

Blendworth Peaking Power Generation Plant

Preliminary Ecological Appraisal



September 2016

Version 1

Prepared by:
Neil Parker CEnv MCIEEM

Environment Systems Ltd
11 Cefn Llan Science Park
Aberystwyth
Ceredigion
SY23 3AH

www.envsys.co.uk

Table of Contents

1. Introduction	1
1.1. Project Description	1
1.2. Statutory Provisions	1
1.3. Rationale.....	2
1.4. Quality Assurance.....	2
2. Method	3
2.1. Desk Study	3
2.2. Field Survey	3
2.3. Limitations	3
3. Results	4
3.1. Desk Study	4
3.2. Field Survey	5
4. Discussion.....	9
4.1. Non-statutory Designated Sites	9
4.2. Habitats	9
4.3. Reptiles and amphibians	10
4.4. Birds	12
4.5. Badgers.....	12
4.6. Bats	12
5. Conclusion and Recommendations	14
5.1. Conclusion.....	14
5.2. Recommendations.....	14
6. References	16
Appendix A – Phase 1 Habitat Survey Target Notes.....	17

1. Introduction

Environment Systems was commissioned by Rydberg Development Company Limited to undertake an initial ecological assessment of a site known as Blendworth in Hampshire.

This report presents the evidence found during a daytime visit to the site and its immediate surrounds, and a desk study. This report also sets out likely ecological receptors and high level potential impacts as a result of development and proposes mitigation and enhancement measures where appropriate.

1.1. Project Description

The development is for a Peaking Power Generation Plant (PPGP) which is to provide a temporary source of energy into the national grid at specific times. The footprint of the development will require 0.33ha land take in the south east corner of Blendworth Common. There will be ten gas generators surrounded by a 4.5m high solid wood acoustic fence (refer to design drawings). Inside the PPGP compound there will be gravel surface to the turning circle for maintenance purposes and vegetation will be restored to grassland post-construction.

A site access track will be installed along the east edge of Blendworth common where a gravel track on geotextile membrane would be used to spread the weight of the delivery vehicles. This will be a no-dig construction method to assist in reducing the compaction of soils around trees.

Embedded mitigation includes the planting of trees to all facades to blend in the acoustic fencing and exhaust stacks. This vegetation is to be a mix of native shrub and tree species. To the north and west aspect this will include 5m deep planting and to the south and east alongside existing ancient woodland a minimum of 15m deep.

1.2. Statutory Provisions

1.2.1. National Planning Policy Framework (NPPF)

The NPPF sets out how the planning system should aim to conserve and enhance the natural environment. Paragraph 109 of the NPPF states, among others, minimising the impacts on biodiversity and providing gains in biodiversity where possible.

1.2.2. East Hampshire District Local Plan: Joint Core Strategy

The site falls within the bounds of the East Hampshire District Local Plan: Joint Core Strategy. The Local Plan presents the core strategy which includes Policy CP21 Biodiversity.

The strategic objectives of the plan include improving the design of new development to protect and enhance biodiversity, wildlife habitats and corridors. The management of existing natural environment areas and landscape is also featured in the objectives.

1.2.3. Protected Habitat and Species

There are a number of legislative documents that provide specific protection to certain habitats and species. These include the Conservation of Habitats and Species Regulations 2010 (as amended) ('the Habitat Regulations'); the Wildlife and Countryside Act 1981 (as amended) ('WACA'); the Badger Act 1992 (as amended); and, the Natural Environment and

Rural Communities Act 2006 (as amended) (the 'NERC Act'). These help to provide the principle ecological receptors (habitats and species) for consideration in the planning application. A number of the species, such as bats and dormouse, also have specific permitting requirements outside of the planning regime which may require supplementary consideration by Natural England.

1.3. Rationale

The site is currently used for grazing livestock and appears to be in some form of cutting regime to manage spread of bracken and scrub vegetation. The development will require the removal of existing habitat to facilitate construction and operation of the peaking power generation plant. It is therefore necessary to consider the potential effects on sensitive ecological receptors, i.e. those included in the various legislative documents as well as features such as Local Wildlife Sites and statutory protected sites.

To complete this process a formal Preliminary Ecological Appraisal (CIEEM, 2013) was completed to confirm the presence of ecological receptors on site and immediate surrounds by:

- Undertaking a desk study;
- Completing an Extended Phase 1 Habitat Survey;
- Identifying potential positive and negative effects on ecological receptors as a result of development; and
- Preparing mitigation and enhancement measures to assist in improving the design, construction and operation of the development.

1.4. Quality Assurance

This report is based upon evidence and data prepared, as far as practically possible, in accordance with best practice guidance. It has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) Code of Professional Conduct. The report has been prepared based on guidance from BS42020:2013 Biodiversity: Code of practice for planning and development (BSI, 2013). In preparing this report the opinions are expressed as true and professional bona fide opinions.

2. Method

2.1. Desk Study

A search for statutory designated sites was completed using Natural England open source datasets for Sites of Special scientific Interest (SSSI), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, National Nature Reserves (NNR) and Local Nature Reserves). Each designation within 2km was mapped in a GIS to determine distance from the development and information from citations and web sources used to define the reason(s) for designation and/or features of nature conservation interest.

A Local Environment Records Centre (Hampshire Biodiversity Information Centre) search was completed. This included a request for information on priority and protected species and habitats within 2km of the site, as well as any Local Wildlife Sites (LWS).

2.2. Field Survey

An Extended Phase 1 Habitat Survey (JNCC, 2010) was completed on 14th September 2016. Phase 1 habitat Survey is a technique for classifying and mapping habitats. The term 'Extended' refers in this project to assessing habitat features that may support protected or priority species such as bats. Dominant plant species observed within each habitat type were recorded in accordance with plant species nomenclature in Stace (2010). Target Notes (TN) were used to identify potential for protected or priority species or habitats, and to provide more detailed site descriptions.

The survey was completed by Neil Parker CEnv MCIEEM who has ten years' experience in the ecological industry. Neil is a licensed bat surveyor and has experience with surveying badgers, reptiles, great crested newts, otters, breeding and wintering birds and habitat surveys. In addition Neil has worked on a number of development types including road, rail, wind, hydro, pumped storage and mining.

2.3. Limitations

The development site was visited over the period of a single day, as such seasonal variations could not be observed and it is possible that only a selection of all species that occur within the survey area will have been noted. However, it is considered that the combination of historic records from the desk study and the field survey provides an accurate representation of the habitats present and their potential to support protected species.

Weather conditions during the survey were warm and sunny with some cloud. It is not considered therefore that the weather conditions hampered the survey.

3. Results

3.1. Desk Study

3.1.1. Statutory Designated Sites

There is only one designated site within 2km of the development.

Hazelton Common Local Nature Reserve (LNR) is located approximately 1.3km northwest of the development. The LNR is known to hold a population of great crested newt *Triturus cristatus* with butterflies, dragonflies and rare spiders also known to be present. The woodland is known to support breeding kestrel *Falco tinnunculus*, sparrowhawk *Accipiter nisus* and buzzard *Buteo buteo*.

3.1.2. Sites of Importance for Nature Conservation (SINC)

The development is located within Blendworth Common SINC (both north and south parts). The SINC is qualified as an area of agriculturally unimproved grassland. The grassland is composed of a mixed indigenous species assemblage representing a semi-natural community. The grassland is likely to have developed without the major use of herbicides or inorganic fertilisers.

To the south boundary is Bells Copse SINC which is qualified as ancient woodland/ semi-natural or where remnants of ancient woodland remain. To the east boundary is Havent Thicket (southwest corner) SINC which is qualified for its remnants of ancient woodland and areas of heathland.

Further SINC designations are spread throughout the 2km search area. The SINC's form a connected to the all directions of the development.

3.1.3. Statutory Designated Sites for European Protected Species

Within 10km of the development there are a total of 13 SSSI and four SAC. Based on the information in the citations provided on the Natural England and JNCC websites, none of these designations are specifically for European Protected Species. It should be noted however that a number of these designations are for ancient and semi-natural woodland which offer supporting habitat for bat and breeding birds.

3.1.4. Protected Species and Species of Conservation Concern

In total 207 protected and/or notable species within 2km were returned in the LERC data search. Of particular interest given the habitats present on site are common lizard *Zootoca vivipara*, adder *Vipera berus*, grass snake *Natrix natrix*, slow worm *Anguis fragilis*, common toad *Bufo bufo*, bat species, badger *Meles meles*, butterfly and moth species, and skylark *Alauda arvensis*. In addition there were a number of plant species including marsh ragwort *Jacobaea aquatica*, tormentil *Potentilla erecta*, heather *Calluna vulgaris*, devil's bit-scabious *Succisa pratensis*, corn mint *Mentha arvensis*, star sedge *Carex echinata* and goldenrod *Solidago virgaurea* which are all known to be present in close proximity to the site.

3.2. Field Survey

The development sites current habitat diversity was limited to four habitat types including semi-improved neutral grassland (B2.2); marshy grassland (B5); bracken (C1.1); running water (G2) and broadleaved semi-natural woodland (A1.1.1). There was also a number of scattered trees and scrub. The Phase 1 Habitat Map is presented in Figure 1 and a full copy of the Target Notes (TN) are provided in Appendix A.

3.2.1. Semi-improved neutral grassland

The majority of the site is semi-improved neutral grassland but with scattered trees (Photo 1) in a parkland effect throughout. The grassland appeared to have recently been cut as the sward was short but also loose-knit in places. The majority of the site is also on a sloping hill which evidently drains the grassland to a stream. The field was dominated by rye grass *Lolium perenne*, clover sp. *Trifolium sp.*, with abundant ribwort plantain *Plantago lanceolata*, tormentil, betony *Stachys officinalis*, red barstia *Odontites vernus*, and black knapweed *Centaurea nigra*.

Photo 1: Semi-improved neutral grassland with scattered trees/parkland



3.2.2. Marshy grassland

Along the riparian zone of the stream is a short band (approx. 2-3m wide) of uncut grassland habitat. This is not dominated by one particular species but abundant in many including devil's-bit scabious, great burnet *Sanguisorba officinalis*, ribwort plantain, meadow fescue *Festuca pratensis*, mint sp. *Mentha sp.*, soft rush *Juncus effusus*, bush vetch *Vicia sepium*, tormentil, hawkbit sp. *Leontodon sp.*, bramble *Rubus fruticosus* agg, willow saplings and birch saplings (both occasional).

3.2.3. Species-poor hedge with trees

At TN1 a tree line forms along the fenced boundary. The first five-six trees are small-leaved lime *Tilia cordata* and are at least 5m tall. All appear in healthy condition with smooth bark. Underneath the trees goat willow *Salix caprea* and gorse *Ulex europaeus* form a scrub layer before a similar wildflower and grass community as described for the semi-improved neutral grassland and marshy grassland.

There is a clear and distinct break between the existing woodland to the south and the boundary line which the hedge with trees and post and wire fence make. This can also be considered a woodland ride.

3.2.4. Broadleaved semi-natural woodland

The majority of the site is grassland with a few patches of bracken and marshy grassland. In addition to these habitats there is woodland along the stream, to the east boundary (Photo 2) and a linear woodland strip (Photo 2) in the middle of the grassland.

The woodland is typically dominated by sessile oak *Quercus petraea* with hazel *Corylus avellana*, hawthorn *Crataegus monogyna*, goat willow, birch *Betula pendula* occasional canopy species. Understorey is not dominated by one particular species but has a mix of occasional gorse and bramble. The ground flora at the time of survey included soft rush, bracken *Pteridium aquilinum*, willowherb sp. *Epilobium* sp., mint sp., common couch *Elymus repens* and common bent *Agrostis capillaris*.

Photo 2: Broadleaved semi-natural woodland belt along east boundary of development



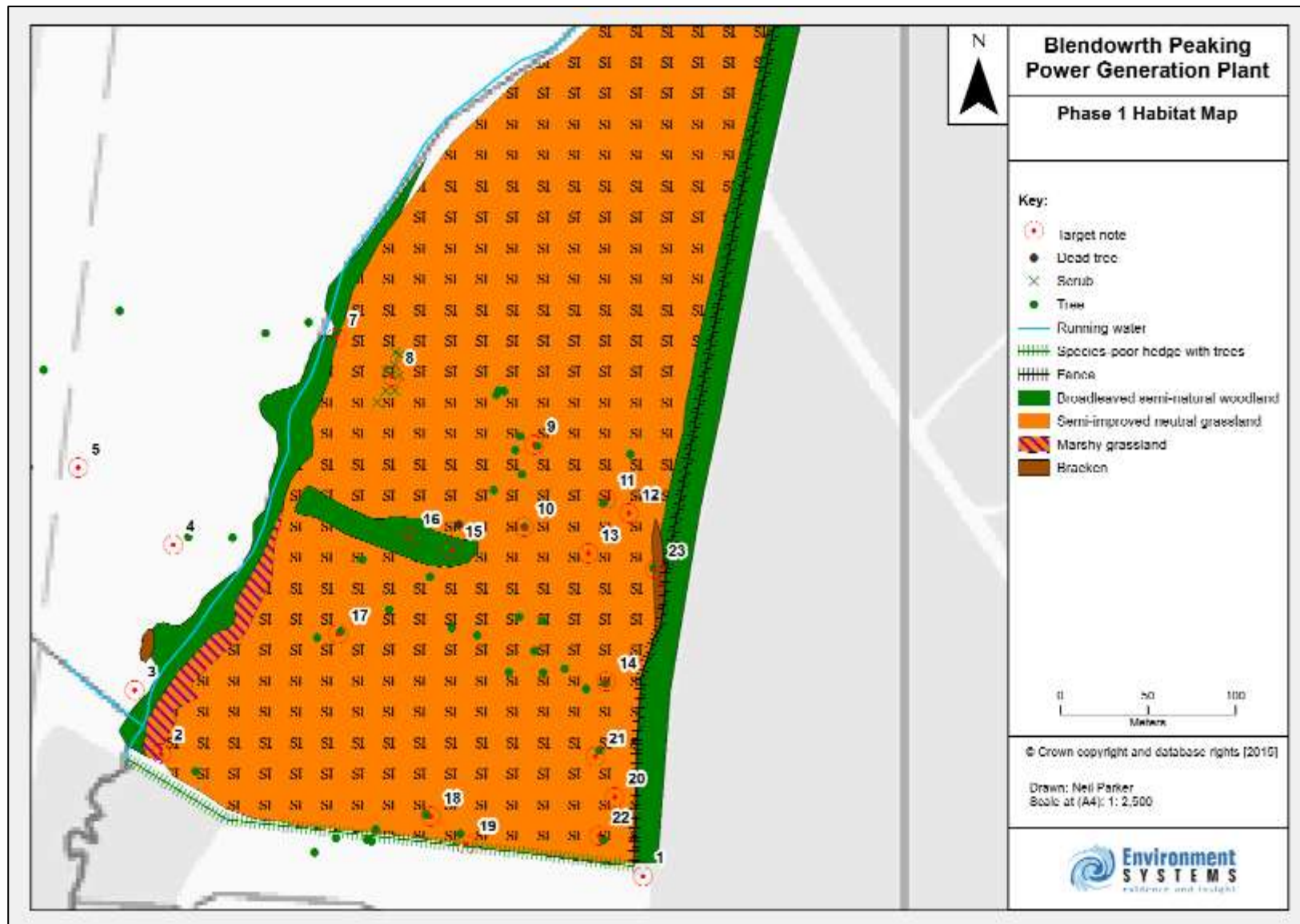


Figure 1: Phase 1 Habitat Map

3.2.5. Bracken

An area of dense bracken exists to the north of the operational site with the access track passing immediately adjacent to the west. Underneath the bracken frequent grass sp. such as meadow fescue, rye grass, common bent etc. were present.

3.2.6. Parkland and scattered trees

Throughout the immediate area there are many scattered trees and this can be described as parkland. Several deer were observed on the opposite hill sheltering under trees. The majority of trees were oak, upon close inspection the acorn on the trees were confirmed as attached directly to the branch rather than having a stalk.

Underneath many of the trees the vegetation is longer and typically bracken dominant with grass and forb species below that mimic the semi-natural neutral grassland and marshy grassland. Several trees were of note for being large, mature and healthy specimens. In addition a number were observed to have features such as rot holes and cracks that could provide for nesting birds and roosting bats. These are detailed in Table 1 with the remainder of trees with target notes (outside of the development area included in Appendix A).

Table 1: Scattered trees of significance to the development

Target Note	Details	Bat Potential
11	Oak tree with multiple access points	Moderate
12	Dead oak tree. Rot hole where branch used to be. Maybe more rot holes and features higher.	Moderate-High
14	Oak tree, ivy covered	Low
20	Oak tree with dead branch and gap at wound	Low
21	Oak tree with rot hole at end of dead branch	Low
22	Oak tree with split up majority of trunk. Possible lightning strike	High
23	Oak tree with split in lower stem. Very low to ground	Low

3.2.7. Incidental Observations

At TN18 pitting in the ground where the earth is exposed was noted. This was within a few metres of the post and wire fence and gap in the hedge at TN19 where the bottom strand of fence was raised/saggy and clear mammal track underneath. It is likely that given there is an ancient woodland adjacent and suitable habitat surrounding that this could be foraging badgers. The fence was inspected for guard hairs and tracks but none found. The immediate surrounds were searched for latrines and edge of woodland for any evidence of sett building, but also none found. Another mammal track (although this could be livestock or a well-trodden 'desire' line was noted at TN5 to the west.

At TN6, approximately 1km north of the development, a buzzard was observed soaring over the grassland.

At TN24 on the track leading through the woods to the east a common lizard was observed quickly crossing the path.

4. Discussion

4.1. Non-statutory Designated Sites

The development is located in the Blendworth Common SINC. The SINC is designated due to the botanical diversity of its grassland. It is also clear from the results of the field survey that although there is some slight 'semi-improvement' due to mowing this is actually retaining the species diversity and reducing encroachment from bracken, bramble and scrub.

4.1.1. Land-take

Given that the development is located on the grassland, albeit a very small area, it is clear that there will be direct land take. In the local/district area, and somewhat the region, neutral grassland can be considered relatively common and many of them are also of SINC status. However neutral grassland is also considered part of the national Lowland Meadow Biodiversity Action Plan (BAP) due to its decline of an estimated 97% up to 1984, with further decline believed to have occurred since (Maddock, 2008). The loss is likely to represent less than 1% of the overall available neutral grassland in the area and given that the majority of effects will be temporary due to construction as the operational use of the site is done remotely there is opportunity for mitigation measures.

4.1.2. Nitrogen deposition and acidification

An air quality assessment (Gair Consulting, 2016) has been completed for the development and should be referenced for the full details. The air quality assessment included predicted concentrations for the Blendworth Common SINC, Bell's Copse SINC and Havent Thicket (southwest corner) SINC.

The deposition rate of nitrogen was found not to exceed the critical level of $30 \mu\text{g m}^{-3}$ or the 24-hour mean critical level of $75 \mu\text{g m}^{-3}$ at any location. This is also referred to as less than 100% of the relevant critical load. The predicted effects therefore are unlikely to have a significant detrimental impact on the SINC or the other designated sites in close proximity (including statutory designated sites such as SSSIs and SACs).

4.2. Habitats

Two distinct habitat types will be affected by the development. These are the neutral grassland and parkland habitats. Both are UKBAP habitats, Lowland Meadow BAP and Lowland Wood Pasture and Parkland BAP. The primary purpose of the Blendworth Common SINC is for the neutral grassland representing the Lowland Meadow BAP and is discussed in Section 4.1. In addition there is potential to impact upon the field boundaries due to the locating of the development (Figure 2) tight to the fence lines.

4.2.1. Wood pasture and parkland BAP habitat

Wood pasture and parklands are described (JNCC, 2011) as areas which have open grown trees, some of which may be ancient, with some decay over land which is used for fodder or other products in the presence of grazing animals. In addition vegetation types often include pockets of scrub and trees have a lack of understorey due to grazing and high light levels with grassland or heathland communities present.

Given the results of the Phase 1 Habitat Survey it is clear that the scattered trees with little grass/heath characteristics under the trees provide the ecotones between the habitat types present. Neutral grassland is dominant throughout but when combined with the presence of the mature open grown and, some, decaying oak trees it is clear that the development site is parkland habitat.

There is no current reliable statistical source of extent of Wood Pasture and Parkland BAP (JNCC, 2011). It is therefore difficult to assess direct land take against rigid criteria and professional opinion has to be applied. There will be loss of neutral grassland as detailed in Section 4.1 and there is opportunity to mitigate for this by contributing to the management for the grassland both within the development site boundary and on the wider Blendworth Common SINC. Of the 29 mature oak trees surveyed in the immediate vicinity of the development, only two are proposed to be removed to facilitate development (Figure 2). Given the quite extensive local network of woodland and wood pasture throughout the area it is unlikely that this will lead to a significant effect as measures such as Root Protection Areas can be applied to the remaining trees and edge habitat to prevent soil compaction and asphyxiation of roots leading to harm to other trees.

The specific trees noted for removal are marked as TN21 on Figure 1. A single rot hole at the end of a low branch was considered the only feature present which is likely to support priority or protected fauna and the crown spread of the tree was limited compared to other trees nearby. It is therefore considered that the loss of this feature in its own right is also unlikely to result in a significant effect due to availability of other features within close proximity to the site. In addition the structure and function of the parkland habitat is unlikely to be affected by the loss of this feature.

4.2.2. Broadleaved semi-natural woodland and species-poor hedge with trees

Along the east and south boundaries of the development is a post and wire fence with woodland over. Although there will be no direct land take from these habitats there is potential for effects by constructing access tracks or even by just delivering heavy containers on HGVs which may compact the ground within the crown and root area of the trees. Without mitigation it is possible that roots could become asphyxiated by the compaction resulting in deprivation of oxygen and water to the small fibrous roots. This can lead to insufficient take up of water from the soil causing the tree to start decaying. By applying a Root Protection Area (as defined in BS5837:2012) it will be possible to prevent impacts on the wooded habitats. By applying this measure there will be a negligible impact to these habitats.

4.3. Reptiles and amphibians

Results of the desk study show there are a number of reptiles and amphibians known to use the habitats on site and immediately adjacent. A common lizard was observed during the field survey along a woodland path in the Havant Thicket (southwest corner) SINC.

As all reptiles species in the UK and amphibians including common toad are a priority BAP species it is possible that there could be a small effect on individual animals if not properly mitigated. Given the small footprint of this development it is unlikely that an extensive trapping survey would calculate an accurate population density due to the availability of the wider habitat. Therefore, the best course of action would be to move directly to the temporary removal of vegetation in the construction zone to make it unsuitable. On completion of the construction phase it is unlikely that there will be effects on reptiles or amphibians and it is possible that by managing the grassland around the development the habitat may become more suitable.



Figure 2: Landscape Mitigation Strategy (HDA, 2016)

4.4. Birds

During the field survey a single soaring buzzard was observed approximately 1km north of the development. However, it is anticipated given the extensive woodland and many mature trees in the parkland landscape that there is a range of breeding birds including priority and protected species.

The immediate area of the development did not hold any significant raptor nests and the majority of features on the trees (wounds, rot holes etc) were often too small for nesting passerines and are more suited to bats. Nevertheless it is advised that protected birds, particularly raptors, are likely to be present in the adjacent woodland. There are many studies that have assessed the influence of management activities on breeding birds in woodlands. The Ruddock & Whitfield (2007) review of disturbance distances included species such as goshawk *Accipiter gentilis*, merlin *Falco columbris* and red kite *Milvus milvus* which seem to be appropriate to the type of woodland present. The distances for each species varied but with a range between 300 and 500m a common feature for most species during the breeding season. It is therefore clear that any species that are sensitive to change during the breeding season are likely to be disturbed if construction is completed during the breeding season. It is recommended therefore that the construction period is timetabled between September and February to avoid the key mating and breeding periods. Once the construction period is complete the presence of the PPGP is unlikely to affect the ability of birds to nest, hunt and forage due to its small land take and it is highly likely that birds will adapt to the height PPGP quite quickly.

4.5. Badgers

Evidence of possible badger activity, snuffed holes and trackway, was found within close proximity (45m) of the development. On an initial search no evidence of sett building was found within approximately 50m radius of the development. It is unlikely therefore that there will be a significant impact due to the presence of the remotely operated PPGP on the local badger population. However there is always opportunity for badgers to be affected by the construction phase.

During the construction phase there is potential for entrapment in foundations and excavations, sheltering in stockpiled materials and potential traffic collisions. No night time working and lighting is planned. It is clear therefore that by applying general mitigation measures to provide escape routes from open excavations, fencing in material stockpiles and implementing a site speed limit will alleviate these risks to individual badgers.

4.6. Bats

A number of trees with features to support roosting bats are present within the development and in close proximity i.e. within 20-50m. Of particular concern are trees marked with TN11, TN12, TN21 and TN22. The results of the LERC data search confirmed that the development is located in an area important for Bechstein's bat *Myotis bechsteinii* which is a considered very rare in the UK. The bechstein's bat is also considered primarily a tree dwelling bat. In addition all species of bats in the UK are protected under the Habitat Regulations due to their various forms of rarity.

At TN21 the depth and shape of the rotten branch end was limited to just a few inches. This implies that the likelihood of a large roost is heavily limited and it is more likely that this would be a day roost used by individual non-breeding bats. Effects on local, regional and national populations are near certain to be low when using guidance from the Bat Mitigation

Guidelines (2004) and Wray et al (2010) to determine species rarity and conservation significance of roost status. Therefore, the recommendation is to provide new replacement roost facility as standard best practice. It should also be noted that where a tree is defined as of low potential to support bats then addition surveys are not completed, largely due to the often regular movement between tree roosts (i.e. on a day to day basis).

The trees are TN11, TN12 and TN22 are not proposed to be removed by development, however they are in close proximity to the development. Each of these trees was considered of moderate-high potential to support bats as there were either multiple rot holes or a distinct feature which could hold a number of bats. In these cases the most appropriate approach is to avoid the active season for bats (i.e. 1st May to 1st October). This will allow any roost in these trees to follow its annual lifespan as usual without disturbance. The disturbance considered of effect in this case is high noise and vibration levels as regular farm machinery is likely to provide a moderate amount of noise and disturbance. By therefore compacting the construction timetable to a short timeframe it is unlikely that bats will be affected by the works.

5. Conclusion and Recommendations

5.1. Conclusion

The PPGP development will result in a localised impact on Blendworth Common SINC as well as Lowland Meadow BAP and Wood Pasture and Parkland BAP habitats. The limited land take of 0.33ha is very small and unlikely to have a functional or structural effect on these habitats. These may be considered as minor-moderate adverse impacts. With supporting mitigation to help maintain and enhance the habitats this will be reduced to negligible-minor adverse.

Taking account of protected and priority species applying avoidance measures such as timing of works and exclusion from the construction area will greatly assist in managing effects on reptiles, amphibians and badgers. However, mitigation is required for clearing the existing vegetation from site including the soft felling of the trees to be removed, turf stripping and installing Root Protection Areas to prevent roost asphyxiation (although this will largely be avoided by routing of the access track). The residual effects can be described as minor impacts as the likelihood of harm to individuals and populations has been distinctly reduced

5.2. Recommendations

5.2.1. Habitats

Within the development footprint a management regime to maintain and enhance the neutral grassland will be implemented. This will only enhance the habitat that is already present, so it is important that a secondary location or perhaps an agreement to support the wider management of the Blendworth Common SINC will be implemented. Where turf is to be stripped a neutral grassland seed mix to match the existing botanical diversity (it might be more appropriate to collect seed from other parts of the SINC) will be used for replacing following construction.

There will be a loss of two trees, one with a feature that may support individual bats. Planting of individual saplings grown from acorns harvested from the remaining oak trees on site or similar will be undertaken. This will provide opportunity for extending the longevity of the wood pasture and parkland habitat and provide future opportunities for bat and bird species, among others, to maintain long term (i.e. greater than 30 years) populations.

Root Protection Areas in compliance with BS5837:2012 Trees in relation to design, demolition and construction will be applied to all woodland edge, hedge lines and individual trees. Heras fencing is to be installed along woodland and hedge lines with post and rail fencing installed for individual trees.

Shrub and tree vegetation of local provenance is to be planted along all facades of the development compound. It should be noted that this should be scattered scrub and grassland habitat to provide an ecotone to the grassland and heath habitats of Blendworth Common SINC into the ancient woodland.

5.2.2. Reptiles and amphibians

A phase vegetation degradation approach will be completed on the access track and construction site. This will include the cutting the vegetation in the demarcated construction zone to 10cm before leaving any reptiles to move away. At least 24 hours later a soil strip

under the supervision of an Ecological Clerk of Works (ECoW) will be completed. The PPGP development area itself will be temporarily fenced with purpose built reptile and amphibian fencing to prevent individuals returning to site. On completion of construction the temporary fencing will be removed.

5.2.3. Birds

The construction timetable is to be planned for the period 1st October to 28th February. This also accounts for the timing required for bats. There is to be no construction during the breeding season without further survey to determine nests of protected and priority species.

5.2.4. Bats

The construction timetable is to be planned for the period 1st October to 28th February.

No lighting will be installed as part of the development.

The removal of the tree at TN21 is to take place during the period 1st October to 28th February to coincide with the requirements for breeding birds and the active bat season. The tree will be surveyed by a suitably qualified and experienced ECoW using endoscope and torch etc. If a bat is found to be present then works will stop and Natural England contacted to agree licensing requirements. If possible at the time of felling, the rotted branch end will be removed and then re-strapped to a nearby tree to maintain the available feature. Where this is not possible a Schwegler 3FN or Miramare Bat Box will be installed on an adjacent tree. This location of an alternative roost will be advised by the ECoW.

5.2.5. Badgers & general measures for mammals

All excavations are to be covered at night and/or provided with a means of escape (such as a securely fixed scaffolding plank).

All materials such as pipework, soil stockpiles and acoustic sheeting is to be fenced with heras style fencing or standard hoarding to prevent access by badgers and other mammals. The application of reptile fencing around the base of the heras style fencing will prevent access underneath.

A site speed limit will be implemented and all construction staff informed during their toolbox talk of the need for safe and sensitive vehicular movement throughout site and access tracks.

6. References

CIEEM (2013) Guidelines for Preliminary Ecological Appraisal.

Maddock, A. (ed.) (2011) UK Biodiversity Action Plan; Priority Habitat Descriptions

Mitchel Jones, A. (2004) Bat mitigation guidelines. English Nature

JNCC (2010) Handbook for Phase 1 Habitat Survey. Peterborough

Wray, S., Wells, D., Long, E., and Mitchell-Jones, A. (2010) Valuing bats in ecological impact assessment. In Practice No. 70.. pg23-25

Stace, C. (2010) New flora of the British Isles. 3rd Edition

BSI (2012) BS5837:2012 Trees in relation to design, demolition and construction – Recommendations.

Ruddock, M. and Whitfield, P. (2007) A review of disturbance distances in selected bird species. Scottish Natural Heritage

Appendix A – Phase 1 Habitat Survey Target Notes

Target Note	Details
1	Line of trees with understorey scrub encroaching onto track and starting to form woodland. Canopy birch, goat willow, oak, with gorse, bramble, common heather, devil's-bit scabious, hawkweed sp., yorkshire fog, meadow fescue.
2	Corner of field uncut. Ribwort plantain, devil's-bit scabious, great burnet, willow saplings, meadow fescue, mint sp., soft rush, bush vetch, tormentil, birch saplings
3	Area of marshy grassland with same species as TN2 but with additional birds-foot trefoil, creeping thistle and star sedge
4	Oak tree with multiple rot holes and large wasp nest at base.
5	Mammal track
6	Buzzard observed soaring over meadows to north
7	Riparian zone damp but not very wet. Water mint, birds-foot trefoil, soft rush, common bent, dock sp., tufted vetch, fescue sp., betony, red barstia.
8	Area of slightly longer grassland sward with low growing bracken, bramble and willow scrub dominant.
9	Oak tree with some rot features.
10	Oak tree with gap around fused branch which is rotting
11	Oak tree with multiple access points
12	Dead oak tree. Rot hole where branch used to be. Maybe more rot holes and features higher.
13	Grassland with less diversity in sward at this location. Still has same appearance but with rye grass, bracken, and thistle sp. more abundant
14	Oak tree, ivy covered
15	Thin strip of broadleaved semi-natural woodland over a wet depression. Dry at time of survey but clearly becomes wet for good period of the year. Canopy: goat willow, oak, birch, beech and hawthorn. Understorey limited to gorse and bramble with ground flora including soft rush, mint sp., willowherb sp., couch grass and agrostis sp.
16	Beech tree with at least three rot holes
17	Oak tree with some small dying branches with holes at wounds
18	Disturbed pitting in ground. Looks similar to snuffle holes. Several
19	Mammal track through longer grass adjacent to fence line. Gap scratched/rubbed out under fence. No guard hairs.
20	Oak tree with dead branch and gap at wound
21	Oak tree with rot hole at end of dead branch
22	Oak tree with split up majority of trunk. Possible lightning strike
23	Oak tree with split in lower sem. Very low to ground
24	Common lizard observed passing over track.