.90 km N	Not Provided
Cwm Rhydyceirw to Birchgrove railway	SINC	1.90 km SE	Not Provided

⁴ SINC = Site of Importance for Nature Conservation

3.1.2 Protected Species

The desk study returned protected and priority species⁵ records within 2 km of the survey area, dated between 2010 and 2019, which included the following species protected under UK legislation^{6,7} and listed on Local Biodiversity Strategy and Action Plan (LBAP) for Swansea. Those relevant to the survey area by habitats present and date (2010 onwards) are detailed further below and in Table 3.2.

- Common pipistrelle (*Pipistrellus pipistrellus*);
- Soprano pipistrelle (*Pipistrellus pygmaeus*);
- Pipistrelle Bat (*Pipistrellus* sp.);
- Brown long-eared bat (*Plecotus auritus*);
- Noctule Bat (*Nyctalus noctula*);
- Myotis Bat (*Myotis* sp.);
- Common toad (*Bufo bufo*);
- Common lizard (*Zootoca vivipara*);
- Adder (*Vipera berus*);
- Slow worm (*Anguis fragilis*);
- Badger (*Meles meles*);
- European otter (*Lutra lutra*);
- Hazel dormouse (*Muscardinus avellanarius*);
- European hedgehog (*Erinaceus europaeus*);
- Polecat (*Mustela putorius*);
- Large wainscot (*Rhizodra lutosa*).

Table 3.2: Relevant protected and priority species within 2 km of the survey area

Taxonomic group	Species	Number of records	Distance and direction of closest record from survey area
Bats	Common pipistrelle	5	1.87 ENE
	Soprano pipistrelle	2	1.95 km SE
	Pipistrelle sp.	1	1.03 SE
	Brown long-eared bat	2	1.87 ENE
	Noctule bat	3	1.87 ENE
	Myotis sp.	1	1.95 km SE
Amphibians	Common toad	1	1.95 km SE
Reptiles	Common lizard	2	1.04 km SW
	Adder	4	1.36 km SW
	Slow worm	2	1.45 km W
Terrestrial Mammals	Badger	7	1.04 km SW

⁵ As listed under Section 7, Environment (Wales) Act 2016

⁶ Wildlife and Countryside Act 1981 (as amended), Schedule 5

⁷ Conservation of Habitats and Species Regulations 2019

	Otter	2	1.57 km SSW
	Hazel dormouse	2	2.0 km S
	Hedgehog	6	1.74 km SE
	Polecat	1	1.64 km SE
Invertebrate	Large Wainscot	1	1.16 km ESE

In addition to the protected and priority species listed in Table 3.2, the data search also returned 163 records of 20 species of protected or notable bird species within 2 km of the survey area. This included raptors such as: goshawk, peregrine falcon, red kite, and osprey. Farmland and woodland bird species such as: skylark, redwing, cuckoo, wood warbler, tree pipit and linnet were also recorded.

3.2 Survey Area Description

The survey area is situated approximately 1.6 km north-west of Morriston with the centre of Swansea located a further three miles south-west of Morriston. The survey area is adjacent to the existing Swansea North Substation and lies east of the B4489. It is surrounded by arable fields, connecting hedgerows and associated farm buildings, and patches of woodland. The consented but not yet constructed Abergelli Power Station is located to the northeast of the Development.

The main survey area comprises of two grassland fields separated by scattered trees, approximately 4 Hectare (ha). The area providing access to the Development from the existing substation comprises three grassland fields, separated by hedgerows and scattered trees, approximates 10.7 ha.

Furthermore, two ponds are located within a field beyond the east of the survey area boundary and on the edge of the substation boundary offsite to the south west.

3.3 Ecological Walkover Habitats

For the purposes of this report, Latin names are excluded from plant species names in the following sections and only the common names incorporated within this report, which it is felt will make the sections more concise. A botanical list of species can be found in Appendix A.

3.3.1 *Semi-natural Broadleaved Woodland*

Within the south west of the survey area and adjacent to the existing substation a planted woodland was found underneath overhead transmission lines and pylons. This comprised of young oak, alder, silver birch, ash, with hazel, field maple, bramble, hawthorn understorey. This area was supplemented with additional planting of holly, hawthorn, hazel, field maple. The ground layer consisted of dog's mercury, bramble, blue bell, Rosebay willowherb, ivy, cleavers, scaly male fern, harts-tongue fern, and dog rose.

3.3.2 *Plantation Broadleaved Woodland*

Within the south west of the survey area and adjacent to the existing substation, a planted woodland was found underneath overhead transmission lines and pylons. This comprised of alder hawthorn, silver birch and scots pine

3.3.3 *Species Poor Hedgerow*

Within the south west of the survey area, a species poor hedgerow was recorded. It comprised of planted hawthorn, cherry, and hazel, and was not considered 'important' under the Hedgerow Regulations 1997.

3.3.4 Species Rich Hedgerow with Trees

An overgrown hedgerow forming a line of trees was found within the south west of the survey area. This comprised of a canopy of oak, ash, silver birch, and grey willow. The understorey and ground layer comprised of bramble, rosebay willowherb, great willowherb and nettle, with occasional red campion and herb Robert.

3.3.5 Dense Scrub

Adjacent to the existing substation and in the south west of the survey area, the survey visit of the 11th June 2020 identified a previously cut vegetation layer had grown into a dense matt of bramble, with grey willow, hawthorn, blackthorn, hazel and young alder also present.

3.3.6 Improved Grassland

Sheep-grazed improved grassland dominates the central survey area. It had a short sward at the time of the survey of around 10-15 cm. The sward is dominated by perennial rye-grass with some cock's-foot, white clover, creeping buttercup and common mouse-ear.

A double fence line encloses a stretch of the southern-eastern boundary to the south of the pylons and is therefore not grazed and has a tall sward. This grassland includes cock's-foot, false oat-grass, willowherb, bent, sorrel, common nettle, foxglove, knapweed with some standard oak, ash and immature hazel and holly.

3.3.7 Semi-improved Grassland

The grassland within the survey area to the west of the stream is damp and tussocky with a sward height of around 20 cm. This grass is dominated by *Juncus* (largely soft-rush) species, bent species, annual meadow-grass, Yorkshire-fog, marsh thistle, marsh bedstraw with other species including perennial rye-grass, broad-leaved willowherb and some purple moor-grass. The grassland to the east of the stream is drier with less *Juncus* apparent and other grass species including sweet vernal and crested dog's-tail. Sheep are free to graze the grassland throughout the field, but it is more tightly grazed to the east of the survey area. Some fungus was noted in the north of the survey area within proximity to the stream including fly agaric and other species (Appendix B, Photograph 1).

The western part of the survey area comprises horse-grazed semi-improved grassland. The sward is tightly grazed and comprised largely perennial rye-grass, but also a number of herb species including mayweed, daisy, broad-leaved dock, meadow buttercup, thistle species, white clover, common ragwort and broad-leaved plantain.

A forb and species rich grassland strip was found within the south west of the survey area close to the existing substation, which was identified during the visit on the 11th June 2020. This comprised of red fescue, sheep's fescue, common birds foot trefoil, dandelion, Yorkshire fog, soft brome, sweet vernal grass, meadow foxtail, cut leaved cranes bill, ribwort plantain, red clover, cocks foot, timothy, smooth meadow grass, rough meadow grass, great willowherb, Rosebay willowherb, common vetch, black medick, broad leaved dock, bramble, nettle, perforate St John's wort, creeping bent, common bent, ragged robin, creeping thistle, hard rush soft rush, European gorse, silverweed, white clover, crested dogs tail, creeping buttercup, and dog rose,

3.3.8 Ephemeral Short Perennial/Grassland

The area where the new access road would join the existing road in the west of the survey area comprised an area of ephemeral species that have colonised gravel and in places are starting to resemble grassland habitat. Species include red clover, common vetch, sedge, dandelion, black medick, ribwort plantain, hemp agrimony, colt's-foot, Yorkshire-fog,

ribbed melilot, bristly ox-tongue, silverweed, knapweed, butterfly-bush, tansy, fleabane, yellow toadflax, common ragwort, broad-leaved plantain and common bird's-foot-trefoil.

3.3.9 Ditches

Several ditches are present throughout the survey area. Although many of these held some water, they are likely to be only seasonally wet in the winter months. Most are alongside the field boundaries, but one extends into the field to the east of the stream within the survey area. A damp ditch to the southwest of the survey area assessed on the 11th June 2020, was scrubbed over with great willowherb, common field horsetail nettle, Rowan alder, ash, willow, false fox sedge, ragged robin, marsh thistle, soft rush, marsh bedstraw, bramble. A small area of the ditch contained approximately six marsh orchid spikes.

3.3.10 Stream

The section of stream within the survey area flows through a narrow earth channel with a stony substrate (Appendix B, Photograph 2). Willow (goat/grey), birch, Indian balsam, grass, *Juncus*, bracken, moss, foxglove, gorse, tree stump, common nettle, common ragwort, hemp agrimony and ferns. Overgrown in places with gorse scrub.

Within the central part of the survey area the stream has tightly grazed grass banks with some semi-mature oaks and ash on the banks. Indian balsam, mint, bittersweet, fool's-water-cress and lesser spearwort is present.

The stream further south-west is shallow and flows down a stony substrate (Appendix B, Photograph 3). It appears to follow the course of an old track flanked by mature trees and the remains of a stone wall with no natural channel present. It is heavily shaded by trees.

3.3.11 Fencing

Post and wire fencing are present throughout the survey area. The fencing is well maintained with few gaps noted with the exception of the central part of the survey area alongside the PROW/stream where some gaps are present. Grass is taller alongside the fence lines and some mature trees and scrub is present in places. Some electric fencing is present to the southwest of the survey area.

3.4 Protected Species

3.4.1 Badger

Evidence of badger is present within the survey area in the form of guard hairs on a mammal track in the south of the woodland south of the existing substation. A mammal track leads from this point eastwards along the ditch bank to a single sett entrance (Appendix B, Photograph 4). The entrance is of a size and shape suitable for badger; the entrance was clear of debris, but there was no scent, spoil, bedding, guard hairs or prints to suggest current occupancy. Other smaller mammal burrows (likely rabbit) are present in proximity to this entrance and dog hairs are present along the track.

3.4.2 Bats

3.4.2.1 Roosts

No suitable trees suitable for roosting bats were identified within the survey area. Mature trees with light ivy cover and some broken limbs, but no obvious potential roosting features (PRFs) were identified at the boundaries. No structures or buildings were present within the survey area.

3.4.2.2 Habitats

Features immediately offsite such as a mature woodland provide potential to support foraging bats, connecting to suitable habitats in the wider area. The survey area provides suitable foraging habitat and the boundaries, trees and stream, provide suitable commuting corridors for bats.

3.4.3 Herptiles (Amphibians and Reptiles)

There are no ponds within the survey area. The wet ditches are likely to be seasonal and therefore provide sub-optimal breeding opportunities for amphibians.

The less intensively grazed grassland within the survey area and ephemeral habitat in the boundary of the access track location provide good opportunities for reptiles and amphibians. The adjacent woodland, trees and public right of way (PROW) provide suitable refuge for reptiles and amphibians. Within the central part of the survey area the tall grassland within the double fencing and the vegetated mounds provide suitable opportunities for reptiles as does the brash (Appendix B, Photograph 5). The intensively grazed grassland provides suboptimal foraging habitat and no refuge opportunities. The flowing stream across the survey area provides a partial barrier to dispersal, but several culverts are present providing some terrestrial connectivity between the field units throughout the survey area.

3.4.4 Birds

The grassland, particularly the less intensively grazed neutral grassland provides opportunities for ground nesting and overwintering birds. It also provides opportunities for foraging raptors. The heavily grazed nature of the improved and semi-improved grassland renders it less suitable for birds.

The woodland and trees adjacent to the survey area offer suitable nesting and foraging habitat for birds and are likely to be used in combination with habitats in the wider landscape, which hosts an abundance of similar opportunities. These features are also likely to support a range of foraging passerine species throughout the year.

3.4.5 Otter and Water Vole

The stream provided a suitable corridor for otter, but its small size is unlikely to provide suitable prey. The dense scrub along a section of the stream in the survey area provided opportunities for shelter as did the old stone wall and tree roots along the PROW. Other sections of the stream are considered too exposed to provide places of shelter for otter, but the nearby woodland provides additional opportunities for shelter. No otter holts or other signs were observed during the survey.

The stream flows through a narrow earth channel which is up to 1 m in depth. There are sections of grassy banks that provide suitable opportunities for water vole, but in areas it is grazed. The presence of water vole is considered unlikely based on the fragmented and discontinuous habitats present, and no water vole signs were observed during the survey.

3.4.6 Hazel Dormouse

The data search noted records of hazel dormouse within 2 km of the survey area; however, these records relate to habitat at 2 km to the south of the survey area and beyond the M4 motorway. The woodland and treelines on the survey area boundaries provide suitable habitat for dormouse, although (with the exception of scrub habitats and woodland understorey within the south west of the survey area), do not offer suitable sheltering, foraging or commuting habitat opportunities for this species. The woodland habitats to the boundary do appear connected to the wider offsite hedgerow/woodland network in the local area.

3.4.7 Other Protected / Notable Species

The survey area provided suitable opportunities for other mammal species such as hedgehog and brown hare. Mole hills are present to the east of the stream in the survey area.

Himalayan balsam is present along the main stream that passes through the survey area although this species does not dominate this habitat. This species along with Japanese knotweed is found adjacent to the access track leading up to the survey area.

3.5 Limitations and Assumptions

The survey visits were undertaken in suitable weather (dry, sunny and warm) by a suitably qualified ecologist. The site visits were carried out during peak survey season for ecological walkover surveys.

Habitats to the survey area boundary were difficult to access in places, with dense scrub and woodland found offsite making it difficult to assess these areas for the potential to support protected species. Permission to access offsite waterbodies was not available at the time of the survey. With the exception of these limitations, there were no other known limitations.

4 FURTHER SURVEY REQUIREMENTS

Previous extended Phase 1 surveys had been carried out in 2014⁸ and 2017⁹, which showed the baseline habitat is similar to that found in the current Phase 1 habitat survey (see Appendix C). A temporal comparison of aerial imagery also showed the habitat had not changed. The distribution and composition of protected species results are expected to be similar and therefore likely to produce similar survey results. For this reason, a range of further protected species surveys have therefore been scoped out¹⁰. However, some surveys were incomplete or did not cover the extent of the survey area. Some further ecology surveys are recommended to provide further information to help assess the potential ecological effects of the Development and to inform mitigation. Survey requirements for protected species are referenced in the following sections.

4.1 Badgers

A single badger sett entrance was found approximately 290 m south of the Development footprint in the southern part of the survey area. As the sett was found over 30 m from the Development and the Development does not obstruct identified mammal tracks or fragment habitat used by badgers, it is considered unlikely that construction works or the Development will have an impact upon foraging and commuting badgers. Surrounding the survey area, linear habitat features will be maintained and the planting of native species along linear habitats will enhance opportunities for commuting and foraging badgers in the local area.

The Development works will allow for safe and sensitive retention of the badger sett, both during construction and occupancy of the Development. Dependent on the timing of construction, further surveys may be required before construction works take place to provide up-to-date information about the status and distribution of badgers so that they can be properly considered.

4.2 Bats

4.2.1 *Trees and habitats*

There were no buildings within the survey area, and trees onsite offered negligible potential for roosting bats, therefore no dusk emergence/dawn return to roost surveys are required, in accordance with BCT¹¹ guidance.

The habitats within the survey area have not changed since the previous bat transect surveys were carried out in 2017¹². Trees on the survey area are proposed to be retained where possible; however, a small number of trees within the alignment of access route Option 2 within the south west of the survey area could be affected by the Development if the access route option is selected. These were assessed as having a negligible potential to support roosting bats. Other trees on survey area are to be retained and woodland edge habitats elsewhere will not be affected by the proposed Development works. It is therefore considered, unlikely that bats will pose a constraint to the Development and no further surveys are required.

However, if any trees with bat roost potential within the Development area to be felled or pruned, further surveys following BCT⁸ guidelines will need to be carried out by a suitably experienced ecologist.

⁸ BSG Ecology (2014) Preliminary Ecological Appraisal Report. Abergelli Power Limited

⁹ AECOM (2017) Preliminary Ecological Appraisal. (updated 2018). Abergelli Power Limited

¹⁰ <https://cieem.net/wp-content/uploads/2019/04/Advice-Note.pdf>

¹¹ Bat Conservation Trust (2016), Bat Survey Guidelines

¹² AECOM (2018) Bat Activity and Roost Survey Report. Abergelli Power Limited

4.3 Otter and Water Vole

No signs of otter or water vole were found during the Phase 1 habitat survey. However, previous surveys carried out in 2017¹³ identified watercourses suitable for foraging otter/water vole, couch creation and burrow creation. The closest watercourse suitable for otter and water vole was approximately 220 m north-east the survey area, which is sufficiently separated by distance from the Development for any likely impacts to these species to occur, and therefore further detailed surveys of these species have been scoped out.

However, as a precautionary approach, a pre-construction check of aquatic habitat within 10 m of the Development footprint to ensure otter or water vole will not be a constraint to the Development works is recommended.

4.4 Hazel Dormouse

The woodland and treelines on the survey area boundaries provide suitable habitat for dormouse, although most habitats (with the exception of a small area of scrub habitat and woodland understorey) within the survey area do not offer suitable sheltering, foraging or commuting habitat opportunities for this species.

The Development design seeks to avoid habitat that could be used by hazel dormouse, and on this basis no further surveys (or mitigation) for this species is recommended. Should the Development design change, and scrub or understorey woodland habitat be impacted by the Development, further survey for hazel dormouse may be required.

4.5 Herptiles

4.5.1 Amphibians

The on-site ditches were either dry, held very limited levels of water or were flowing, making them unsuitable aquatic habitats for breeding great crested newts. Access to offsite ponds was not available at the time of the survey.

Previous GCN surveys had been carried out in 2017¹⁴ and 2014¹⁵, which returned no records for GCN within 500 m of the Development. Habitat Suitability Assessment (HSI) and eDNA surveys had been carried out in 2017, all of which returned negative results. On this basis, GCN were not considered to be a constraint to this Development at the time of survey and no further surveys have been recommended.

4.5.2 Reptiles

Previous surveys have been carried out in 2017 by AECOM¹⁶ which recorded a total of 51 common lizards of which 4 were found to be within the potential access route area. Both male and female adults; and juveniles were recorded which confirms a likely breeding population of common lizard.

No surveys were carried out within the eastern survey area where the main compound would be located in 2017, although earlier surveys carried out by BSG Ecology 2014¹⁷, found two records of common lizards recorded within this extent.

¹³ AECOM (2017) Otter and Water Vole Survey Report. Abergelli Power Limited

¹⁴ AECOM (2018) Great Crested Newt Survey Report. Abergelli Power Limited

¹⁵ BSG Ecology (2014) Great Crested Newt Survey Report. Abergelli Power Limited

¹⁶ AECOM (2018) Reptile Survey Report. Abergelli Power Limited

¹⁷ BSG Ecology (2014) Figure1b: Reptile Survey Results- South. Reptile Survey Report. Abergelli Power Limited

There is suitable habitat recorded for reptiles with the survey area, within the less intensively grazed area, and within boundary habitats to the west of the survey area where the access would be from.

Due to the age of previous surveys that have been carried out, and the presence of a population of reptiles within the survey area, a 7-visit reptile survey was recommended for completion within suitable weather and temperature conditions (sunny, peak air temperature of 9-20°C) during the reptile active season (April through to September inclusive) in line with best practice¹⁸. These surveys primarily focus on the spatial distribution of reptiles utilising habitats of value to reptiles within the proposed Development footprint to determine the population density. The results of this survey inform and update the mitigation requirements for reptiles; however, standard mitigation for reptiles has been proposed in Section 5. The surveys were completed in Spring 2020 and will be reported in a separate Reptile Report that will form part of the planning application.

4.6 Birds

There have been no significant changes to the habitats within the survey area since the previous breeding bird surveys were carried out in 2017¹⁹ and 2014²⁰, which produced similar results. On this basis, no further breeding bird surveys are recommended.

However, based on the findings of the ecological walkover, where less intensively grazed neutral grassland offers opportunities for ground nesting birds and foraging raptors, it is recommended that a nesting bird check needs to be undertaken prior to vegetation clearance works of these habitat areas, or where trees are being pruned to facilitate the Development should clearance works be required in the nesting bird season (March to September).

Nesting bird checks comprise inspections of vegetation looking for evidence of use by nesting birds, such as nesting material, droppings, feathers and activity by young and/or adult birds. Checks can be carried out throughout the year but must be carried out no more than 48 hours before site works. In the unlikely event that any birds particularly, those listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), are found to be nesting onsite, an ecologist will need to be contacted for further advice.

4.7 Other Protected / Notable Species

Both Himalayan balsam and Japanese knotweed are listed as invasive species²¹ and classed as controlled plant species making it illegal to cause or allow the plant to spread in the wild. Whilst distribution of both these species was confirmed offsite, with Himalayan balsam observed within the survey area, it is unlikely that the Development will impact the areas where these plants were found to be growing and therefore no further survey is recommended. However, should new growth be identified of either of these species elsewhere in the survey area, closer to the Development footprint, then the requirement for further survey may need to be revisited.

A small number of marsh orchid spikes were identified within a small area of ditch during the survey visit of the 11th June 2020. Whilst this species is not strictly protected under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended), efforts to avoid impacts to this species should be taken. The footprint of the Development proposal avoids this area, and no further assessment or mitigation is required.

¹⁸ Draper A., Barber, V. & Larcombe, V. (2015), *Surveying for Reptiles: Tips, techniques and skills to help you survey for reptiles*. Froglife. Peterborough

¹⁹ AECOM (2017) Breeding Bird Survey Report. Abergelii Power Limited

²⁰ BSG Ecology (2014) Breeding Bird Survey Report. Abergelii Power Limited

²¹ Schedule 9, Wildlife and Countryside Act 1981 (as amended)

5 DISCUSSION, MITIGATION AND ENHANCEMENT

5.1 Designated Sites

The SPA is approximately 7 km from the survey area and given the nature and the scale of the Development, it is considered unlikely to have an impact upon the important ecological features of the designated site. However, due to the hydrological connectivity present, there will be a requirement for a Habitats Regulations Assessment (HRA) to be produced, which will be completed by the local planning authority (Swansea Council). Measures to avoid any potential for impacts to this connected watercourse and other waterbodies from the Development during construction have been proposed and are detailed further in the following section (Section 5.2).

To manage surface water interactions with the connected watercourse at the operational stage of the Development, an appropriate SUDs system has been selected, the details of which are proposed in a separate drainage strategy report²².

A non-statutory designated site Llety-Morfil is found immediately to the west boundary of the survey area; however, to avoid impacts, the Development footprint will be set away from this boundary, and given the limited scale of the Development is unlikely to impact the features for which this non-statutory site is designated.

5.2 Ditches and Streams

To remove the potential for impacts to waterbodies during construction, the Development design proposes utilising the same access as proposed for Abergelli Power Station with a small section of alternative access also included as an option. This avoids the need for the construction of a new access crossing and addition of any new culverting. As such, the closest Development infrastructure is *circa* 20 m from the nearest watercourse, which through design, further reduces the risk of any potential for construction related impacts. Furthermore, to ensure appropriate construction practices are in place, a Construction Environmental Management Plan (CEMP) is proposed to be delivered by the contractor prior to construction commencing. Following the implementation of measures set out in the CEMP any risk of impact arising from construction on the ditches and streams is considered to be minimised.

Through the Development there will be a cessation of agricultural management practices within the developed areas of the survey area, which will include an end to the application of nitrate fertiliser and pesticides within this area. Where there is a decline in these inputs, there is a reduction in impact, with both plants and animals found in these habitats less likely to be subject to stress. Where habitats are no longer subjected to the stresses of these inputs, recovery and changes in both the composition and abundance of plants and animals is possible, which can benefit biodiversity in the longer term. With no new additional pesticide application in the Development footprint, it is expected that any remaining pesticide residues within the survey area will biodegrade in time.

5.3 Badger

A badger sett is located in the south of the survey area, 290 m from the Development footprint and as such the Development is not likely to impact on badgers. However, dependent on the timing of construction, further surveys may be required before construction works take place to provide up-to-date information about the status and distribution of badgers so that they can be properly considered.

The access to the Development is currently in frequent use by farm machinery and substation personnel, meaning the badgers using the area will be habituated to a certain

²² Arcus 2020 *Flood Consequence and Drainage Assessment*

level of disturbance. Whilst this vehicular movement is set to increase with the Developments construction, this will be during daylight hours and will be infrequent, and is therefore unlikely to pose a direct threat to badgers or lead to a significant increase in disturbance levels, particularly given the distance to the known sett.

Should there be a requirement for works within 20 m to 30 m of the Sett entrance, this will be limited to non-invasive ground works in order to reduce disturbance to badgers. Works within this area will be done under advice of an Ecological Clerk of Works with a Toolbox Talk given to operatives prior to works.

A number of additional controls will be implemented during and after the works, in order to minimise disturbance and maintain the social group of badgers within the area. Key measures include:

- Any deep excavations that are to be left open overnight should include a means of escape for any animals that may fall in;
- Where possible, works will be limited to the hours from dawn to one hour before sunset;
- The creation of large stock piles of earth should be avoided as these may prove attractive for badgers to excavate new setts;
- Badger corridors will be maintained to allow badgers access to adjacent habitat; and
- New landscape planting to include species known to provide a food source and sheltering opportunities for badgers.

5.4 Bats

The effects of lighting on plants and animals are difficult to assess but it is known that lighting can adversely affect invertebrates and bats (as well as other species). The survey area experiences limited lighting from the adjacent substation, but is otherwise within a rural and unlit location. When operational, the Development would be remotely operated and subject to limited maintenance visits, which would likely take place during daylight hours. Any lighting would be motion activated/ infra-red security lighting. Where permanent lighting is required for either construction or operation, this will be limited and designed in line with good practice²³, such as minimising light spill and directing it away from boundaries and retained habitats, such as the scrub and adjacent woodland. Given the previous records of lesser horseshoe bats, the light levels of permanent lighting would need to be less than 0.5 Lux.

General measures will ensure the favourable conservation status of bats using the survey area, as well as providing an enhancement. The following measures will also be adhered to:

- Ensuring all site operatives are made aware of current legislation protecting bats via a Toolbox Talk;
- In the unlikely event that any bats are encountered then works will cease and Natural England contacted to agree appropriate measures;
- Development design needs to ensure that the adjacent arable fields and hedgerows, which provides flight lines, remains unlit;
- Planting of native species along hedgerows to increase the bat foraging value; and
- A minimum of two bat boxes will be installed on trees just outside of the Development boundary (but in client ownership) to provide enhanced roosting opportunities. Boxes need to be installed in accordance with good practice²⁴.

²³ Bat Conservation Trust (2014), *Artificial Lighting and Wildlife*.

²⁴ http://www.bats.org.uk/pages/bat_boxes.html#Putting up your box

5.5 Reptiles

Mitigation measures for reptiles has been finalised following further survey work completed in Spring 2020 and has been reported in a separate Reptile Report; however, due to the presence of suitable habitat within the Development area, any site clearance will be completed following Reasonable Avoidance Measures (RAMs). In accordance with this precautionary approach, a supervised clearance exercise will be carried out within the vegetation onsite. The works will be completed during an appropriate time of year when reptiles are fully active (although weather and temperature dependent, reptiles are usually active from April through to September) and supervised by an ecologist. This will be carried out in conjunction with the methods for other species onsite, if possible. A Method Statement for the works will be produced pre-commencement and informed by further survey work.

The following preliminary mitigation measures are recommended with respect to reptiles:

- Two staged phased cut of vegetation to be undertaken under the supervision of an experienced Ecologist, the first cut will be down to 150 mm;
- Followed by a supervised second cut down to ground level to allow any reptiles time to move away from the works area;
- Habitat clearance should be undertaken in suitable weather and temperature conditions (sunny and above 9^oc), such that any reptiles present can readily disperse into retained reptile habitats in the wider area and to avoid the hibernation period; and
- To ensure reptiles are not trapped within unsuitable areas and to reduce the risk of impacts to reptiles during the habitat clearance, the cut will need to be in one direction and towards suitable retained reptile habitat.

The following enhancements for reptiles will be provided:

- Linear features surrounding the Development area to be enhance with native planting; and
- Brash and log piles to be created to provide sheltering and hibernating opportunities for reptiles utilising the survey area.

5.6 Birds

If any nesting habitats (all vegetation onsite) need to be pruned/removed to facilitate the Development they will need to be removed during the period October to February inclusive to avoid the bird nesting season (March to September). Alternatively, if clearance is not possible during this time, prior to habitat clearance a check for nesting birds needs to be undertaken by a suitably experienced ecologist no more than 48 hours prior to habitat clearance. Any active nests will need to be left in situ until a suitably qualified ecologist confirms birds have stopped using them.

Where possible, bird boxes will be installed on trees just outside of the Development boundary (but in client ownership) to provide enhanced nesting opportunities for a number of different bird species. All boxes need to be installed in accordance with good practice²⁵.

5.7 Other Protected/Notable Species

The mitigation measures proposed in Section 5.3 will be sufficient to ensure that impacts to other mammals are minimised during the construction and operational phase of the Development.

The presence of Himalayan balsam within the survey area needs to be clearly marked off with appropriate tape/fencing and signage to inform contractors to avoid these areas of

²⁵ www.rspb.org.uk/advice/helpingbirds/nestboxes/index.asp

habitat. Similarly, contractors need to be made aware of the offsite Japanese knotweed growth and areas of this to avoid. Advice from an ecologist on these invasive species will be provided to contractors via the Tool Box talk and prior to works activity taking place.

6 CONCLUSIONS

Some protected species and habitats have the potential to be affected by the Development. Further survey work, as described Section 4, is required to inform the assessment of effects and mitigation. In order to increase the Development's biodiversity value a range of enhancement measures have also been provided (detailed in Section 5).

A European designated site is located approximately 7 km from the Development, but is sufficiently separated by distance in combination with the scale and nature of the Development for there not to be any impacts on the important ecological features of this designated site. Hydrological connectivity between the Development and this designated site has necessitated the requirement for an HRA, which it is understood will be completed by the local planning authority.

Specific details of the mitigation and enhancement measures could be included within an Ecological Mitigation and Enhancement Plan (EMEP) for the Development. This document would detail measures to be implemented in order to enhance the value of the Development (including bird and bat box placement) and sympathetic management of these areas to maximise their ecological value in the long term.

Appendix A - Plant Species List

Common Name	Scientific Name
Alder	<i>Alnus glutinosa</i>
Blackthorn	<i>Prunus spinosa</i>
Hawthorn	<i>Crataegus monogyna</i>
Grey willow	<i>Salix cinerea</i>
Herb Robert	<i>Geranium robertianum</i>
Red campion	<i>Silene dioica</i>
Soft brome	<i>Bromus hordeaceus</i>
Rough meadow grass	<i>Poa trivialis</i>
Creeping bent	<i>Agrostis stolonifera</i>
Common bent	<i>Agrostis capillaris</i>
Common vetch	<i>Vicia sativa</i>
Meadow foxtail	<i>Alopecurus pratensis</i>
Perforate St Johns wort	<i>Hypericum perforatum</i>
Red fescue	<i>Festuca rubra</i>
Sheep's fescue	<i>Festuca ovina</i>
Ragged robin	<i>Lychnis flos-cuculi</i>
Common birds foot trefoil	<i>Lotus corniculatus</i>
Dog rose	<i>Rosa canina</i>
Perennial rye-grass	<i>Lolium perenne</i>
Cocks foot	<i>Dactylus glomerata</i>
White clover	<i>Trifolium repens</i>
Creeping buttercup	<i>Ranunculus repens</i>
Common mouse-ear	<i>Cerastium fontanum</i>
False oat grass	<i>Arrhenatherum elatius</i>
Willowherb	<i>Epilobium sp</i>
Bent	<i>Agrostis spp.</i>
Sorrel	<i>Rumex acetosa</i>
Common nettle	<i>Urtica dioica</i>
Foxglove	<i>Digitalis purpurea</i>
Common knapweed	<i>Centaurea nigra</i>
Oak	<i>Quercus robur</i>
Ash	<i>Fraxinus excelsior</i>

Common Name	Scientific Name
Hazel	<i>Corylus avellana</i>
Holly	<i>Ilex aquifolium</i>
Rushes	<i>Juncus spp</i>
Yorkshire fog	<i>Holcus lanatus</i>
Marsh thistle	<i>Cirsium palustre</i>
Marsh bedstraw	<i>Galium palustre</i>
Broadleaved willowherb	<i>Epilobium montanum</i>
Purple moor-grass	<i>Molinia caerulea</i>
Sweet vernal grass	<i>Anthoxanthum odoratum</i>
Crested dog's-tail	<i>Cynosurus cristatus</i>
Fly agaric	<i>Amanita muscaria</i>
Mayweed	<i>Anthemis arvensis</i>
Daisy	<i>Bellis perennis</i>
Broadleaved dock	<i>Rumex obtusifolius</i>
Meadow buttercup	<i>R. acris</i>
Thistle	<i>Cirsium sp.</i>
Common ragwort	<i>Senecio jacobaea</i>
Broadleaved plantain	<i>Plantago major</i>
Red clover	<i>Trifolium pratense</i>
Common vetch	<i>Vicia sativa</i>
Sedge	<i>Carex sp</i>
Dandelion	<i>Taraxicum officinale agg</i>
Black medick	<i>Medicago lupulina</i>
Ribwort plantain	<i>Plantago lanceolata</i>
Hemp agrimony	<i>Eupatorium cannabinum</i>
Colts foot	<i>Tussilago farfara</i>
Ribbed melilot	<i>Melilotus officinalis</i>
Bristly oxtongue	<i>Helminthotheca echioides</i>
Silverweed	<i>Potentilla anserina</i>
Butterfly bush	<i>Buddleia davidii</i>
Tansy	<i>Tanacetum vulgare</i>
Common fleabane	<i>Pulicaria dysenterica</i>
Yellow toadflax	<i>Linaria vulgaris</i>

Common Name	Scientific Name
Common birds-foot trefoil	<i>Lotus corniculatus</i>
Gorse	<i>Ulex europaeus</i>
Goat willow	<i>Salix caprea</i>
Himalayan balsam	<i>Impatiens glandulifera</i>
Water mint	<i>Mentha aquatica</i>
Bittersweet	<i>Solanum dulcamara</i>
Fools watercress	<i>Apium nodiflorum</i>
Lesser spearwort	<i>Ranunculus flammula</i>

Appendix B - Photographs



Photograph 1: Fly agaric fungus



Photograph 2: Stream to the northwest of the survey area



Photograph 3: Stony substrate stream along the south western boundary of the central part of the survey area



Photograph 4: Badger sett entrance

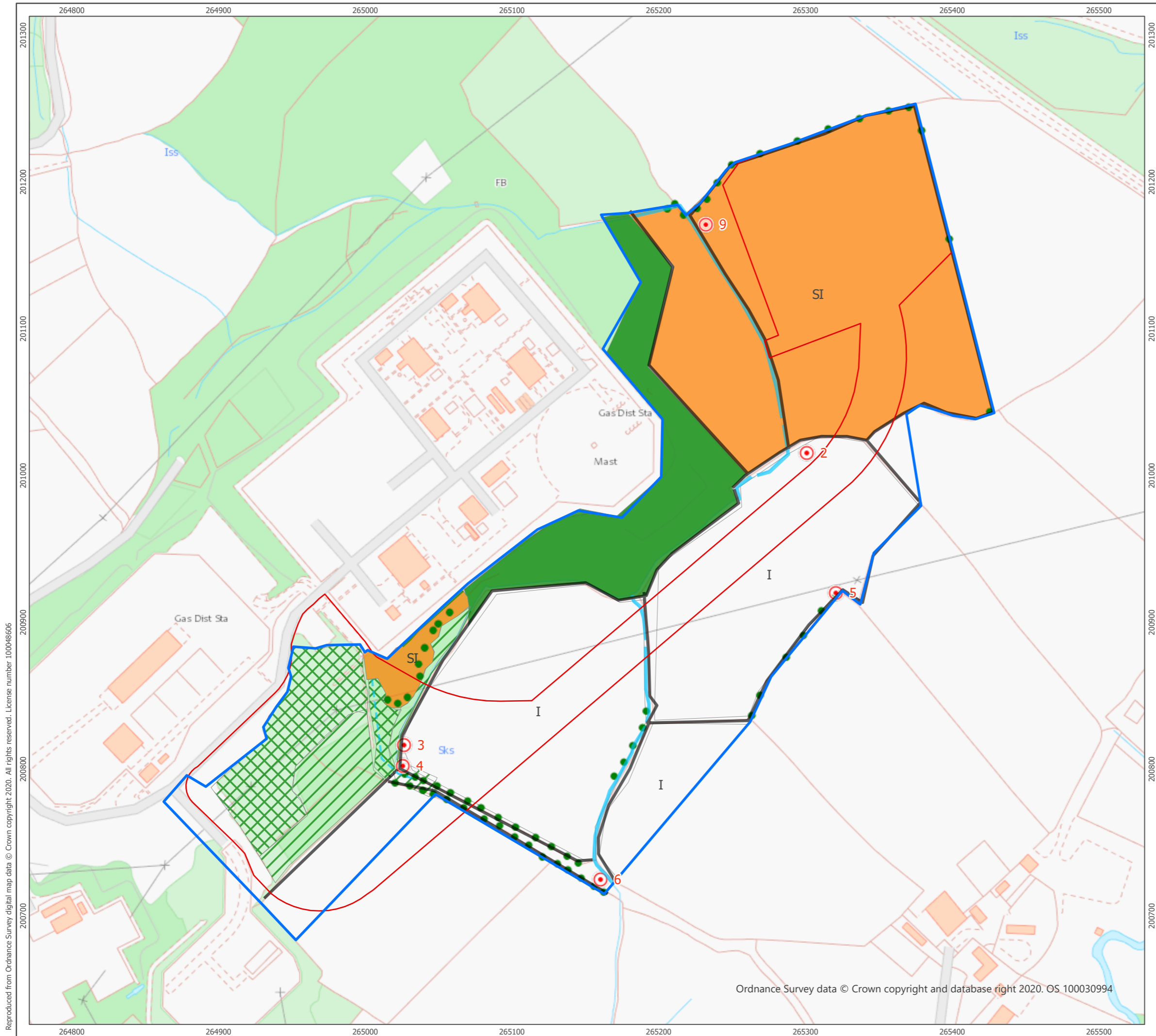


Photograph 5: Brash pile and vegetated mounds

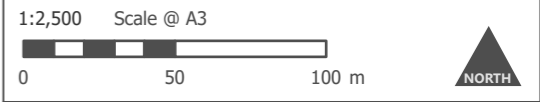


Photograph 6: Small ditch along the survey area boundary

Appendix C – Phase I Habitat Plan



- Proposed Development Area
- Survey Areas
- Broadleaved woodland - semi-natural
- Broadleaved woodland - plantation
- Scrub - dense/continuous
- SI Neutral grassland - semi-improved
- I Improved grassland
- Running water
- Intact hedge - species-poor
- Hedge with trees - native species-rich
- Fence
- Dry ditch
- Broadleaved parkland/scattered trees
- ⊙ Target Note

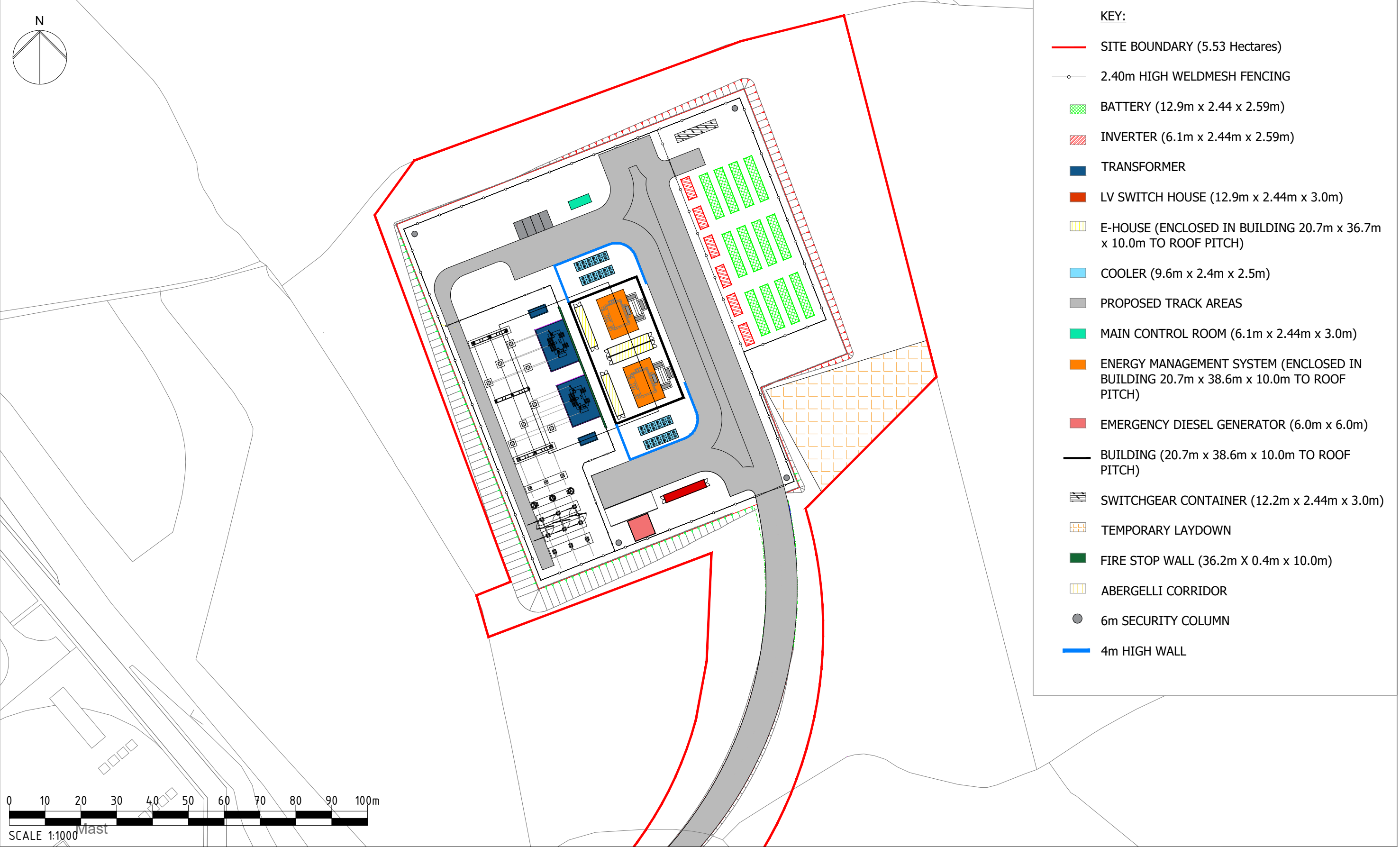


Produced By: CW	Ref: 3421-REP-002
Checked By: DH	Date: 16/06/2020

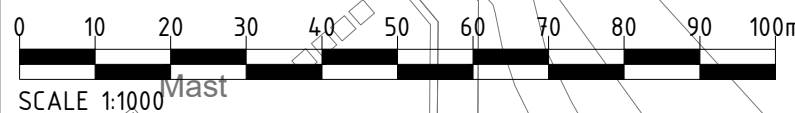
Phase 1 Habitat Plan
Figure 1

**Swansea North
Energy Management Facility
Preliminary Ecological Appraisal**

Appendix D – Site Layout



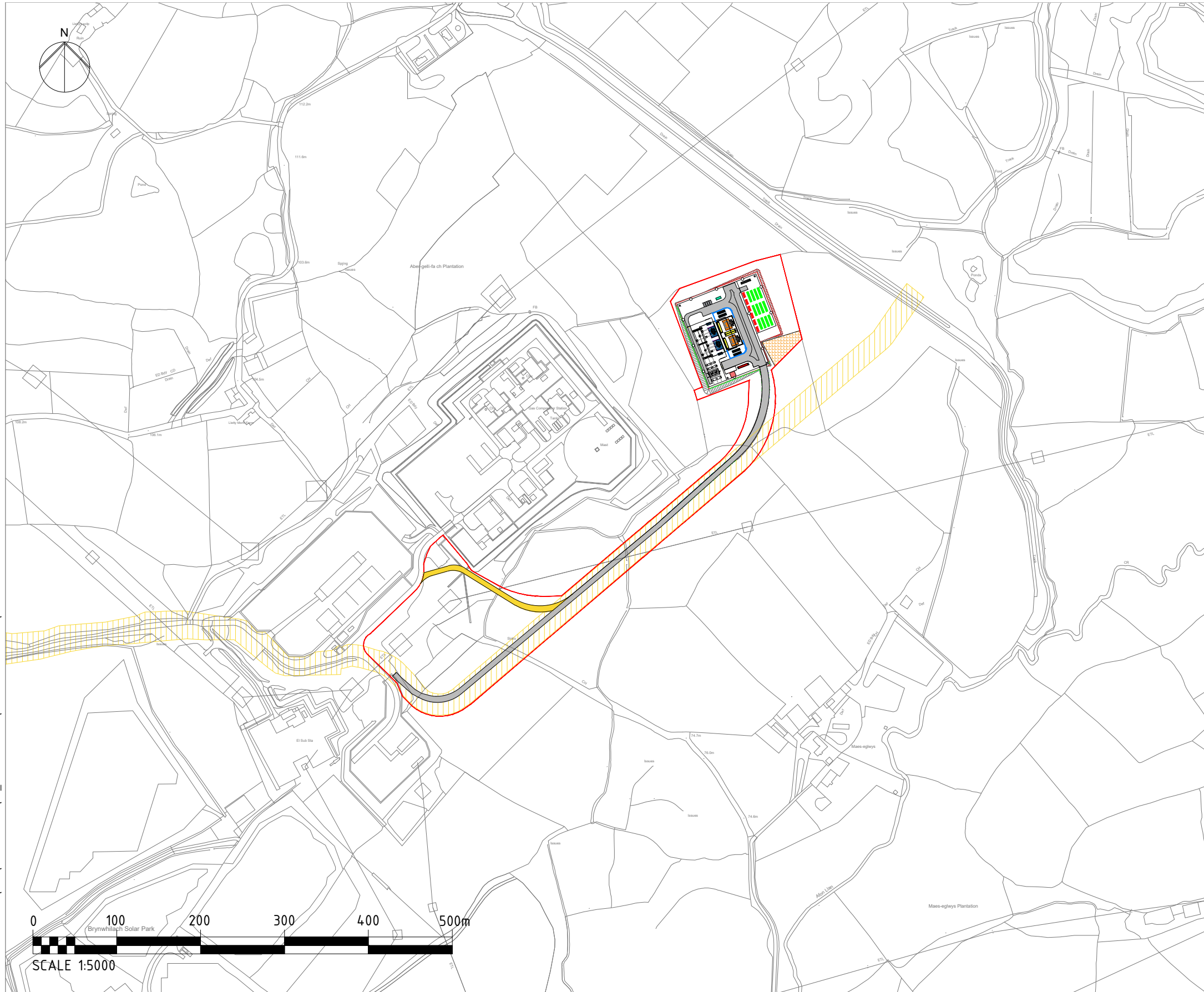
- KEY:**
- SITE BOUNDARY (5.53 Hectares)
 - 2.40m HIGH WELDMESH FENCING
 - BATTERY (12.9m x 2.44 x 2.59m)
 - INVERTER (6.1m x 2.44m x 2.59m)
 - TRANSFORMER
 - LV SWITCH HOUSE (12.9m x 2.44m x 3.0m)
 - E-HOUSE (ENCLOSED IN BUILDING 20.7m x 36.7m x 10.0m TO ROOF PITCH)
 - COOLER (9.6m x 2.4m x 2.5m)
 - PROPOSED TRACK AREAS
 - MAIN CONTROL ROOM (6.1m x 2.44m x 3.0m)
 - ENERGY MANAGEMENT SYSTEM (ENCLOSED IN BUILDING 20.7m x 38.6m x 10.0m TO ROOF PITCH)
 - EMERGENCY DIESEL GENERATOR (6.0m x 6.0m)
 - BUILDING (20.7m x 38.6m x 10.0m TO ROOF PITCH)
 - SWITCHGEAR CONTAINER (12.2m x 2.44m x 3.0m)
 - TEMPORARY LAYDOWN
 - FIRE STOP WALL (36.2m X 0.4m x 10.0m)
 - ABERGELLI CORRIDOR
 - 6m SECURITY COLUMN
 - 4m HIGH WALL



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Project Title SWANSEA NORTH ENERGY MANAGEMENT FACILITY	Drawing Title PLANNING DRAWING 003A PROPOSED SITE LAYOUT MAIN COMPOUND	Purpose of issue PLANNING	THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT APPOINTMENT. ARCUS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS CLIENT AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED	Arcus Consultancy Services 7th Floor 144 West George Street Glasgow, G2 2HG Tel: +44 (0)141 221 9997 Fax: +44 (0)141 221 5610 www.arcusconsulting.co.uk													
Client 	Arcus Internal Project No. 3421 Scale @ A3 1:1000	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Designed</td> <td>Drawn</td> <td>Checked</td> <td>Approved</td> </tr> <tr> <td>-</td> <td>KB</td> <td>DB</td> <td>AM</td> </tr> <tr> <td colspan="2">Date</td> <td colspan="2">15/04/20</td> </tr> </table>	Designed	Drawn	Checked	Approved	-	KB	DB	AM	Date		15/04/20		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Drawing Number 3421-DR-P-0001A</td> <td>Rev 8</td> </tr> </table>	Drawing Number 3421-DR-P-0001A	Rev 8
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-	KB	DB	AM														
Date		15/04/20															
Drawing Number 3421-DR-P-0001A	Rev 8																





KEY:

- SITE BOUNDARY (5.53 Hectares)
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<p>Project Title SWANSEA NORTH ENERGY MANAGEMENT FACILITY</p> <p>Client Statkraft</p>	<p>Drawing Title PLANNING DRAWING 003B PROPOSED SITE LAYOUT BLOCK PLAN</p>	<p>Purpose of issue PLANNING</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Designed -</td> <td>Drawn KB</td> <td>Checked DB</td> <td>Approved AM</td> </tr> <tr> <td colspan="2">Arcus Internal Project No. 3421</td> <td colspan="2">Date 08/06/20</td> </tr> <tr> <td colspan="2">Scale @ A3 1:5000</td> <td colspan="2"></td> </tr> </table>	Designed -	Drawn KB	Checked DB	Approved AM	Arcus Internal Project No. 3421		Date 08/06/20		Scale @ A3 1:5000				<p>THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT APPOINTMENT. ARCUS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS CLIENT AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Drawing Number 3421-DR-P-0001B</td> <td>Rev 10</td> </tr> </table>	Drawing Number 3421-DR-P-0001B	Rev 10	<p>Arcus Consultancy Services 7th Floor 144 West George Street Glasgow, G2 2HG Tel: +44 (0)141 221 9997 Fax: +44 (0)141 221 5610 www.arcusconsulting.co.uk</p>
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