Heronsbridge School Preliminary Ecological Appraisal and BREEAM Report

Bridgend County Borough Council

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Quality information

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Executive Summary

AECOM was instructed by Bridgend County Borough Council (BCBC; hereafter the 'client') to undertake a Preliminary Ecological Appraisal (PEA) and a Building Research Establishment Environmental Assessment Method (BREEAM) Land use and Ecology (LE) Assessment (Issues LE02, LE03, LE04 and LE05) of the land of the proposed Heronsbridge Special School in Bridgend, South Wales.

The proposed Heronsbridge Special School (hereafter referred to as the 'Proposed Development') is located on the southern outskirts of Bridgend, central grid reference SS 90179 78239. The Site is located within arable land with residential and industrial areas to the north and east.

The assessment is focussed towards specific BREEAM Land use and Ecology Issues LE02, LE03, LE04 and LE05. The assessment includes a desk study and an Extended Phase 1 Habitat Survey. The assessment has been undertaken using BREEAM 2018 Criteria for Wales (BREEAM, 2018a).

The Proposed Development is for a new build project to replace the existing Heronsbridge Special School which is currently located approximately 0.8 km northeast of the Proposed Development within Bridgend. The Proposed Development will use approximately 2.94 ha, out of the 4.20 ha allocated for it, and will accommodate 300 primary and secondary pupils. The Proposed Development will include the construction of a two-storey main school complex, an autism unit, a lagoon, a car park, a new road, two residential blocks, a football pitch and Multi-use Games Area (MUGA) to the north.

The proposed Site plan layout and landscaping plan on page 19 (option 7) of the 'Heronsbridge School. Bridgend, Feasibility Study' (Roberts Limbrick Architects, 2021) has been used for this assessment. This PEA and BREEAM report will be used to inform the final detailed design of the Proposed Development.

The Site was dominated by arable land, with bare ground, improved grassland, neutral semi-improved grassland, ruderal vegetation, scattered scrub, dense/continuous scrub, and piles of manure also present. The Site boundary was demarcated in part by fences, walls, line of trees and hedges. Habitats in the Zone of Influence (ZoI) included the same habitats and defunct species-poor hedge, but not ruderal vegetation, scattered scrub, and piles of manure. (Figure 1).

Within the Site boundary there was potential for bluebell, lesser squirrel-tail moss, common generalist and Protected and Priority invertebrates, breeding birds, foraging and commuting bats, badger, hedgehog, and polecat. Within the ZoI, there is potential for these species as well as common toad, roosting bats, and dormouse.

The proposed Site plan layout and landscaping plan shown on page 19 (option 7) of the 'Heronsbridge School. Bridgend, Feasibility Study' (Roberts Limbrick Architects, 2021) shows that the majority, if not all, of the existing habitat will be removed. Boundary features will be retained, though it is possible fences will be refurbished or replaced.

Without mitigation there is potential for retained features to be damaged during construction. Without mitigation there is potential for habitat loss, injury and killing and disturbance (including external lighting disturbance) to affect Protected and Priority Species using the Site and ZoI. Without mitigation, there is potential for pollution, including noise, and light spill onto adjacent habitats including a Site of Importance for Nature Conservation (SINC). Recommendations for mitigation have been provided to avoid and reduce impacts on retained habitats and Protected and Priority species using the Site.

The 'before development' BREEAM LE04 calculations are based on the Extended Phase 1 Habitat Survey. 'Post development' calculations are based on the proposed Site plan layout and landscaping plan as shown on page 19 (option 7) of the 'Heronsbridge School. Bridgend, Feasibility Study' (Roberts Limbrick Architects, 2021). This report can be used to guide Site design to achieve credits under BREEAM Issues LE03, LE04 and LE05.

Summary of Potential BREEAM Issues and Credits

Issue	Total Available Credits	Credits Likely Achievable Under Current Landscaping Proposals*
LE02	3	3
LE03	3	2
LE04	5	2
LE05	2	2
LE Total	13	9

* Achieving credits is dependent on recommendations being implemented by the client/contractor. Achieving these may be dependent on meeting the prerequisite Criteria.

Credits will be confirmed once a detailed Site plan including final landscape design has been issued.

As per BREEAM guidance, mandatory recommendations are requirements for compliance with UK and EU legislation (Appendix A). Additional recommendations outline further measures which could be included to maximise the ecological value of the Site. These are:

Mandatory 'Legal' Requirements	Additional Recommendations	
1) Further Surveys including Arable Field Margin; INNPS; Bat Preliminary Roost Appraisal, Emergence and Activity; Dormouse *Muscardinus avellanarius*; and Badger *Meles meles*; 2) Pollution and Surface Water Control; 3) External Lighting Sensitive to Wildlife; 4) Protection of Retained Habitat; and, 4) Mitigation for Protected Species including Pre-Works Checks, Watching Briefs and Directional Removal of Habitat.	1) Species-rich Grassland; 2) Green Roof/Living Wall; 3) Green Corridors; 4) Insect Walls/Boxes, Bee Banks or Log Piles;	5) Bird Boxes; 6) Bat Boxes; and, 5) Hedgehog *Erinaceus europaeus* Habitat

The Executive Summary is not a substitute for the full report. Refer to the full text for further detail.

1. Introduction

1.1 Introduction

AECOM was instructed by Bridgend County Borough Council (hereafter the 'client') to undertake a Preliminary Ecological Appraisal (PEA) and a Building Research Establishment Environmental Assessment Method (BREEAM) Land use and Ecology (LE) Assessment (Issues LE02, LE03, LE04 and LE05) of the land of the proposed Heronsbridge Special School in Bridgend, South Wales (hereafter referred to as the 'Site'). The central grid reference for the Site is SS 90179 78239 and the Site boundary is shown on Figure 1, Section 15.

The PEA was instructed to identify whether there are known or potential ecological features (nature conservation designations, Protected and notable habitats and species) that may constrain or influence the design and implementation of the Proposed Development. The approach applied when undertaking this PEA pays due regard to the *Guidelines for Preliminary Ecological Appraisal* published by the Chartered Institute of Ecology and Environmental Management (CIEEM) (CIEEM, 2017). The PEA addresses relevant wildlife legislation and planning policy as summarised in this report.

To deliver the PEA, a desk study, an Extended Phase 1 Habitat Survey and a Preliminary Roost Assessment (PRA) were undertaken by appropriately experienced ecologists, to identify ecological features within the Site and the wider potential Zone of Influence (ZoI), which extends 10 m from the Site boundary.

The BREEAM assessment is focussed towards specific BREEAM Land use and Ecology Credits LE02, LE03, LE04 and LE05. The assessment includes a desk study and an Extended Phase 1 Habitat Survey. The assessment has been undertaken using BREEAM 2018 criteria for Wales (BREEAM, 2018a).

1.2 Site Location and Description

The proposed Heronsbridge Special School (hereafter the 'Proposed Development') is located on the southern outskirts of Bridgend, central grid reference SS 90179 78239. The Site is located within arable land with residential and industrial areas to the north and east.

The Site is dominated by arable land, with bare ground, improved grassland, semi-improved neutral grassland, ruderal vegetation, manure piles, scattered scrub and dense/continuous scrub also present. The Site boundary is demarcated in part by fences, walls, line of trees and hedges. Habitats in the ZoI include the same habitats and defunct species-poor hedgerow, but not ruderal vegetation, scattered scrub, and manure piles. See Figure 1 for the distribution of the habitats.

1.3 Proposed Development

The Proposed Development is for a new build project to replace the existing Heronsbridge Special School which is currently located approximately 0.8 km northeast on the Proposed Development, within Bridgend. The Proposed Development will use approximately 2.94 ha, out of the 4.20 ha allocated for it, and will accommodate 300 primary and secondary pupils. Option 7 of the potential Site layouts has been used for this assessment (page 19, Roberts Limbrick Architects, 2021). Option 7 for the Proposed Development includes:

- Two-storey main school complex to the south of the Site containing shared facilities and secondary/sixth form provision, joined with a single-storey building containing primary/nursery provision to the west;
- Autism unit, separate but linked to the main school complex by a covered walkway to the northeast;
- Lagoon to act as rainwater attenuation in the west corner of the Site;
- Car park with 91 car spaces and eight minibus spaces to the east;
- New road parallel to the eastern boundary of the Site;
- Two residential blocks placed to the southeast, screened from car park and road through planting of hedges and trees; and,
- A football pitch and Multi-use Games Area (MUGA) to the north.

A lighting plan has not been finalised.

This PEA and BREEAM report will be used to inform the final detailed design of the Proposed Development.

1.4 Objectives

1.4.1 PEA

This report is based on the findings of an Extended Phase 1 Habitat Survey and ecological desk study. The objectives of the report are to:

- Identify any designated nature conservation sites on or within proximity to the Site.
- Identify any known records of Protected or Priority species within proximity to the Site.
- Identify and categorise the main habitats and features of ecological interest present within the Site.
- Appraise the potential for Protected or Priority Species of fauna and flora.
- Identify Potential Roosting Features (PRFs) suitable to support roosting bats, where required.
- Identify the requirement for further habitat and/or Protected species surveys.
- Make recommendations to avoid and mitigate ecological impacts as well as opportunities for biodiversity enhancements on and within proximity to the Site.
- To make recommendations relating to European Protected Species Mitigation Licence (EPSML) application (if required).
- Provide a map showing the Phase 1 habitats on the Site, the location of PRFs for bats and any additional features of ecological interest.

The purpose of this report is to inform the design of the Proposed Development and to support the submission of a planning application. The report identifies the scope of further work (where necessary) that would be required to support a planning application.

1.4.2 BREEAM

This report is based on the pre-development findings of the Extended Phase 1 Habitat Survey (Figure 1) and the post-development concept design as shown on page 19 of the 'Heronsbridge School. Bridgend, Feasibility Study' (Roberts Limbrick Architects, 2021) as shown in Figure 2.

The objectives of this report are to:

- Undertake a BREEAM Ecology Assessment, focused towards specific BREEAM LE Issues LE02, LE03, LE04 and LE05; and,
- Provide recommendations to guide the soft landscaping Site design to achieve credits under BREEAM Issues LE03, LE04 and LE05.

1.5 Wildlife Legislation and Planning Policy

1.5.1 Wildlife Legislation

There are several different acts of legislation and regulations which refer to the protection of wildlife. These are summarised in Appendix A. In particular, the legislation relating to possible Protected and Priority species on the Site is outlined. This is a summary of the legislation and is not to be regarded as a definitive legal opinion. When dealing with individual cases, the client is advised to consult the full texts of the relevant legislation and obtain further legal advice.

The following wildlife legislation potentially relevant to the Proposed Development includes:

- The Conservation of Habitats and Species Regulations 2017 (as amended);
- The Wildlife and Countryside Act (WCA) 1981 (as amended);
- Convention of Biological Diversity 1992;
- The Countryside and Rights of Way (CRoW) Act 2000; and,
- Environment (Wales) Act 2016.

The above legislation has been considered when planning and undertaking this PEA and BREEAM assessment, when identifying potential constraints to the Proposed Development, and when making recommendations for

further survey, design options and mitigation. Compliance with legislation may require the attainment of relevant Protected species licences prior to the implementation of the Proposed Development.

1.5.2 National Planning Policy

1.5.2.1 Planning Policy Wales (11th Ed. February 2021)

Planning Policy Wales (PPW) sets out the land use planning policies of Welsh Government (Welsh Government, 2021).

It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales.

Chapter 6. Distinctive and Natural Places outlines Welsh Government's objectives for the environmental and cultural components of placemaking. These components are complementary to those of the Active and Social and Productive and Enterprising themes and collectively the three themes come together to contribute towards the national sustainable placemaking outcomes.

Section 6.4 addresses Biodiversity and Ecological Networks. The policy includes the duties and requirements set out in Section 6 the Environment Wales Act (2016) and pays due regard to the State of Natural Resources Report (Natural Resources Wales (NRW), 2016) by taking all reasonable steps to maintain and enhance biodiversity. There is a focus on ecosystem services and the benefits of protecting and enhancing biodiversity.

The relevant measures in place to conserve landscape and biodiversity include:

- Statutory designations;
- Non-statutory designations;
- Maintaining and enhancing biodiversity;
- Ecosystem resilience and connectivity of ecological networks; and,

Protection and consideration of Protected and Priority species and habitats.

Sections relevant to this PEA and BREEAM assessment are detailed below.

Paragraph 6.4.5 states that Planning authorities must seek to maintain and enhance biodiversity in the exercise of their functions. This means development should not cause any significant loss of habitats or populations of species, locally or nationally and must provide a net benefit for biodiversity.

Paragraph 6.4.15 states that Statutorily Designated Sites must be protected from damage and deterioration, with their important features conserved and enhanced by appropriate management.

Paragraph 6.4.19 states that sites which have been formally proposed as Special Protection Areas (SPAs), Special Areas of Conservation (SACs) but which are not yet subject to legal protection under the Habitats Regulations, should be treated within the planning system in the same way as if they were legally designated. The same considerations should, as a matter of policy, be applied to proposed Ramsar sites.

Paragraph 6.4.20 states that Non-statutory Designated Sites should be given adequate protection. Before authorising development likely to damage a local wildlife designation, planning authorities should give notice of the proposed operation to the County Ecologist and third sector environmental organisations.

Paragraph 6.4.21 states that Planning Authorities must follow a stepwise approach to maintain and enhance biodiversity and build resilient ecological networks by ensuring that any adverse environmental effects are firstly avoided, then minimized, mitigated, and as a last resort compensated for; enhancement must be secured wherever possible.

Paragraph 6.4.22 states that the presence of a species protected under European or UK legislation, or under Section 7 of the Environment (Wales) Act 2016 is a material consideration when a planning authority is considering a development proposal which, if carried out, would be likely to result in disturbance or harm to the species or its habitat and to ensure that the range and population of the species is sustained.

Paragraph 6.4.25 states that Planning authorities should protect trees, hedges, groups of trees and areas of woodland where they have ecological value, contribute to the character or amenity of a particular locality, or perform a beneficial and identified green infrastructure function.

Paragraph 6.4.26 states that Ancient Woodland and semi-natural woodlands and individual ancient, veteran and heritage trees should be afforded protection from development which would result in their loss or deterioration unless there are significant and clearly defined public benefits.

Paragraph 6.4.27 states that the protection and planting of trees and hedges should be delivered, where appropriate, through locally specific strategies and policies, through imposing conditions when granting planning permission, and/or by making Tree Preservation Orders (TPOs).

1.5.2.2 TAN5 Nature Conservation and Planning (September 2009)

The PPW is supplemented by a series of TANs. TAN 5 provides guidance on how the land use planning system should contribute to protecting and enhancing biodiversity and geological conservation. It provides advice on areas including the key principles of positive planning for nature conservation, nature conservation in Local Development Plans and development management procedures. It also provides advice on development affecting designated sites and habitats, in addition to Protected or Priority habitats and species.

Key principles include that the town and country planning system in Wales should integrate nature conservation into all planning decisions; that the town and country planning system should look for development to provide a net benefit for biodiversity conservation with no significant loss of habitats or populations of species, locally or nationally and that they should ensure that the UK's international and national obligations for site, species and habitat protection are fully met in all planning decisions.

1.5.3 Local Planning Policy

Local Development Plans (LDPs) must be produced by every Local Planning Authority in Wales. Any development proposal will be tested against the policies within the LDP. The LDPs follow the planning guidance provide in PPW, including biodiversity and natural heritage policies. These include protecting designated Sites and other areas of importance for biodiversity conservation; safeguarding Protected species and Priority species, including those listed in local biodiversity action plans and retaining, creating, and enhancing features of importance for biodiversity conservation where appropriate.

Relevant local planning policies for Bridgend County Borough Council are detailed in the following document:

- Bridgend County Borough Council Local Development Plan 2006 – 2021. Adopted 18 September 2013. Once finalised and adopted, the Replacement LDP 2018-2033 will replace the existing LDP as the Statutory Development Plan for the County Borough.

Appendix A provides a summary of relevant local planning policies. For the precise wording of each specific policy please refer to the source document. This planning policy has been considered when assessing potential ecological constraints and opportunities identified by the desk study and field surveys; and, when assessing requirements for further survey, design options and ecological mitigation.

1.5.4 Quality Assurance

This survey and subsequent report were undertaken in line with AECOM's Integrated Management System (IMS). Our IMS places great emphasis on professionalism, technical excellence, quality, environmental and Health and Safety management. All staff members are committed to maintaining our certification to the international standards BS EN ISO 9001:2015 and ISO 14001:2015 and BS ISO 45001 2018. In addition, our IMS requires careful selection and monitoring of the performance of all sub consultants and contractors.

All AECOM Ecologists who worked on this project follow the CIEEM code of professional conduct (CIEEM, 2022) when undertaking ecological work.

2. Methodology

2.1 Preliminary Ecological Appraisal

2.1.1 Desk Study

The objectives of the desk study are to review the existing information available in the public domain concerning species and habitats to identify the following:

- Nationally designated sites, up to 2 km from the Site, and internationally designated sites, up to 5 km from the Site, using the Multi Agency Geographic Information for the Countryside (MAGIC) website (www.magic.gov.uk).
- Locally non statutory sites, up to 2 km from the Site using the South East Wales Biodiversity Records Centre (SEWBReC).
- Protected and Priority Species records up to 2 km from the Site, using the SEWBReC;
- Special Areas of Conservation (SAC) and Sites of Special Scientific Interest (SSSI) designated for bats within a 10 km radius of the Site in accordance with Bat Conservation Trust (BCT) (Collins, 2016) recommendations.
- Section 7 list of Species and Habitats of Principal Importance for Conservation in Wales (Environment (Wales) Act 2016).
- Ancient Semi-Natural Woodland (ASNW), Plantation on Ancient Woodland Site (PAWS), Restored Ancient Woodland Site (RAWS) or Ancient Woodland Site of Unknown category (AWSU) within or adjacent to the Site boundary using Forestry Commission Wales 2021 Ancient Woodland Inventory data set downloaded from the DataMapWales website (Welsh Government, 2023).
- Bridgend County Borough Council (BCBC) was contacted for local records or knowledge about the project area.
- Aerial photographs and Ordnance Survey (OS) maps were reviewed to identify features of ecological interest surrounding the Site including ponds within 500 m, nearby areas of ecological interest and features connecting these habitats (hedges, watercourses, railway lines).

2.1.2 Historical Reports

Furthermore, historical reports, where available were also reviewed. The Proposed Development is one of several developments proposed to the land south of Island Farm Close, Bridgend. One such development is the proposed Island Farm Tennis Centre. The location of the proposed Island Farm Tennis Centre is adjacent to the southeast of the Proposed Development. A review of the ecological survey reports for the Island Farm Tennis Centre was carried out to supplement the findings of this PEA and BREEAM report. The reports reviewed were:

- Ecological Assessment- Island Farm Tennis Court. October 2020 V2 (Ethos, 2020)
- Bat Survey Report (Appendum to Ecological Assessment) Island Farm Tennis Court. September 2021 (Ethos, 2021a)
- Protected Species Report (Appendum to Ecological Assessment) Island Farm Tennis Court. November 2021 (Ethos, 2021b)
- Protected Species Report (Appendum to Ecological Assessment) Island Farm Tennis Court. July 2022 (Ethos, 2022)
- Bat Survey Report: Hut 9, Island Farm, Bridgend. May 2023 (MPS Ecology, 2023)

2.1.3 Extended Phase 1 Habitat Survey

A Phase 1 Habitat Survey (Joint Nature Conservation Committee (JNCC), 2010) of the Site was undertaken by two experienced AECOM ecologists on 21 March 2023.

The survey involved a Site walkover and preliminary assessment of habitats, land use and ecological features. The main habitats present were recorded using standard Phase 1 Habitat Survey methodology as described in the Handbook for Phase 1 Habitat survey: A technique for Environmental Audit (JNCC, 2010). The plant species defining the habitat types on the Site were recorded. The abundance of the plant species was recorded using the DAFOR scale (D=Dominant; A=Abundant; F=Frequent; O=Occasional; R=Rare). This is a subjective system

open to different interpretations and quantifiable using basic principles, however it is a simple and effective way of collecting useful data. Evidence of any Invasive Non-Native Plant Species (INNPS) subject to legal controls was recorded if present.

The Phase 1 Habitat Survey was 'Extended' by including a desk study, as described above, and an assessment of the potential for the Site to support Protected or Priority species in order to identify potential ecological constraints and to guide recommendations for further surveys. The severity of potential impacts to habitats were classified as follows:

- None/No Impact - No impact anticipated to the habitat;
- Negligible Impact - Habitat type is not distinctive and can recover quickly or will be replaced by similar or better habitat in the long term. Habitat is sufficiently small, and potentially very isolated, with similar habitats of greater or equal value in the wider landscape. Therefore loss of habitat will have very minimal impact on the short term or/and long term availability of that habitat;
- Low – Habitat is larger in size to increase the impact from loss or damage. but is not very distinctive, can recover quickly and/or will be replaced by similar or better habitat in the long term. Similar habitats of greater or equal value are available in the wider landscape. Therefore, loss of or damage to habitat may impact the short term availability of the habitat, but not the long term availability of that habitat;
- Moderate - Habitat is fairly distinctiveness and/or covers a large area, making it harder to replace/recover in the long term. Habitat is less widely available in the wider landscape and possibly isolated to other similar habitats. Therefore, loss of or damage to the habitat has potential to impact the short term and long term availability of that habitat,
- High – Habitat is difficult to replace in terms of distinctiveness and time to recover/replace. Habitat type may not be available, or only be available in small areas, in the wider landscape. Therefore, loss of or damage to habitat will almost certainly/definitely impact the short term and long term availability of that habitat,

Potential impacts to species were classed as follows:

- None/No Impact - No impacts anticipated to the species;
- Negligible Impact – Proposed Development will have limited short term impacts only on a species, for example through removal of small area of habitat suitable for that species or temporary displacement for a short time period. The species will not be impacted long term as there is habitat with similar or greater suitability in the wider landscape. No deaths or injuries are anticipated as a result of the Proposed Development.
- Low – Proposed Development has potential to impact species in the short term, but not in the long term. This could be, for example short term removal of habitat that will quickly recover/be replaced, or from a species being present which may suffer impacts on a small-scale (few individuals impacted by impacts that are unlikely to result in death or injury). The species will not be impacted long term as there is habitat with similar or greater suitability in the wider landscape, and the population will be quick to recover.
- Moderate – Proposed Development has potential to impact species in the short term and the long term. Proposed Development will/has potential to kill or injure, directly or indirectly, moderate numbers of the local population, including through the loss of a large amount of habitat suitable for the species. Habitat of similar or greater quality is available in the wider landscape, but not extensively.
- High – Proposed Development has potential to impact the breeding of a species, and is of sufficient size and duration to impact long term foraging and/or commuting of a species. This will likely result in injuries and death of a large number of individuals in the local and potentially wider landscape, either directly or indirectly, and potentially cause a decrease in local population size. Habitat of similar or greater quality is possibly rare in the wider landscape. Proposed Development will almost certainly/definitely impact the local population, and perhaps populations further afield, in the short term and long term.

Habitat outside of but adjacent to the Site boundary was also recorded to aid the assessment of impacts of the Proposed Development on the ZoI (within 10 m of the Site boundary).

2.1.4 Bat Roost Survey

2.1.4.1 Preliminary Roost Assessment (PRA)

During the Phase 1 Habitat Survey, a PRA was undertaken of trees within the Site and the ZoI via an external appraisal from the ground using binoculars and a high-powered torch where necessary. Trees were classified into

categories dependent on the presence of features suitable to support roosting bats. Table 2.1 provides descriptions of the bat roost suitability categories for trees. No structures were found on Site, so no assessment of structures was undertaken.

Table 2.1 Trees – Bat Roost Suitability Categories

Roost Suitability	Descriptions for Trees
Known or Confirmed	Confirmed signs of bat presence/ occupation (droppings, oily staining around entry points, insect remains, odour, scratching) and actual bat presence.
High	A 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 potential for longer periods of time due to their size, shelter, protection, conditions (e.g. temperature, humidity, height above ground level, light levels or levels of disturbance) and surrounding habitat.
Moderate	A 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.
Low	Tree of sufficient size and age to contain suitable roost features but with none seen from the ground or features seen have only very limited roosting suitability.
Negligible	Trees with no suitability to support bats.

Source: Category descriptions drawn from Collins (2016) and Mitchell-Jones (2004) to be applied using professional judgement

2.1.4.2 Commuting and Foraging Habitat Suitability

Habitats within the Site and the ZoI were classified into categories dependent on the presence of features suitable to support commuting and foraging bats. Table 2.2 provides descriptions for habitat suitability categories for commuting and foraging bats.

Table 2.2 Commuting and Foraging Habitat Suitability Categories

Commuting and Foraging Suitability	Descriptions
High	Continuous high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.
Moderate	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
Low	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or un-vegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small number of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Negligible	Negligible habitat features on site likely to be used by commuting or foraging bats.

Source: Category descriptions drawn from Collins (2016) to be applied using professional judgement

2.2 BREEAM Assessment

The Technical Guidance from Land Use and Ecology - BREEAM New Construction 2018 (Wales) (BREEAM, 2018a) was used for this report.

Assessment Route 2 (for sites where complex ecological systems are likely to be present) has been used for Issues LE02 to LE05 for this Site.

There are two options within Assessment Route 2:

1. *Full methodology* – This must be used where the pre-development habitats are above the set size threshold of 0.05 hectares in total or include habitats that are assigned as high distinctiveness.
2. *Simplified methodology* – This can be used where the pre-development habitats are below the set size threshold and no habitats present that are assigned a high level of distinctiveness. Route 2 may be used where desired.

The 'full methodology' has been used for Issues LE02 – LE05 for this assessment because the pre-development habitats within the Site totals 4.20 ha.

The assessment of Issues LE02 – LE05 has been informed by the results of the Extended Phase 1 Habitat survey. During the Site visit target notes (TN) were made of features of ecological value or with the potential to support legally Protected Species. Recommendations for Site protection and mitigation were based on these observations. In addition, conditions on Site were used to provide recommendations for enhancing site ecology.

2.2.1 BREEAM Issues LE02 – LE05 Land Use and Ecology Criteria.

The Land Use and Ecology Issues are summarised in Table 2.3 below and more detail is provided in Appendix A.

Table 2.3 Summary of Land Use and Ecology BREEAM Issues

BREEAM Issue	Description of Criteria	Number of Credits Available (Route 2)	Comments
LE02: Identifying and Understanding the Risks and Opportunities for the Project	Survey and evaluation	1	Total available credits: 3 The second and third credits under LE02 are only achievable once the previous credits have been achieved.
	Determining the ecological outcomes for the site	1	
	Exemplary criteria	1	
LE03*: Managing Negative Impacts on Ecology	Planning, liaison and implementation	1	Total available credits: 3 Credits within LE03 can only be achieved if LE02 has been achieved. The second and third credits under LE03 are only achievable once the first credit has been achieved.
	Managing negative impacts of the project (limitation or compensation)	Up to 2	
LE04*: Change and Enhancement of Ecological Value	Liaison, implementation and data	1	Total available credits: 5 Credits within LE04 can only be achieved if Criteria 2 and 3 under LE03 have been achieved.
	Change and enhancement of ecology	Up to 3	
	Exemplary criteria	1	
LE05*: Long Term Ecology Management and Maintenance	Planning, liaison, data, monitoring and review management and maintenance	1	Total available credits: 2 Credits within LE05 can only be achieved if Criteria 2 and 3 under LE03 have been achieved, and at least one credit under LE 04 for 'Change and Enhancement of Ecology' has been awarded.
	Landscape and ecology management plan (or similar) development	1	

Credits available cannot be achieved for Issues LE03 – to LE05, unless credits from the previous criteria have been achieved.

2.3 Limitations

2.3.1 Desk Study and Extended Phase 1 Habitat Survey

Biological records can be received from a wide variety of sources and may or may not be comprehensive and accurate: Information obtained from a desk study is dependent upon people and organisations having made and submitted records for the area of interest. As such, a lack of records for a particular habitats or species does not necessarily mean that the habitats or species do not occur in the study area. Likewise, the presence of records for particular habitats and species does not automatically mean that these still occur within the area of interest or are relevant in the context of the Proposed Development. However, if assessed in conjunction with an Extended Phase 1 Habitat Survey, biological records can contribute to a robust ecological assessment of a site.

Where any conclusions and recommendations contained in this report are based upon information provided by others, it has been assumed that all relevant information provided by those parties is accurate. Any such information obtained by AECOM has not been independently verified by AECOM, unless otherwise stated in the report. AECOM accepts no liability for any inaccurate conclusions, assumptions or actions taken resulting from any inaccurate information supplied to AECOM from others.

The methodology adopted and the sources of information used by AECOM in providing its services are outlined in this report. The work described in this report was conducted in March and April 2023 and is based on the conditions encountered and the information available during this time. The scope of this report and the services are accordingly factually limited by these circumstances. AECOM disclaim any undertaking or obligation to advise any person of any change in any matter affecting the report, which may come or be brought to AECOM's attention after the date of the report.

The optimal time to undertake a Phase 1 Habitat Survey is between April and September. As the survey was conducted in March, it is possible species may have been missed. Due to the size and complexity of habitats on Site, there is potential that INNPS and evidence of Protected and Priority species were missed which may influence the mitigation and recommendations measures required at the Site. Therefore, it is recommended that an arable field survey and INNPS survey is undertaken to overcome this limitation.

Habitats to the north of the Site, within the ZoI, were not accessible as they were private residences. From aerial images, the habitats are modern houses, hardstanding, and gardens, which are habitats unlikely to support Protected and Priority species. Therefore, the inability to survey these areas is not deemed a significant limitation to this report.

The dense/continuous scrub to the west of the Site within the ZoI could not be examined fully for, for example badger setts, due to the density of the vegetation. This is deemed a significant limitation due to the scale of the Proposed Development which will likely impact the ZoI due to increased lighting and pollution. This limitation will be overcome by undertaking a more thorough survey for badger.

Because of a fence, the western face of an oak *Quercus sp.* tree in the ZoI could not be assessed for bat roosting features. Therefore, there is potential that roosting bat features were missed. Given the size of the Proposed Development, there is a risk of disturbance from noise, vibration, and lighting to any potential roosts within the tree. Therefore, it is considered a significant limitation that the tree could not be assessed completely for bat roosting features. This limitation will be overcome by finishing the assessment during the badger survey, where permission to access the land on the opposite side of the fence will be required.

As the Proposed Development is still in its early design stage, the potential impacts, mitigation, and enhancement recommendations may be subject to change upon review of the final design.

2.3.2 BREEAM Land Use and Ecology Issues LE02 – LE05

The BREEAM Land Use and Ecology assessment outlined in this report is based on the information provided by the Client available at the time of writing. Any changes to the Site design could significantly affect the conclusions of this assessment.

Achievement of the credits will require a commitment by the client and/or contractors to implement the recommendations outlined in this report, and post-construction verification that implementation of the recommendations has been completed by a Suitably Qualified Ecologist (SQE).

Calculations for 'after development' have been provisionally calculated using the proposed Site layout and landscaping plan as shown by option 7 on page 19 of the 'Heronsbridge School. Bridgend, Feasibility Study'

(Roberts Limbrick Architects, 2021). As some habitats have not been specified yet, they have been assumed by the report writer in order to undertake the preliminary Biodiversity Unit calculations (Section 11.3). These assumptions are noted in the tables in Section 11. A further calculation will need to be undertaken once a detailed Proposed Development and landscaping plans for the Site have been produced. This report can be used to guide Site design and to help achieve credits under LE04.

3. Baseline Conditions

3.1 Desk Study Results

The designated habitats, sites, and features within proximity to the Proposed Development are listed in Table 3.1.

Table 3.1 Desk Study Results

Designation / Feature	Description
Nationally Designated Sites Within 2 km	There is one nationally designated site within 2 km of the Site boundary. Old Castle Down SSSI Distance and Direction: Approximately 1.7 km south, connected by fields and woodland, bisected by occasional minor roads. Description: Designated for its range of limestone heath and calcareous grassland vegetation composed of plant species that reflect its western location. On the eastern side is an oak, hazel *Corylus avellana*, ash *Fraxinus excelsior* scrub woodland. Invertebrate interest in the SSSI is also known to be considerable, though this is not a primary reason for designation. (Countryside Council for Wales (CCW), 1983).
Internationally Designated Sites Within 5 km	There is one internationally designated site within 5 km of the Site boundary. Kenfig Special Area of Conservation (SAC) Distance and Direction: Approximately 2.8 km southwest, connected by fields and woodland, intersected by the River Ogmore. Description: Designated for its dune grassland, Atlantic salt meadows, dunes with creeping willow, calcium-rich nutrient-poor lakes, lochs and pools, humid dune slacks, fen orchid *Lipari loeselii*, and petalwort *Petalophyllum ralfsii* (JNCC, 2004).
Locally Designated Sites Within 2 km	There is one Local Nature Reserve (LNR) and 18 Sites of Importance for Nature Conservation (SINC) within 2 km of the Site. Island Farm POW Camp SINC Distance and Direction: Adjacent to the west of the Site. Description: 14.03 ha broadleaved semi-natural woodland with resident and breeding hazel dormouse *Muscardinus avellanarius* and lesser horseshoe bat *Rhinolophus hipposideros*, which are European Protected species. Likely to provide foraging opportunities for birds of prey including barn owl *Tyto alba*. (BCBC, 2011). Heronston House Meadow SINC Distance and Direction: Approximately 0.5 km east, separated by industrial and residential areas of south Bridgend. Description: 2.78 ha with two separate meadow areas with overgrown hedgerows, wet areas and drainage ditches to the north field. Likely to provide foraging/ commuting habitat along field margins and over wet areas for bats and potential habitat within hedgerows for hazel dormice. (BCBC, 2011). Ewenny Moor SINC Distance and Direction: Approximately 0.6 km southeast, connected by fields intersected by a railway line and minor roads. Description: 53.61 ha of river floodplain grazing marsh with improved grassland, marshy grassland, drainage ditches, riparian woodland and scrub. INNPS are present in abundance along the riverbank with Himalayan balsam *Impatiens glandulifera* being particularly prevalent. Potential habitat for otter *Lutra lutra*, bats, breeding and wintering birds, specialist invertebrate species, hazel dormice, water vole *Arvicola amphibius*, and great crested newt *Triturus cristatus*. (BCBC, 2011). Craig y Parcau LNR Distance and Direction: Approximately 0.95 km north, separated by south Bridgend (urban area) and A48. Description: An oak and ash woodland on a steep slope of the Ogmore River. Home to populations of protected species including kingfisher *Alcedo atthis*, Daubenton's bat *Myotis daubentonii* and otter. (BCBC, 2023). Craig-y-Parcau SINC Distance and Direction: Approximately 0.95 km north, separated by south Bridgend (urban area) and A48. Description: Semi-natural woodland with an assemblage of indicator species. Southeast of Site is fringed by Japanese knotweed *Reynoutria fallopica.* Himalayan balsam, montbretia *Crocosmia x crocosmiiflora* and Japanese knotweed occur in several parts of the SINC. Potential habitat for foraging and roosting bats, hazel dormice, resting otters and woodland birds. (BCBC, 2011).

Designation / Feature	Description

Chapel Hill SINC

Distance and Direction: Approximately 1.15 km west, separated by River Ogmore.

Description: 7.3 ha broadleaved semi-natural woodland plantation with occasional veteran trees set in parkland. Likely to provide good foraging and potential roosting opportunities for bats and riparian habitat for otter. Areas of Himalayan balsam invading woodland along north-east SINC boundary with New Inn Road. (BCBC, 2011).

River Wood SINC

Distance and Direction: Approximately 1.2 km east, connected by fields intersected by a railway line and minor roads, though on opposite bank of the River Ewenny.

Description: 1.75 ha semi-natural woodland with an assemblage of ancient woodland indicator species. INNPS, including Himalayan balsam, are present. An active badger sett is present towards the southwest end of the woodland. Likely to provide habitat for otters, foraging bats and hazel dormice. (BCBC, 2011).

Coed-y-Tyle SINC

Distance and Direction: Approximately 1.3 km northwest, separated by the River Ogmore, though New Inn Road runs through the SINC and travels over the River to the Site.

Description: 3.95 ha semi-natural woodland with an assemblage of ancient woodland indicator species and some wet woodland areas. Badger activity observed; sett not identified but likely to be within or close to the woodland. Potential habitat for foraging bats and hazel dormice. (BCBC, 2011).

Alun Valley SINC

Distance and Direction: Approximately 1.3 km south, connected by a railway line and arable land.

Description: Extensive area of ancient semi-natural broadleaved woodland and wood pasture in river valley with areas of scrub and bracken. This SINC is an important stronghold for many Section 7 species including the high brown fritillary *Argynnis adippe*. The SINC contains the following UK Biodiversity Action Plan (BAP) habitats: wood pasture and parkland, lowland mixed deciduous woodland, and rivers. (Vale of Glamorgan (VoG), 2013).

Coed-y-Nawern SINC

Distance and Direction: Approximately 1.4 km west, separated by the River Ogmore.

Description: 2.45 ha broadleaved semi-natural woodland plantation including with occasional veteran trees. Potential for foraging bats. (BCBC, 2011).

Verville SINC

Distance and Direction: Approximately 1.4 km southwest, connected by arable land.

Description: 3.32 ha broadleaved semi-natural woodland along the river Ogmore banks at the north of the SINC. Likely to provide good foraging opportunities for bats and riparian habitat offering shelter to otter. (BCBC, 2011).

Coed Pwlldu SINC

Distance and Direction: Approximately 1.5 km southwest, connected by woodland and arable land.

Description: 7.68 ha semi-natural woodland with an assemblage of ancient woodland indicator species including bluebell *Hyacinthoides non-scripta*. Likely to provide good foraging opportunities for bats and riparian habitat with shelter for otter. Areas of extensive Japanese knotweed along adjacent River Ogmore and some more localised Himalayan balsam. (BCBC, 2011).

Long Wood SINC

Distance and Direction: Approximately 1.5 km east, connected by fields intersected by a railway line, minor roads and the River Ewenny.

Description: Semi-natural broadleaved woodland which forms a biodiversity-rich complex with adjacent sites. (VoG, 2013).

King's Wood SINC

Distance and Direction: Approximately 1.5 km south, connected by arable land which is intersected by two minor roads and the River Ewenny.

Description: Ancient semi-natural broadleaved woodland. (VoG, 2013).

South of Long Wood SINC

Distance and Direction: Approximately 1.65 km east, connected by fields intersected by a railway line, minor roads and the River Ewenny.

Description: Meadow supporting species-rich rush pasture which forms a biodiversity-rich complex with adjacent sites. (VoG, 2013).

North of Corntown SINC

Distance and Direction: Approximately 1.7 km east, connected by fields and scattered woodland blocks

Designation / Feature	Description
	intersected by a railway line and minor roads. Description: Series of wet meadows supporting species-rich rush pasture and some scrub which forms a biodiversity-rich complex with adjacent sites. (VoG, 2013). Cottage Wood SINC Distance and Direction: Approximately 1.9 km east, connected by fields intersected by a railway line, minor roads and the River Ewenny. Description: Semi-natural broadleaved woodland. (VoG, 2013). Cwm Alun SINC Distance and Direction: Approximately 1.9 km south, connected by woodland, a railway line and arable land. Description: Extensive area of ancient semi-natural broadleaved woodland and wood pasture in river valley with areas of scrub and bracken. This SINC is an important stronghold for many Section 7 species including the high brown fritillary. The SINC contains the following UK BAP habitats: wood pasture and parkland, lowland mixed deciduous woodland, and rivers. (VoG, 2013). Ogmore Down SINC Distance and Direction: Approximately 2 km southeast connected by arable land. Description: Extensive area of common land which supports a mosaic of calcareous grassland, relict limestone heath, scrub, gorse, bracken, exposed rock and scree and many Section 7 species including yellowhammer *Emberiza citrinella*, common linnet *Carduelis cannabina subsp. Autochthona/cannabina*, skylark *Alauda arvensis subsp. Arvensis/scotica* and brown hare *Lepus europaeus*. This SINC forms part of the larger Ogmore Down habitat complex. (VoG, 2013).
Statutory Sites Within 10 km Designated for Bats	There are no SSSIs or SACs designated for bats within 10 km of the Site boundary.
Protected and Priority Species Records from the Last 10 Years Within 2 km	INNPS (none within 0.4 km): Cotoneaster species *Cotoneaster sp*.; Himalayan balsam; Japanese knotweed; Japanese rose *Rosa rugosa;* montbretia; three-cornered garlic *Allium triquetum*. Plants (none within 1 km): Bluebell; lesser squirrel-tail moss *Habrodon perpusillus* Invertebrates (none within 0.4 km): Bees: Brown-banded carder bee *Bombus humilis*; moss carder bee *Bombus muscorum*. Beetles: Black oil-beetle *Meloe proscarabaeus* Butterflies: Dingy skipper *Erynnis tages;* grayling *Hipparchia semele*; high brown fritillary; small blue *Cupido minimus*: small heath *Coenonympha pamphilus*; small pearl-bordered fritillary *Boloria selene;* white-letter hairstreak *Satyrium w-album.* Moths: August thorn *Ennomos* quercinaria; autumnal rustic *Eugnorisma glareosa*; beaded chestnut *Agrocola lychnidis*; blood-vein *Timandra comae*; broom moth *Ceramica pisi*; buff ermine *Spilosoma lutea*; chalk carpet *Scotopteryx bipunctaria*; cinnabar *Tyria jacobaeae*; dark-barred twin-spot carpet *Xanthorhoe ferrugata*; dot moth *Melanchra persicariae*; double dart *Graphiphora augur*; dusky thorn *Ennomos fuscantaria;* garden tiger *Arctia caja*; ghost moth *Hepialus humuli*; grass rivulet *Perizoma albulata*; green-brindled crescent *Allophyes oxyacanthae*; grey dagger *Acronicta psi*; knot grass *Acronicta rumicis*; lackey *Malacosoma Neustria;* mottle rustic *Caradrina morpheus*; powdered quaker *Othosia gracilis*; pretty chalk carpet *Melanthia procellata*; rosy rustic *Hydraecia micacea*; sallow *Cirrhia icteritia*; shaded broad-bar *Scotopteryx chenopodiata*; small phoenix *Ecliptopera silaceta;* small square-spot *Diarsia rubi*; white ermine *Spilosoma lubricipeda.* Amphibians: Common toad *Bufo bufo* approximately 1.3 km south, connected by arable fields. Record was of two adults on road. Reptiles: Grass snake *Natrix helveticus* approximately 1.1 km southwest, separated by arable land intersected by two minor roads. One adult female, dead on road; common lizard *Zootoca vivipara* approximately 1.9 km south, separated by River Ewenny and B4524. Field observation; adder *Vipera berus* south approximately 2 km, separated by River Ewenny and B4524. One individual. Birds: Schedule 1: kingfisher (approximately 0.35 km northeast); red kite *Milvus milvus* (approximately 0.7 km northeast); common scoter *Melanitta nigra* (approximately 0.8 km east); hobby *Falco Subbuteo* (approximately 0.8 km east); barn owl *Tyto alba* (approximately 1 km south); crossbill *Loxia curvirostra* (approximately 1 km north); goshawk *Accipiter gentilis* (approximately 1 km southwest); peregrine falcon *Falco peregrinus* (approximately 1 km northwest); redwing *Turdus iliacus* (approximately 1.1 km north); ruff *Philomachus pugnax* (approximately 1.1 km southwest); wood sandpiper *Tringa glareola* (approximately 1.1 km southwest); Mediterranean gull *Larus melanocephalus* (approximately 1.2 km southwest); osprey *Pandion haliaetus* (approximately 1.3 km east); brambling *Fringilla montifringilla* (approximately 1.5 km southeast); fieldfare *Turdus pilaris* (approximately 1.5 km east); firecrest *Regulus ignicapillus* (approximately 1.5 km east); garganey *Anas querquedula* (approximately 1.6 km southwest); greenshank *Tringa nebularia* (approximately 1.6 km southwest); wryneck *Jynx torquilla* (approximately 1.6 km northeast); hen harrier *Circus cyaneus* (approximately 1.8 km southeast); purple sandpiper *Calidris maritima* (approximately 1.8 km southwest); chough *Pyrrhocorax pyrrhocorax* (approximately 1.8 km southwest); little ringed plover *Charadrius dubius* (approximately 1.8 km southwest); merlin *Falco columbarius* (approximately 1.9 km east); whimbrel *Numenius phaeopus* (approximately 1.9 km southwest). Non-Schedule 1 Birds (none within 0.3 km): Bar-tailed godwit *Limosa lapponica*; black-headed gull *Chroicocephalus ridibundus*; bullfinch *Pyrrhula pyrrhula*; cuckoo *Cuculus canorus*; curlew *Numenius arquata*;

Designation / Feature	Description
	dunnock *Prunella modularis*; golden plover *Pluvialis apricaria*; goldeneye *Bucephala clangula*; grasshopper warbler *Locustella naevia*; hawfinch *Coccothraustes coccothraustes*; herring gull *Larus argentatus*; house sparrow *Passer domesticus*; kestrel *Falco tinnuculus*; lapwing *Vanellus vanellus*; lesser redpoll *Acanthis cabaret*; lesser spotted woodpecker *Dryobates minor*; linnet; pintail *Anas acuta*; red-throated diver *Gavia stellata*; ring ouzel *Turdus torquatus*; skylark; song thrush *Turdus philomelos*; spotted flycatcher *Muscicapa striata*; starling *Sturnus vulgaris*; tree pipit *Anthus trivialis*; white-fronted goose *Anser* albifrons; yellowhammer. Bats: Roosts: pipistrelle *Pipistrellus sp.* maternity roost approximately 1.4 km southeast at a semi-rural large house on Corntown Road. Pups found within. Connected by minor roads and arable fields. Foraging: common pipistrelle approximately 0.55 km north, connected by residential area; lesser horseshoe bat, soprano pipistrelle *Pipistrellus Pygmaeus* and whiskered bat *Myotis mystacinus* approximately 0.9 km northwest, connected by roads and railway line; Myotis species *Myotis sp.* approximately 1.1 km west, connected by B4265 and arable land; noctule *Nyctalus noctule* approximately 1.4 km northwest, connected by residential areas. Other Mammals: Hedgehog: Adjacent to north of Site, individual in back garden adjacent to Site. Badger: Approximately 0.3 km north, connected by woodland and arable land. Roadkill. Otter: Approximately 0.95 km north at Craig-y-Parcau LNR, separated by south Bridgend (urban area) and A48. Spraint. Polecat *Mustela putorius*: Approximately 1.35 km southwest, connected by arable land. Live individual.
Priority Habitats and Species – Section 7 List	The full list of Section 7 Habitats and Species of Principal Importance in Wales has been reviewed. Priority habitats present on the Site and Priority species with potential to be on the Site are listed in Table 3.2 and Table 3.3 respectively.
Surrounding Land Use	The Site is broadly located to the southern boundary of the town of Bridgend. The Site is bounded by arable crop fields to the south, broadleaved woodland to the west and urban developments to the north and east. The Ewenny River is located approximately 0.8 km west of the Site, whilst the River Ogmore is located approximately 1 km west. The wider landscape to the east, south and west comprises arable fields with mature hedgerow boundaries and pockets of broadleaved woodland. The wider landscape to the north comprises of urban developments (both residential and commercial), with localised areas of amenity/modified grassland.
Ancient Woodland	There is no Ancient Woodland within or adjacent to the Site boundary.
Trees with a TPO	There are no TPOs within or adjacent to the Site boundary.
Waterbodies Within 500 m	There are four waterbodies (three ponds and one ditch) within 500 m of the Site boundary: Waterbody 1: Pond present along the southern boundary of the Site, and approximately 45 m^2. The pond is immediately surrounded by grassland, though sits within an arable crop field. Inspection of aerial imagery suggests that this pond is likely ephemeral. Waterbody 2: Pond approximately 0.1 km southwest of the Site, and approximately 210 m^2. The pond is immediately surrounded by broadleaved trees, though sits within an arable crop field. The pond is connected to the Site via a hedgerow network and arable cropland. Waterbody 3: Pond approximately 0.25 km southwest of the Site, and approximately 30 m^2. The pond sits in a corner of an arable crop field, bounded by hedgerows. Inspection of aerial imagery suggests that the pond is likely ephemeral. The pond is separated from the Site by a farm track road, but there is connectivity to the Site within the hedgerows. Waterbody 4: Ditch, approximately 0.2 km south of the Site, and approximately 150 m in length. The ditch is immediately surrounded by a pocket of managed grassland, within an arable crop field. Inspection of aerial imagery suggests this ditch has been fabricated to re-direct run-off from the arable fields and as such is likely ephemeral.
County Ecologist	The County Ecologist was contacted who did not provide explicit comments about this Site, rather advised that “TPOs, SINCs etc are free of charge on the BCBC website via the View It banner: https://maps.bridgend.gov.uk/webmap9/Map.aspx?MapName=OSWMTSBasemap”

3.2 Historical Reports

The relevant supplemental findings from the review of the historical reports are summarised below:

3.2.1 Bats

From previous surveys undertaken in 2009 for a larger sports village development, roosting lesser horseshoe bats and brown long-eared bats have been recorded in a structure (exact location unknown) in the Craig-Y-Parcau SINC, approximately 0.95 km north of the Proposed Development (Ethos, 2020)

Ethos conducted two activity surveys, deploying two passive bat detectors each time, on 6th May and 8th June 2020 (Ethos, 2020). Their transect route covered approximately 0.1 km of the Proposed Development's Site boundary to the south (Figure 3 in Ethos, 2020).

During the activity transects, Ethos (2020) recorded low numbers of common and soprano pipistrelle, and a single noctule and lesser horseshoe bat. The passive bat detectors recorded a total of 1,826 bat passes of nine species of bat; common pipistrelle, soprano pipistrelle, nathusius' pipistrelle *Pipistrellus nathusii*, noctule bat, leisler's bat *Nyctalus leisleri*, serotine *Eptesicus serotinus*, whiskered/brandt's bat *Myotis mystacinus/brandtii*, natterer's bat *Myotis nattereri*. and lesser horseshoe. Most calls were common and soprano pipistrelles (Ethos, 2020).

Ethos also conducted an emergence survey on 6th May 2020 of a structure to the east of the proposed Tennis Court Development (central NGR SS 90352 78040); the exact location of the structure was not recorded in the report, but no bats emerged (Ethos, 2020).

Ethos conducted two further activity transects on 30th June and 16th August 2021 with two passive bat detectors deployed on these dates as well as 14th September 2021 (Ethos, 2021a). The transect route was extended to include the eastern boundary of the Proposed Development due to the proposed access road (Figure 6, Ethos, 2021a). The activity transects identified low numbers of common pipistrelle, and a single noctule and lesser horseshoe bat (Ethos, 2021a). The passive bat detectors recorded a total of 5,932 bat passes of ten species of bats; species include those listed in Ethos (2020) and brown long-eared bat *Plecotus auritus* (Ethos, 2021a). Most calls were common and soprano pipistrelles (Ethos, 2021a).

MPS Ecology (2023) conducted a desk study and bat monitoring between March 2022 and March 2023 at Hut 9 (NGR: SS 90028 78480, approximately 180 m northwest from the Site) in the Island Farm POW Camp SINC. From their desk study, MPS Ecology (2023) discovered that Hut 9 was a summer roost for brown long eared bats between 2009 and 2011, and a summer roost for lesser horseshoes between 2009 and 2012; 2010 to 2012 were also years when Hut 9 was a maternity roost for lesser horseshoes. Furthermore, the Vale of Glamorgan and Bridgend bat group conducted emergence surveys on 6th June and19th June 2022 and recorded, respectively, 130 and 117 lesser horseshoes emerging (MPS Ecology, 2023). The BCT also shared data confirming that Hut 9 was in use as a summer roost between 2017 and 2019, and a hibernation roost between 2016 and 2018 (MPS Ecology, 2023).

The bat monitoring involved monthly internal inspection surveys with a torch by a NRW bat-licenced ecologist (MPS Ecology, 2023). The internal inspection surveys identified lesser horseshoes on each visit, with a maximum count of 149 in August 2022, and one instance of a brown long-eared bat in April 2022 (MPS Ecology, 2023). MPS Ecology (2023) concluded that 'the site is an important summer and hibernation roost for lesser horseshoes', which are assumed to be breeding at numbers 'significant at the county scale and possibly regionally'.

3.2.2 Dormice

Ethos (2020) noted seven LERC records of dormouse dating from 2000 to 2015 and determined the woodland belt adjacent to the southeast corner of the Proposed Development (central NGR: SS 90333 78120) has potential to support dormouse. Therefore, Ethos (2020) assumed dormouse are present in the woodland. At the time of reporting, there was an existing European Protected Species application for dormouse at the proposed Tennis Court Development (NRW license: 724874 (S085050)) (Ethos, 2021b, 2022).

3.2.3 INNPS

Himalayan balsam was identified in the hedgerow west of Pen Y Bont Court (central NGR SS 90352 78040), approximately 0.1 km west from the Site boundary (Ethos, 2020).

3.3 Extended Phase 1 Survey

3.3.1 Habitats

The habitats present within the Site boundary and their descriptions are shown in Table 3.2. A plan of the Site showing the location and distribution of these habitats is shown in Figure 1.

Habitats within the ZoI included arable land, bare ground, improved grassland, neutral semi-improved grassland, line of trees, dense/continuous scrub, and defunct species-poor hedgerow. Features of note within the ZoI included a large rubble pile (approximately 10 by 3 m) under scrub located south of the Site (Figure 1 and Appendix C: TN 1), shallow, ephemeral pools on bare ground located south of the Site (Figure 1 and Appendix C: TN 2), a small rubble pile (Figure 1 and Appendix C: TN 3; approximately 1 by 1.5 m) and approximately twenty hybrids of common and Spanish bluebell *Hyacinthoides* × *massartiana* (Figure 1 and Appendix C: TN 4) on neutral grassland located north of the Site, and common bluebell between the line of trees located west of the Site (Figure 1 and Appendix C: TN 5).

Table 3.2 Phase 1 Habitats and Descriptions

Habitat	Description	Section 7 Habitat
Line of Trees	Demarcating the western boundary of the Site was a line of trees dominated by coppiced hazel with occasional hawthorn *Crataegus monogyna* and elder *Sambucus nigra* (Appendix B: Photograph 1). The field layer below the lines of trees consisted of frequent lesser celandine *Ficaria verna*, primrose *Primula vulagris* common bluebell, and occasional hart's-tongue fern *Asplenium scolopendrium*, soft-shield fern *Polystichum setiferum* and lords and ladies *Arum maculatum*. Two rabbit *Oryctolagus cuniculus* warren entrances were present under the line of trees (Figure 1 and Appendix C: TN 6; Appendix B: Photograph 2). The entrances did not look recently used with spider webs and leaves within the entrances.	No
Dense/ Continuous Scrub	A small strip of bramble *Rubus fruticosus* dominated scrub south of the cinder block wall in the northwest of the Site (Appendix B: Photograph 3).	No
Scattered Scrub	Two small areas of buddleia *Buddleja davidii* dominated scattered scrub lie to the west of the Site, separated from each other by a farm track (Appendix B: Photograph 4). An approximately 1 x 1 m rubble hibernacula sat covered by, and within, the scattered scrub (Appendix C: TN 7).	No
Neutral Semi-improved Grassland	A thin strip of neutral semi-improved grassland, approximately 2 m wide, bordered part of the northern boundary of the Site (Appendix B: Photograph 5). The grassland consists of abundant cock's foot *Dactylis glomerata* and false oat grass *Arrhenatherum elatius*.	No
Improved Grassland	Improved grassland lay to the northwest of the Site, adjacent to the line of trees (Appendix B: Photograph 6) and to the northeast corner of the Site. Species within the northwest improved grassland included abundant creeping bent *Agrostis stolinifera* and perennial rye *Lolium perenne*; frequent Yorkshire fog *Holcus lanatus*, common nettle *Urtica dioica*, broadleaved dock *Rumex obtusifolius*, creeping thistle *Cirsium arvense*, and creeping buttercup *Ranunculus repens*; occasional white clover *Trifolium repens*; and rare soft rush *Juncus effusus*. Growing over the northwest margins of the northwest improved grassland (varying between 2 x 4 m wide from the line of trees) was ruderal vegetation (for species see 'Tall Ruderal' below; Appendix B: Photograph 6; Appendix C: TN 8). To the north of the northwest improved grassland was an open brash pile constructed from cut hazel, approximately 3 x 1 m large (Appendix B: Photograph 7; Appendix C: TN 9). Species in the northeast improved grassland included abundant creeping bent, perennial rye, red fescue *Festuca rubra*; frequent Yorkshire fog; and occasional creeping buttercup, common ragwort *Jacobaea vulgaris* and lesser burdock *Arctium minus*. Within the northeast corner grassland is a brash pile approximately 3 x 2 m (Appendix B: Photograph 8; Appendix C: TN 10).	No
Tall Ruderal	Two areas of tall ruderal vegetation were present in the centre and the northwest of the Site (Appendix B: Photograph 9). The area in the centre was growing on rocky substrate and was adjacent to bare rocky ground to the north, arable land to the east and south, and the farm track to the west. The area in the northwest of the Site was growing on a bunded area of soil adjacent to the farm track and partially enclosed an area of scattered scrub. Species within both areas, ranging from occasional to frequent, included common nettle, creeping thistle, bristly oxtongue *Helminthotheca echioides*, stinking iris *Iris fortidissima*, broadleaved dock, common ragwort, curled dock *Rumex crispus*, and rosebay willowherb *Chamaenerion angustifolium*.	No
Cultivated/ Disturbed land – Arable	Arable land dominated the Site and consisted of planted rows of Italian rye *Lolium multiflorum* (Appendix B: Photograph 10). In the northern area of the arable land, adjacent to the farm track were two rabbit warren entrances (Appendix B: Photograph 11; Appendix C: TN 11).	No
Intact Hedge – Species Poor	There are three intact hedges (species poor) on the boundaries of the Site. The first hedge demarcates part of the northwest of the Site from a private garden and is dominated by hazel and beech *Fagus sylvatica* (Appendix B: Photograph 7).	Yes

Habitat	Description	Section 7 Habitat
	The second hedge demarcates part of the north of the Site from a private garden and contains frequent western red cedar *Thuja plicata*, beech and a *Lonicera* species (Appendix B: Photograph 12). The third hedge demarcates part of the northeast of the Site, in conjunction with a wooden fence, from a private garden and is dominated by firethorn *Pyracantha* sp. (Appendix B: Photograph 13).	
Fence	Fences border the majority of all but the southern boundary of the Site. On the western boundary of the Site is a 1 m high fence constructed of crossed wires and wooden posts with barbed wire across the top. There were 15 by 15 cm gaps between the wire (Appendix B: Photograph 14). The fence is collapsed in places from fallen wooden posts, rocks and logs, and lack of maintenance. On the northern boundary, to the east, was an approximately 2 m high wooden fence that was flush with the ground and was well sealed between its wooden boards (Appendix B: Photograph 5). On the eastern boundary was an approximately 1.2 m high wooden fence constructed of two horizontal rows of wooden boards supported by wooden posts (Appendix B: Photograph 15). Gaps of at least 30 cm were present between the boards and from the ground. Some parts of the fence were covered with wire, leaving 15 by 15 cm gaps.	No
Wall	Two lines of cinder block walls were present bordering the northwest corner of the Site and demarcating the Site from private gardens (Appendix B: Photograph 16). The walls were flush with the ground and were approximately 1.7 m high. One of the walls had a dense patch of ivy *Hedera helix* growing on top of it and contained a wooden door, which is approximately 1 m wide and has a 7 cm gap underneath it (Appendix B: Photograph 16).	No
Bare Ground	A farm track, approximately 3 m wide, ran from the southwest corner of the Site to its centre and then split to run to the southeast corner and towards the northeast corner (Appendix B: Photograph 12). The track had a base of gravel rich concrete, the majority of which was coated with a layer of thick mud. The section of the track running to the northeast corner had scattered perennial ephemeral vegetation over it (Appendix B: Photograph 17; Appendix C: TN 12). Perennial ephemeral species, all occasional to frequent, included self-heal *Prunella vulgaris*, common field speedwell *Veronica persica*, wild carrot *Daucus carota*, curled dock, spear thistle *Cirsium vulgare*, a willow herb species *Epilobium* sp., a forget-me-not species *Myosotis* sp, a knapweed species *Centaurea* sp, perennial rye grass, dwarf thistle *Cirsium acaule*, common ragwort, Yorkshire fog, common nettle, broadleaved dock, cleavers *Galium aparine*, smooth sowthistle *Sonchus oleraceus*, bristly ox tongue, and a burdock species *Arctium* sp.. Moss was abundant. At the end of the northeast section of track was a pile of large tree stumps, logs and smaller branches approximately 8 x 3 m (Appendix B: Photograph 18; Appendix C: TN 13). The pile was covered with scattered vegetation and moss. North of the centre of the track was bare soil with perennial ephemeral vegetation scattered across it (Appendix B: Photograph 19). Perennial ephemeral species included occasional willowherb species, common ragwort, curled dock, common chickweed *Stellaria media*, wild carrot, annual meadow grass *Poa annua* and spear thistle. Vehicle tracks were present. Towards the south of this area, the ground substrate became rockier (Appendix C: TN 14). To the southeast of the Site, was an area of bare soil which was adjacent to the arable land.	No
Other Habitat - Manure Pile	Adjacent to the northwest of the farm track, and piled within the western improved grassland, were two large piles of manure (Appendix B: Photograph 20). The first was approximately 20 by 3 m large, and the second was approximately 10 by 60 m large. The height of the piles ranged from 1 to 2 m.	No

3.4 Protected and Priority Species

Details of Protected and Priority Species recorded or with potential to be present on the Site, with justification, are listed in Table 3.3. A plan of the Site showing the location and distribution of features with potential for Protected or Priority Species is shown in Figure 1. Target Notes of Protected Species evidence, or features that have potential to support Protected Species are shown in Figure 1 and Appendix C.

Table 3.3 Protected and Priority Species Potential

Species/ Species Group	Associated Habitat	Description	Section 7 Species on/ likely to be on Site
Plants	On Site: Line of Trees In ZoI: Line of Trees	SEWBReC returned records of two species of Priority and Protected plants within 2 km of the Site. The line of trees and hedgerows provide suitable habitat for bluebell. The mature trees, within the line of trees on Site and within the ZoI, provide suitable habitat for lesser squirrel-tail moss. Bluebells were recorded on Site and within the ZoI under the	Yes – lesser squirrel-tail moss

Species/ Species Group	Associated Habitat	Description	Section 7 Species on/ likely to be on Site
		line of trees. No additional Protected or Priority plants were identified on Site or within the ZoI during the field survey. Lesser squirrel-tail moss has the potential to be present on the mature trees in the ZoI.	
Invertebrates	On Site: Line of Trees; Dense/Continuous Scrub; Scattered Scrub; Improved Grassland; Neutral Semi-Improved Grassland; Hedgerows In ZoI: Line of Trees; Dense/Continuous Scrub; Improved Grassland; Neutral Semi-Improved Grassland; Hedgerows	SEWBReC returned 38 species of Protected or Priority invertebrates within 2 km of the Site. There is suitable habitat on Site to support august thorn, dingy skipper, beaded chestnut, blood-vein, cinnabar, dot moth, double dart, garden tiger, ghost moth, green-brindled crescent, grey dagger, lackey, mottled rustic; shaded broad-bar; and white ermine. Due to their small size and lack of connectivity to similar habitats, the suitable habitats are considered sub-optimal to support these Protected and Priority species. There is no suitable habitat on Site or within the ZoI for: brown-banded carder bee; moss carder bee; black oil-beetle; grayling; high brown fritillary; small blue; small heath; small pearl-bordered fritillary; white-letter hairstreak; autumnal rustic; broom moth; buff ermine; chalk carpet; dark-barred twin-spot carpet; grass rivulet; powdered quaker; pretty chalk carpet; rosy rustic; sallow; small phoenix; and, small square-spot. No evidence of Protected or Priority invertebrates was identified on Site during the field survey. There is sub-optimal habitat to support Protected and Priority invertebrates and therefore they are likely absent from the Site. The habitats within the Site provide suitable habitat for common invertebrate species only.	Yes – see list within description
Amphibians	On Site: N/A ZoI: Neutral Semi-Improved Grassland	SEWBReC returned records of common toad within 2 km of the Site, connected by arable land. There is no suitable habitat for amphibians on Site. The grassland is too short to provide suitable resting and foraging habitat for amphibians and there are no water bodies on Site. In the ZoI, to the south of the Site, there was tussocky neutral semi-improved grassland in the vicinity of shallow, ephemeral pools on bare ground (Figure 1 and Appendix C: TN 2) which provides suitable habitat for foraging, resting, and breeding common toad. Three ephemeral ponds lie within 0.25 km of the Site, one of which is just outside the ZoI and is surrounded by dense/continuous scrub. These ponds are likely suitable for breeding common toad. The pools and ponds have direct connectivity to SEWBReC records via arable land increasing the likelihood of their use by breeding common toad. No evidence of Protected or Priority amphibians was identified on Site during the field survey. Common toads are considered likely absent from the Site, but may be present in the ZoI.	No
Reptiles	On Site: Improved Grassland; Brash Pile; Rubble Piles ZoI: Neutral Semi-Improved Grassland	SEWBReC returned records of grass snake, common lizard, and adder within 2 km of the Site. There is no connectivity between these records and the Site. Tussocky areas of improved grassland, a rubble pile (Figure 1 and Appendix C: TN 7), brash piles (Figure 1 and Appendix C: TNs 9 and 10; Appendix B: Photographs 7 and 8), and a log pile (Figure 1 and Appendix C: TN 13; Appendix B: Photograph 18) may provide suitable habitats for common lizard on the Site. Neutral semi-improved grassland and rubble piles (Figure 1 and Appendix C: TNs 1 and 3) in the ZoI may provide suitable habitat for common lizard. Bare ground provides suitable areas for basking. However, due to lack of connectivity to SEWBReC records and to other suitable habitat, it is considered unlikely common lizards are on Site or in the ZoI. The Site and ZoI are unlikely to support adder, which prefer open woodlands and heathlands, or grass snake, which requires waterbodies surrounded by taller herbaceous vegetation. No evidence of reptiles was identified on Site during the field survey. Reptiles are unlikely to be on Site and in the ZoI due to the limited and isolated suitable habitat.	No
Breeding	On Site: Line of Trees;	SEWBReC returned records of 29 bird species, 25 of which	Yes

Species/ Species Group	Associated Habitat	Description	Section 7 Species on/ likely to be on Site
Birds	Scattered Scrub; Dense/Continuous Scrub; Hedgerows. ZoI: Line of Trees; Dense/Continuous Scrub; Hedgerows.	are Schedule 1, within 2 km of the Site. There was suitable habitat within the Site and ZoI for common passerine species of breeding bird. Suitable habitats included the line of trees and hedgerows. The habitats on the Site were unlikely to support breeding Schedule 1 bird species. The Island Farm POW Camp SINC has potential to support barn owl, a Schedule 1 bird species. There is potential for common passerines to breed within the Site and the ZoI, and barn owl in the ZoI	
Roosting Bats	On Site: N/A In ZoI: Line of Trees	See Section 3.5 for bat roost assessment.	No
Foraging and Commuting Bats	On Site: Line of Trees; Scattered Scrub; Dense/Continuous Scrub; Improved Grassland; Neutral Semi-Improved Grassland; Tall Ruderal; Hedgerows; Walls; Fences; Piles of Manure. ZoI: Line of Trees; Dense/Continuous Scrub; Improved Grassland; Neutral Semi-Improved Grassland; Hedgerows; Fences	See Section 3.6 for bat foraging and commuting habitat assessment.	Yes
Dormouse	On Site: Line of Trees ZoI: Line of Trees; Dense/Continuous Scrub	SEWBReC returned no records of dormouse within approximately 2 km of the Site within the last ten years. However, the Island Farm POW Camp SINC is adjacent to the Site and designated for its resident and breeding populations of dormouse (BCBC, 2011). The last dormouse records recorded at this SINC are from 2003 when gnawed hazelnuts were found. The line of trees on Site, and line of trees and dense/continuous scrub within the ZoI to the west, are sub-optimal for dormouse. Although elder, hawthorn, oak and ash are present within both lines of trees, they are dominated by coppiced hazel to reduce the variety of year-round food resources. Furthermore, there is no mid-height understorey to aid commuting. The dense/continuous scrub in the ZoI is bramble dominated with rare elder, hawthorn, and sycamore, so also lacks year-round food availability. However due to the proximity to the Island Farm POW Camp SINC (BCBC, 2011), it is likely dormouse may use this sub-optimal habitat. The hedgerows on Site are species-poor and are poorly connected to the surrounding landscape, so are unsuitable for dormouse. Two dormouse tubes were discovered on the western boundary of the Site within the line of trees and dense/continuous scrub. No evidence of dormouse was identified on the Site during the field survey, including within the two tubes. There is potential for dormouse to be present within the ZoI and the Site.	No
Badger	On Site: Line of Trees; Scattered Scrub; Dense/Continuous Scrub; Neutral Semi-Improved Grassland; Improved Grassland; Arable Land ZoI: Line of Trees; Dense/Continuous Scrub; Neutral Semi-improved Grassland; Improved Grassland; Arable Land	SEWBReC returned records of badger within approximately 0.3 km of the Site with connectivity to the Site via woodland and arable land. Past badger activity, including sett building, has been noted in the River Wood and Coed-y-Tyle SINCs, which are within 1.3 km of the Site and have connectivity via roads and a railway. The line of trees, scattered scrub, dense/ continuous scrub, neutral semi-improved grassland, improved grassland, and arable land within the Site and ZoI likely provide suitable habitat for foraging and commuting badger. The fencing on the western and eastern boundary of the Site, and the lack of fencing on the southern boundary, will allow badger to access the Site. Woodland is present in the wider landscape, including the adjacent Island Farm POW Camp	Yes

Species/ Species Group	Associated Habitat	Description	Section 7 Species on/ likely to be on Site
		SINC, which may have potential for sett building. There is no potential for sett building within the Site, or within the ZoI, with the possible exception of the dense/continuous scrub in the ZoI on the western boundary where the ground couldn't be seen to check for setts. No evidence of badger was identified on the Site or within the ZoI during the field survey. There is potential for foraging and commuting badger to be present within the Site and the ZoI. Badger setts are considered absent from the Site and ZoI.	
Otter/ Water Vole	On Site: N/A ZoI: N/A	SEWBReC returned records of otter, but not, water vole within 2 km. There is no suitable habitat within the Site and the ZoI suitable to support otter or water vole. The Site has connectivity to the River Ogmore via woodland and arable land, which has potential to have habitat suitable to support otter or water vole. However, the River Ogmore is approximately 0.9 km from Site, so it is unlikely otter and water vole would commute from suitable habitat alongside the River Ogmore to unsuitable habitat on Site and within the ZoI. No evidence of otter or water vole was identified on the Site during the field survey. Otter and water vole are considered absent from the Site and the ZoI.	No
Hedgehog	On Site: Scattered Scrub; Dense/Continuous Scrub; Improved Grassland; Neutral Semi-Improved Grassland; Tall Ruderal; Hedgerows. ZoI: Dense/Continuous Scrub; Improved Grassland; Neutral Semi-Improved Grassland; Hedgerows	SEWBReC returned records of hedgehog adjacent to the north of the Site, connected by gaps in walls, fences and a wooden back door. Scrub, grassland, and tall ruderal vegetation within the Site and ZoI provide suitable habitat for foraging and commuting. The hedgerows within the Site and ZoI provide suitable habitat for shelter and commuting. The gaps under and through the fences around part of the Site are sufficient for hedgehogs to commute under. Within the Site, brash piles (Figure 1 and Appendix C: TNs 9 and 10; Appendix B: Photographs 7 and 8), and a log pile (Figure 1 and Appendix C: TN 13; Appendix B: Photograph 18) are also present to provide sheltering opportunities for hedgehog. No evidence of hedgehogs was identified on the Site during the field survey. There is potential for hedgehogs to be present within the Site and ZoI.	Yes
Polecat	On Site: Line of Trees; Improved Grassland; Neutral Semi-Improved Grassland Arable Land ZoI: Line of Trees; Improved Grassland; Neutral Semi-Improved Grassland Arable Land	SEWBReC returned records of polecats within 2 km of the Site with connectivity to the Site via arable land. The line of trees, improved grassland, neutral semi-improved grassland, and arable land within the Site and ZoI likely provide suitable habitat for foraging and commuting polecat. The fencing on the western and eastern boundary of the Site, and the lack of fencing on the southern boundary, will allow polecat to access the Site. Woodland is present in the wider landscape, including the adjacent Island Farm POW Camp SINC, which may encourage polecats to use the Site. No evidence of polecat was identified on the Site or within the ZoI during the field survey. However, rabbit warrens (Figure 1 and Appendix C: TNs 6 and 11; Appendix B: Photographs 2 and 9) and a live rabbit were seen on Site, which is the preferred prey of polecats. Polecats also commonly den within rabbit warrens. There is potential for foraging, commuting, and breeding polecat to be present within the Site and the ZoI.	Yes

3.5 Invasive Non-Native Species Subject to Legal Controls

No INNPS listed on Schedule 9 of the WCA were identified on the Site.

Although not on Schedule 9, approximately 20 hybrids of Spanish bluebell and common bluebell were identified in the ZoI (Figure 1 and Appendix C: TN 4) and buddleia was identified in the scattered scrub on Site. Spanish bluebell and its hybrids, pose a risk of outcompeting the native common bluebell. Buddleia can rapidly colonise habitats to reduce biodiversity, and, in severe cases, damage infrastructure.

3.6 Bat Roost Assessment

3.6.1 Preliminary Roost Assessment

There were trees with suitability to support roosting bats within the ZoI, but not on Site. The locations of the trees assessed as having features suitable to support roosting bats are shown as Bat Trees on Figure 1. A description of these trees is provided in Section 3.5.2. Features assessed for, and found to have, suitability to support roosting bats are listed in Table 3.4.

3.6.2 Description of Bat Trees

Bat Tree 1 - Ash tree within the line of trees in the ZoI west of the Site (Figure 1: Bat Tree 1; Appendix B: Photograph 21). The ash tree is approximately 17 m high with a Diameter at Breast Height (DBH) of approximately 2 m. The tree is likely a veteran tree, and possibly ancient. The ash tree is multi-stemmed with significant basal spread, indicating possible history as a coppiced tree. Rot features are present on all stems which provide suitable habitat for saprophytic species, including invertebrates.

Bat Tree 2 - Oak tree within the line of trees within the ZoI west of the Site (Figure 1: Bat Tree 2; Appendix B: Photographs 22 and 23). The oak tree is approximately 15 m high with a DBH of approximately 1 m. Because of a fence, the western face of the tree could not be assessed for bat roosting features (see Limitations).

Bat Tree 3 - Pedunculate oak *Quercus robur* within the line of trees in the ZoI west of the Site (Figure 1: Bat Tree 3; Appendix B: Photograph 24). The pedunculate oak is approximately 15 m high with DBH of approximately 1.1 m.

Table 3.4 Tree Features Assessed as Having Suitability to Support Roosting Bats

Bat Tree No.	Description	Bat Roost Suitability Category
1	Six woodpecker holes across limbs, all greater than 5 cm in width. Although not clear how deep each hole goes, given the size of the tree and evidence of rot externally, it is likely the holes extend further into the tree to form potential roost areas for bats.	Moderate
2	Woodpecker hole on east face approximately 8 m off the ground and 7 cm wide. Depth of the hole cannot be seen, but given the size of the tree, it is possible the hole extends further into the tree which has the potential to form a roost area for bats. (Appendix B: Photograph 23).	Precautionary Moderate
3	Two knot holes on south face which may potentially extend into cavity in limbs.	Precautionary Moderate

3.7 Commuting and Foraging Habitat Assessment

The LERC returned records of bat activity and roost records within 2 km of the Site. The closest roost record was a maternity bat roost of a pipistrelle species located approximately 1.4 km southeast of the Site, connected by minor roads and arable fields. The closest foraging record is of a common pipistrelle, approximately 0.55 km north, connected by a residential area. The Island Farm POW Camp SINC is designated for lesser horseshoe bats and is adjacent to the west of the Site (BCBC, 2011). The River Ogmore is 0.9 km west and supports Daubenton's bat (BCBC, 2023). The Site is within the Core Sustenance Zone (CSZ) (BCT, 2020) of pipistrelle species, lesser horseshoe bats and Daubenton's bats. Overall, the habitats on Site are unlikely to provide a significant foraging resource for nearby roosts and foraging bats as it is dominated by arable land, with a monoculture of Italian rye. The grasslands and scrub on Site will provide some foraging resource, but this is likely to be minor due to small size of these habitats. There are no nationally designated sites for bats within 2 km of the Site, and no internationally designated sites for bats within 10 km of the Site.

The habitats on the Site have been assessed as having High suitability to support commuting and foraging bats. The Site provides line of trees, scattered scrub, dense/continuous scrub, hedgerows, fences, and walls to support commuting. Due to their good connectivity to both, these habitats will likely facilitate commuting between the woodland corridor along the railway line to the east and the Island Farm POW Camp SINC to the west. The SINC lies within approximately 0.45 km of the woodland corridor along the River Ogmore, connected partly by lines of trees which may encourage bats to commute via the Site. The majority of the Site boundaries, apart from the north which is adjacent to a residential area, are unlit during the night to promote commuting by bats. As described above, the majority of habitats on Site are unlikely to support a large abundance of invertebrates, reducing their suitability for foraging bats. However, the suitability of the Site for commuting and foraging bats is overall High due to its ability to support commuting bats and how it is connected to a known pipistrelle maternity

roost approximately 1.4 km southeast, and a long-term maternity roost for lesser horseshoe roosts (MPS Ecology, 2023) in the adjacent Island Farm POW camp SINC.

3.8 Zone of Influence

BREEAM defines the ZoI as '*Areas of land or water bodies impacted by the site undergoing assessment. These areas can be adjacent to the site or can be areas that are dependent on the site but not physically linked, including areas downstream from a site. Areas within the zone of influence can be negatively affected by changes on an assessment site but they also provide further opportunity to maximise enhancement activities.'*

The habitats within 10 m of the Site were noted when undertaking the Phase 1 Habitat Survey and as part of the desk study (see Table 3.1). The ZoI includes the following features:

- A line of trees, including individuals who are likely ancient or veteran, running parallel to the line of trees on the western boundary;
- Island Farm POW Camp SINC, which is adjacent to the west of the Site, and has resident and breeding dormice and lesser horseshoe bats (BCBC, 2011);
- Hedgerows to the north of the Site, which aid its demarcation from private residences; and,
- Hybrids of Spanish and common bluebells to the north of the Site.

4. Ecological Constraints and Potential Impacts

Relevant ecological features that may represent constraints to the Proposed Development, or that provide opportunities to deliver ecological enhancement in accordance with planning policy, are identified in Sections 4 and 5 of this report and shown on Figure 1.

4.1 Designated Nature Conservation Sites

4.1.1 International Nature Conservation Sites

Kenfig SAC is located 2.8 km southwest of the Site. The SAC is designated for various dune, meadow and aquatic habitats and for fen orchid and petalwort. There are no SACs designated for bats within 10 km of the Site. The Proposed Development will have no impact on the SAC, due to its distance from the Site. There are no hydrological links and no pollution pathways between the Site and the SAC

4.1.2 National Nature Conservation Sites

Old Castle Down SSSI is located 1.7 km south of the Site. The SSSI is designated for its limestone heath and calcareous grassland. The Proposed Development will have no impact on this SSSI, due to the distance from the Site. There are no hydrological links and no pollution pathways between the Site and the SSSI.

4.1.3 Local Nature Conservation Sites

There are 18 SINCs and one LNR within 2 km of the Site. The closest SINC, Island Farm POW Camp, is adjacent to the west of the Site and is designated for its resident and breeding dormice and lesser horseshoe bats. The Proposed Development has potential to impact the SINC through pollution, including chemicals, noise, and light, which in turn could negatively impact the Protected species within it.

The Proposed Development will have no impact on the remaining SINCs or LNR, due to their distance from the Site of the Proposed Development. There are no hydrological links and no pollution pathways between the Site and the remaining SINCs and LNR.

4.2 Ancient Woodland

There is no Ancient Woodland within or adjacent to the Site boundary, so this habitat will not be impacted by the Proposed Development.

4.3 Tree Preservation Orders

There are no TPOs within or adjacent to the Site boundary, so none will be impacted by the Proposed Development.

4.4 Habitats

4.4.1 Line of Trees

The line of trees on the western boundary of the Site will not be removed for the Proposed Development.

There is potential for the retained trees on Site and in the ZoI, including the ash tree which is likely a veteran and possibly ancient (Figure 1: Bat Tree 1), to be damaged during construction due to root compaction caused by tracking of vehicles or storage of materials on the root zone or from knocking off/damaging overhanging limbs. Pollution may also harm the retained trees. This damage may impact the trees' abilities to absorb water and nutrients and increase the risk of disease and pollution entering the trees, potentially resulting in a poor condition or even death. While there are other trees in the wider landscape, the trees are mature, especially the likely veteran ash tree (Figure 1: Bat Tree 1), which take centuries to replace. Therefore, without mitigation, there is potential for Moderate impact from the reduced condition or death of the retained trees.

4.4.2 Dense/Continuous Scrub

The Proposed Development will require the complete removal of the dense/continuous scrub on Site. The habitat is very small in area and not well connected to other areas of scrub. Natural habitats, including a larger, more continuous block of dense/continuous scrub in the west of the ZoI, of equal or greater value are available in the surrounding landscape. Therefore, long term, there will be Negligible impact from the loss of the dense/continuous scrub on Site.

Should there be refurbishment/replacement of the fence along the western boundary, the dense/continuous scrub in the ZoI to the west of the Site may require partial vegetation clearance. Short term, this will have a Low impact due to the lack of similar habitat in the local area. However, long term, it will re-establish and therefore this will be a Negligible impact.

4.4.3 Scattered Scrub

The Proposed Development will require the complete removal of the scattered scrub. The habitat is small in area, and is of limited ecological value, particularly because it is dominated by buddleia a non-scheduled INNPS.

Natural habitats, such as dense/continuous scrub in the ZoI, with native species of equal or greater value are available in the surrounding landscape. Buddleia will be removed to benefit native species. Therefore, long term, biodiversity will likely benefit from the removal of the scattered scrub. There will be Negligible negative impact from the loss of the scattered scrub on Site.

4.4.4 Neutral Semi-Improved Grassland

The Proposed Development will likely require the retention of the neutral semi-improved grassland as it is a thin strip of grassland adjacent to a hedge that will likely be retained. Due to its proximity to the Proposed Development, the neutral semi-improved grassland has potential to be impacted by pollution to reduce the condition of the neutral semi-improved grassland. Similar habitats of equal or greater value are available in the surrounding landscape. Therefore, without mitigation, there is potential for Low impact from the reduced condition of the neutral semi-improved grassland.

4.4.5 Improved Grassland

The Proposed Development will likely require the removal of the improved grassland. Similar habitats of equal or greater value are available in the surrounding landscape. Therefore, there will be Low impact from the loss of improved grassland.

4.4.6 Tall Ruderal

The Proposed Development will require the removal of the tall ruderal vegetation. Habitats, such as the dense/continuous scrub and improved grassland in ZoI, of equal or greater value are available in the surrounding landscape. This, and how small this area of habitat is, means there will be a Low impact from the loss of tall ruderal vegetation.

4.4.7 Arable Land

The Proposed Development will require the removal of the arable land. The arable land has low ecological value, due to its monoculture of Italian rye, and similar arable land is found in the wider landscape. Therefore, its removal will have a Low impact, especially as there is opportunity to replace part of it with species-rich habitat.

4.4.8 Intact Hedge (Species Poor)

The intact species-poor hedges will likely be retained for the Proposed Development, especially as they are associated with private residences. The Proposed Development may require pruning of overhanging branches. Regular maintenance trimming of the hedges will likely continue during the Proposed Development. There is potential for root compaction of retained hedges by tracking of vehicles over the root zone or from knocking off/damaging overhanging limbs. Pollution may also harm the intact species-poor hedges. This damage may impact the woody plant species within the hedges to absorb water and nutrients and increase the risk of disease and pollution entering plants, potentially resulting in a poor condition or even death. While the hedges do provide a partial green corridor, the hedges are species-poor with some ornamental species and other hedges are available in the wider landscape. Therefore, without mitigation, there is potential for Low impact from the reduced condition or death of the hedges,

4.4.9 Fence

The Proposed Development will likely require the refurbishment/replacement of the fences on the western and eastern boundaries. The fences are of Negligible ecological value, but any removal of gaps for commuting terrestrial mammals will reduce connectivity to have Low impact on biodiversity long term. This is because connectivity is vital for resilient populations in face of land use change and climate change.

4.4.10 Wall

The Proposed Development will likely require the retention of the walls, as they are associated with private residence. The walls have no ecological value so there will be no impact from their retention.

4.4.11 Bare Ground

The Proposed Development will require the removal of bare ground. The bare ground has no ecological value so there will be Negligible impact from its loss.

4.4.12 Manure Pile

The Proposed Development will require the removal of the manure piles. The manure piles have limited ecological value; they can be used by invertebrates and help to increase the nutrients in the soil, but are not a diverse and permanent habitat. As more species-rich habitats are in the wider landscape, there will be Negligible impact from their loss.

4.5 Protected or Priority Species

4.5.1 Plants

Bluebell, a wild plant which is illegal to uproot, was found under the line of trees on the western boundary of the Site, and have the potential to be found within the intact species-poor hedges on the Site. Bluebell was also found between the line of trees in the ZoI. Lesser squirrel-tail moss is a Section 7 Priority species and has potential to be present on the mature trees within the line of trees on Site and in the ZoI.

As the line of trees is being retained for the Proposed Development, bluebell and lesser squirrel-tail moss should not be directly impacted.

In the absence of mitigation, these plants could be impacted by a pollution event, including dust and fumes, from the Proposed Development should it spread on the Site and into the ZoI to injure and/or kill the plants. Without mitigation, the Proposed Development has potential to have Moderate impact on these plant species due to their proximity (potential and actual) to the Site.

4.5.2 Invertebrates

Fifteen Protected and Priority invertebrate species (14 moths and one butterfly; see Section 3.3) have the potential to be found on Site and in the ZoI, particularly the grasslands, scrub, hedges, and line of trees.

Part of the grassland and all of the scrub is to be removed, which risks injuring and killing Priority and Protected invertebrates. Pollution from the Proposed Development, especially chemical spills, and fumes may also indirectly injure and kill Priority and Protected invertebrates on Site and in the ZoI.

In the absence of mitigation, these invertebrates could be impacted by vegetation clearance and pollution from the Proposed Development. Without mitigation, the Proposed Development has potential to have Moderate

impact on Protected and Priority invertebrates as they have potential to be on Site and all suitable habitats will either be removed or may be potentially affected by pollution.

4.5.3 Common Toad

There is unlikely to be common toad on Site, but they may be present within the ZoI to the south of the Site within the neutral semi-improved grassland and nearby ponds.

As such, they could be impacted by a pollution event from the Proposed Development should it spread into the ZoI to injure and/or kill common toad. The Proposed Development has potential to have Low impact on toads as suitable habitat is not on Site and habitat with higher suitability is available in the wider landscape.

4.5.4 Common Lizard and Slow-Worm

There is small possibility that common lizards and slow-worms are present on Site in the tussocky areas of the improved grassland, and the rubble, log and brash piles, and in the ZoI in the neutral semi-improved grassland.

As such, they could be impacted by vegetation clearance which may injure or kill common lizards and slow-worms, as well as by a pollution event from the Proposed Development should it spread on Site and into the ZoI. The Proposed Development has potential to have Low impact on common lizards and slow-worms as there is limited and isolated suitable habitat on Site and in the ZoI.

4.5.5 Breeding Birds

Breeding birds have the potential to be present within the line of trees, scattered scrub, dense continuous scrub, and hedges on Site, and within the line of trees, dense/continuous scrub and hedges in the ZoI. Barn owl could potentially utilise the adjacent Island Farm POW Camp SINC for breeding.

The Proposed Development could impact breeding birds, should works proceed during the breeding bird season (between March and August inclusive), by disturbing or destroying active nests, eggs, or chicks during any vegetation clearance, or through noise, additional lighting, vibration, or pollution from the Proposed Development. Without mitigation, the Proposed Development has potential to have Moderate impact on breeding birds due to the suitability of the boundary habitats to support them. These boundary habitats will likely be subject to disturbance for the duration of the construction of the Proposed Development.

4.5.6 Roosting Bats

There are no structures or trees with suitability to support roosting bats on Site. Therefore, roosting bats are considered likely absent from Site and therefore will not be impacted.

The ash tree (Figure 1: Bat Tree 1) and two oaks (Figure 1: Bat Trees 2 and 3) within the ZoI to the west of the Site have High, Low and Precautionary Moderate suitability, respectively, to support roosting bats. Due to the scale of the Proposed Development, including the construction of a residential area and a football pitch within approximately 20 of the trees, there is the potential for the Proposed Development to disturb roosting bats from lighting, noise and vibration during construction, and then potentially from lighting post-development (final lighting plan unconfirmed). Without mitigation, the Proposed Development has potential to have Moderate impact on roosting bats due to their potential to be roosting in the ZoI.

4.5.7 Foraging and Commuting Bats

The Site has Moderate suitability to support foraging and commuting bats. Past surveys have recorded ten bat species commuting in vicinity to the Site, including lesser horseshoe (Ethos, 2020, 2021a). As the construction of the Proposed Development is unlikely to occur during the night, there is Negligible potential to disturb foraging and commuting bats through noise, additional lighting, vibration or pollution.

There will likely be no removal of boundary features, except for partial removal of dense/continuous scrub in the ZoI to the west of the Site should fence refurbishment/replacement be needed; commuting corridors and connectivity with the surrounding landscape will be retained. There will be no loss or direct severance of commuting features.

The lighting plan for the Proposed Development has not yet been confirmed. In the absence of mitigation, there is potential to disturb light-averse foraging and commuting bats, especially lesser horseshoe, should boundary features or newly created roost provisions (See Section 5.2) on Site and within the ZoI be lit or light spill onto these features occur as a result of the lighting plan. Without mitigation, the Proposed Development has potential to have High impact on commuting bats from any new lighting along the boundary habitats, and Low impact on

foraging bats as the habitats on Site are not especially species-rich or structurally diverse to support large populations of invertebrates.

4.5.8 Dormouse

Dormouse has the potential to be present within the lines of trees on Site and within the ZoI, as well as the dense/continuous scrub in the ZoI to the west of the Site, which are suitable to support nesting, foraging and commuting dormouse. Historical reports also determined dormouse are likely present in the woodland adjacent to the southeast of the Proposed Development (Ethos, 2020, 2021b, 2022)

In the absence of mitigation there is potential for vegetation clearance or management, additional lighting, noise, vibration, and pollution to disturb, injure and/ or kill nesting, foraging and commuting dormouse. Without mitigation, the Proposed Development has potential to have High impact on dormouse as they are likely present adjacent to the Site on the western boundary.

4.5.9 Badger

Foraging and commuting badger have the potential to utilise the line of trees, scattered scrub, dense/continuous scrub, neutral semi-improved grassland, improved grassland, and arable land.

As such, badger has the potential to be impacted by temporary loss of foraging habitat, by falling into any excavations left open overnight, and any additional lighting during and post-development. Additionally, they could be impacted by a pollution event from the Proposed Development should it spread on Site and into the ZoI to injure and/or kill foraging or commuting badger.

No setts, or habitats suitable for sett building, were found on Site or in ZoI, though the dense/continuous scrub in the ZoI to the west of the Site could not be thoroughly examined (see Limitations). There is potential for sett building habitat to be present in the Island Farm POW Camp SINC adjacent to the west of the Site. Therefore, there is a risk of disturbing, damaging, or destroying a sett during the Proposed Development. Without mitigation, the Proposed Development has potential to have High impact on badgers due to the potential for setts within 30 m of the Site.

4.5.10 Hedgehog

Hedgehog has the potential to be utilising the scattered scrub, dense/continuous scrub, improved grassland, neutral semi-improved grassland, tall ruderal, and hedges on Site and in the ZoI, as well as the brash and log piles on Site.

As such, hedgehog has the potential to be impacted by temporary loss of foraging habitat, removal of the brash and log piles, by falling into any excavations left open overnight and any additional lighting during and post-development. Additionally, they could be impacted by a pollution event from the Proposed Development should it spread on Site and into the ZoI to injure and/or kill hedgehog. Without mitigation, the Proposed Development has potential to have Low impact on hedgehogs due to the range of suitable habitats that will remain available in the wider landscape.

4.5.11 Polecat

Polecat has the potential to be utilising the line of trees, improved grassland, neutral semi-improved grassland, improved grassland, and arable land on Site and in the ZoI.

As such, polecat has the potential to be impacted by falling into any excavations left open overnight and any additional lighting during and post-development. Polecat could also be impacted by the destruction of rabbit warrens within the Site. Additionally, they could be impacted by a pollution event from the Proposed Development should it spread on Site and into the ZoI to injure and/or kill polecat. Without mitigation, the Proposed Development has potential to have High impact on pole cats due to potential for the species to be residing on Site within the rabbit warrens.

4.6 INNPS

Although no INNPS were identified on Site, Himalayan balsam is likely present within 100 m of the Site boundary (Ethos, 2020). As Himalayan balsam was recorded in 2020, there is a possibility that it has spread since towards the Site. As such, the Proposed Development has potential to spread INNPS through, for example, tracking of machinery and personnel.

5. Further Surveys and Requirements for Mitigation

5.1 Further Surveys

The following further surveys are recommended

- Arable field survey (detailed plant survey of arable land and a National Vegetation Classification of arable land margins to confirm presence/absence of Priority habitat and species).
- INNPS survey (walkover of Site and within 10 m of the Site boundary to identify INNPS).
- PRA of western face of Bat Tree 2 (daytime visual assessment to identify any further features suitable to support roosting bats).
- Tree climbing and/or emergence/re-entry surveys (daytime and/or night time surveys to better characteristic the suitability of features for use by roosting bats):
  - Bat Tree 1: two surveys;
  - Bat Tree 2: two surveys;
  - Bat Tree 3: two surveys.
- Bat activity surveys (Site boundaries, except to the south):
  - Two activity transects per month (April to October, inclusive)
  - Static detector deployment (three per activity transect).
- Dormouse survey (dormouse tubes installed on western boundary between March and May, and checked monthly until end of November to identify presence/likely absence of dormouse).
- Badger survey (walkover of habitats 30 m from Site boundary to identify badger field signs, particularly setts).

As the Proposed Development is still in its early stages, further surveys may be required if the initial designs change.

Results from these further surveys will inform and/or supersede the recommendations for mitigation and enhancement outlined in Sections 5 and 6.

5.2 Requirements for Mitigation

The mitigation hierarchy has been considered and should be implemented when designing the Proposed Development. A summary is provided below.

Mitigation Hierarchy:

1. Avoidance – Seek options that avoid harm to ecological features (for example, by locating on an alternative site or use of technology, or timing to eliminate impact);
2. Mitigation – Negative effects should be avoided or minimised through mitigation measures, either through the design of the project or subsequent measures that can be guaranteed – for example, through a condition or planning obligation;
3. Compensation – Used as last resort to offset impacts; and,
4. Enhancement – Seek to provide net benefits for biodiversity over and above requirements for avoidance, mitigation, or compensation.

5.2.1 Pollution Control During Construction

Pollution control measures as required Guidance for Pollution Prevention (GPPs; NetRegs, 2022), and where these have not been replaced the Environment Agencies Pollution Prevention Guidelines (PPGs), will be implemented to avoid and minimise adverse effects of pollution and runoff on the surrounding environment.

As of the 17 December 2015 all PPG Documents published by the UK environment agencies were withdrawn. Although they provide useful advice on the management of construction to avoid, minimise and reduce environmental impacts, they should not be relied upon to provide accurate details of the current legal and

regulatory requirements and processes. They are referred to in this document alongside other current guidance and in the context of scheme and site-specific mitigation measures.

Measures will be employed to ensure that dust is minimised during the construction works. Measures will be in place to deal with pollution incidents efficiently including the use of plant nappies, spill kits and personnel trained to use them.

5.2.2 Control of Surface Water During Construction and Operation

The Proposed Development must be designed to control the rate and quality of surface water runoff. Consideration should be given for a system to capture and treat surface water without the need to discharge to watercourses. This is especially necessary given the proximity of ponds with potential to support breeding amphibians.

5.2.3 External Lighting

The following recommendations in line with best practice guidance (ILP, 2018) should be incorporated into any new lighting scheme at the Site:

- Light spill onto any new wildlife boxes (see Section 6) must be avoided;
- In the first instance, external lighting must be designed to avoid light spill onto boundary features including rows of trees, hedgerows, and woodland edges; and,
- If light spill onto Site boundaries cannot be avoided, this should be limited to levels of 3 Lux or less. If presence of lesser horseshoe bats are confirmed during the activity surveys, light levels on the Site boundaries will likely have to be reduced to less than 0.5 Lux as this species is especially light averse.

Suggestions for mitigating external lighting and achieving the lighting recommendations above are outlined in the ILP Bats and Lighting Guidance Note (ILP, 2018) and best practice guidance (Gunnell *et. Al.,* 2012). These include:

- Only light areas which need to be lit, and use the minimal level of lighting required to comply with guidance such as Institute of Lighting Engineers Guidance Notes for the Reduction of Obtrusive Light (2021).
- Avoid aesthetic lighting which has no other function, and up lighting of trees and buildings.
- Use the lowest level of illumination required for purpose.
- Where lighting is proposed, use lighting modelling programs to indicate where the light spill will occur.
- LED luminaires should be used where possible due to their sharp cut off, low intensity, good colour rendition and dimming capability.
- A warm white spectrum (ideally <2700 Kelvin) should be adopted to reduce blue light component; Avoid neutral white, cool white and blue spectrums of light.
- All luminaires should lack or have negligible UV elements. Avoid white and blue spectrums of light.
- Eliminate bare lamps and any upward pointing light.
- Luminaires should be mounted on the horizontal, i.e., no upward tilt. The spread of light should be at or near the horizontal. Flat cut off lanterns are best. Only luminaires with an upward light ratio of 0% and with good optical control should be used – See ILP Guidance for the Reduction of Obtrusive Light.
- Luminaires should feature peak wavelengths higher than 550 nm to avoid the component of light most disturbing to bats.
- Where lighting columns are in proximity (adjacent to) the wildlife corridors/boundary features and where light spill onto these features is predicted by the lighting models, the luminaries must be moved or fitted with back light control systems to reduce light spill onto the adjacent wildlife corridors/boundary features. This additional feature minimises light spill from the back of the luminaire to avoid intrusive light spill behind the column.
- Any external security lighting should be set to motion sensors and short (1 minute) timers.
- Limit the times that the lights are on, to provide some dark periods; Limit the times that the lights are on to provide some dark periods; and/or dimming of lights during certain periods; the proposed new lighting could be dimmed or turned by 75% from 22:00 until 06:00 daily.

- Avoid using reflective surfaces under lights.
- Do not use a lamp greater than 150W for security lighting.

This will also increase the value of the Site for other nocturnal species, including badger and polecat, as well as for bats.

5.2.4 Line of Trees

To prevent damage to the mature trees within the lines of trees on Site and in the ZoI, tracking of vehicles or storage of materials should not occur within the Root Protection Area (RPA) of the trees (equal to 12 times the radius of a tree's diameter).

5.2.5 Dense/Continuous Scrub

Any retained dense/continuous scrub in the ZoI should be protected during construction to avoid damage; no tracking of vehicles or storage of materials should occur on the dense/continuous scrub.

To compensate for the loss of dense/continuous scrub on Site, new species rich planting is recommended to be incorporated into the Proposed Development to have an overall beneficial impact.

5.2.6 Scattered Scrub

To compensate for the loss of scattered scrub on Site, new species rich planting is recommended to be incorporated into the Proposed Development to have an overall beneficial impact.

5.2.7 Neutral Semi-Improved Grassland

Any retained neutral semi-improved grassland on Site and in the ZoI should be protected during construction to avoid damage; no tracking of vehicles or storage of materials should occur on the neutral semi-improved grassland.

5.2.8 Improved Grassland

To compensate for the loss of improved grassland on Site, new species rich planting and/or a green roof/living wall is recommended to be incorporated into the Proposed Development to have an overall beneficial impact.

5.2.9 Tall Ruderal

To compensate for the loss of tall ruderal on Site, new species rich planting is recommended to be incorporated into the Proposed Development to have an overall beneficial impact.

5.2.10 Arable Land

To compensate for the loss of arable land on Site, new species rich planting and/or a green roof/living wall is recommended to be incorporated into the Proposed Development to have an overall beneficial impact.

5.2.11 Intact Hedge (Species-Poor)

To prevent damage to the intact hedge's (species-poor) roots, tracking of vehicles or storage of materials should not occur within the RPAs.

5.2.12 Plants

On the western boundary and adjacent to hedgerows, the ground should be checked for bluebells prior to materials being stored, excavations being dug, or personnel or vehicles being tracked over it. Should bluebells be found, a buffer should be marked around it and the plant protected until the completion of the Proposed Development.

5.2.13 Invertebrates

Mitigation for lines of trees, grasslands, scrub, and hedges as outlined in Sections 5.2.4 to 5.2.8, and Section 5.2.11.

Grasslands and scrub in should be cleared in the summer in a directional manner, so that any invertebrates are pushed towards retained habitats.

External lighting recommendations outlined in Section 5.2.3 should be followed.

5.2.14 Common Toad

No additional measures required.

5.2.15 Common Lizard and Slow-Worm

Mitigation for grasslands as outlined in Sections 5.2.7 and 5.2.8.

Grasslands should be cleared between April and September in a directional manner, so that any common lizards and slow-worms are pushed towards retained habitats. The rubble, log and brash piles should be dismantled, before they are cleared. These actions must be done under an ecological technical watching brief by a suitably experienced ecologist to allow any discovered common lizards and slow-worms to be rescued and moved to retained habitats.

5.2.16 Breeding Birds

The Proposed Development requires removal of the scattered scrub and dense/continuous scrub on Site, and potentially some dense/continuous scrub in the ZoI to the west of the Site which are suitable to support breeding birds. To protect breeding birds, any vegetation clearance should be undertaken outside of the breeding bird season where possible (works completed between September and February inclusive).

If any vegetation clearance or construction of the Proposed Development is to begin during the breeding bird season (March-August inclusive), for example the clearing of scrub under mitigation for invertebrates, an ecologist must be consulted; a breeding bird check must be undertaken immediately prior to the Proposed Development commencing. If breeding birds are present, then a species specific buffer must be applied around the nest site and left undisturbed until chicks have fledged. This can take up to 8 weeks.

Disturbance close to vegetated areas suitable to support breeding birds must be avoided during the breeding bird season. If a nest is subsequently discovered during the Proposed Development, a species-specific buffer must be applied to avoid damage or disturbance of nests.

External lighting recommendations outlined in Section 5.2.3 should be followed.

5.2.17 Bats

External lighting recommendations outlined in Section 5.2.3 should be followed, especially on the western boundary.

5.2.18 Dormouse

In Wales, dormouse and their places of shelter are fully protected under Schedule 5 of the WCA and the Habitats Regulations 2017. This makes it an offence to intentionally, deliberately, or recklessly kill, injure or disturb a dormouse, damage, or destroy a place used for shelter, such as a nest, by dormouse or impact/ impair the dormouse ability to breed.

As the Island Farm POW Camp SINC is adjacent to the west of the Site and is designated for dormouse, further dormouse tube surveys for dormouse are required to confirm their presence/likely absence on the western boundary of the SINC. If dormouse are confirmed as present during the surveys, an European Protected Species Mitigation Licence (EPSML) will be required to allow construction to proceed lawfully. A mitigation plan will need to be designed and implemented.

If dormouse are not found, the proximity of the Island Farm POW Camp SINC and the mobility of dormouse will still necessitate:

- A Precautionary Working Method (PWM) must be produced detailing how the Proposed Development will be carried out to avoid killing, injuring, or disturbing dormouse. This will require a SQE conducting hand searches of the vegetation to the west of the Site and the adjacent ZoI which could be impacted by the Proposed Development immediately prior to the Proposped Development. The SQE will also provide a toolbox talk so that Site staff are aware of the likely presence of dormouse.
- Retained line of trees and dense/continuous scrub on the west of the Site and ZoI must be fenced off to limit the chances of disturbance, injury of killing through accidental tracking over or knocking of limbs, stems or trunks from vehicles or machinery or material storage during construction and/or operation. The fencing utilised must facilitate the continued commuting of species such as badger and hedgehog through the Site.

External lighting recommendations outlined in Section 5.2.3 should be followed.

5.2.19 Badger

Excavations should be covered overnight or ramps installed so trapped badgers can escape.

Any fences - refurbished, replaced or newly installed - should have gaps at their bases suitably large enough for badger to facilitate commuting through the Proposed Development.

External lighting recommendations outlined in Section 5.2.3 should be followed.

5.2.20 Hedgehogs

Prior to any vegetation clearance of the scrub and removal of brash and log piles, these habitats should be checked for sheltering hedgehog to avoid injuring or killing hedgehogs. If a hedgehog is discovered, they should be moved to a safe location prior to the Proposed Development starting.

Excavations should be covered overnight or ramps installed so trapped hedgehogs can escape.

Any fences - refurbished, replaced or newly installed - should have gaps at their bases suitably big for hedgehog to facilitate commuting through the Proposed Development.

External lighting recommendations outlined in Section 5.2.3 should be followed.

5.2.21 Polecats

Excavations should be covered over night or ramps installed so trapped polecats can escape.

Any fences - refurbished, replaced or newly installed - should have gaps at their bases large enough for polecats to facilitate commuting through the Proposed Development.

External lighting recommendations outlined in Section 5.2.3 should be followed.

5.2.22 INNPS

Although there is no legal obligation, it is recommended that the buddleia, and Spanish and common bluebell hybrids are removed from Site and disposed of so that they cannot reproduce, for example burning or burying over a metre underground.

6. Recommendations for Enhancements

The National Planning Policy Framework for Wales (February, 2021) and the Environment (Wales) Act 2016, requires that developments enhance biodiversity, as well as just mitigating impacts. These will also need to be considered and included in the development design wherever possible as part of the BREEAM Ecology Assessment.

Recommendations have been made to make the most of proposed landscape planting on Site to benefit biodiversity.

6.1 Species-Rich Grassland

Retained and new areas of grassland could be planted and managed to enhance species diversity. These areas should be mown three times a year (April, August and once during winter).

http://wildseed.co.uk/page/management-of-meadows-and-grassland has more details on how to manage species-rich grasslands. Arisings should be removed following cutting.

It has been assumed that the topsoil will be derived from on the Site. The seed mixes used should be appropriate for the subsoil type used and need to be approved by a suitably qualified ecologist prior to use. Areas should be sown with a diverse lawn mix such as:

- Emorsgate General Purpose Meadow Mixture EM2 (18 species) (www.wildseed.co.uk); or,
- Germinal (formally British Seed Houses) WFG20 Eco Species Rich Lawn (34 species) (https://www.germinal.com).

The grassland should be managed with no pesticides, herbicides, or fertilisers for the benefit of wildlife.

For more information including flower colour, benefits to wildlife and soil type for various species see Wildflower Meadows: How to Create One in Your Garden (Natural England, 2017), available online.

6.2 Green Living Roof and/or Living Wall

Incorporate a ‘green’ or ’living’ roof and/or wall into the design of the new buildings to provide benefit to wildlife.

Green roofs and walls come in various forms and have numerous benefits including thermal and acoustic insulation and protection of roof surfaces, as well as aesthetic and ecological benefits.

The final specification for the green roof or green wall should be checked by a structural engineer before implementation.

6.3 Green Corridors

Any landscape planting proposed should seek to create or enhance ‘green corridors’ which provide new connectivity across or around the Site to help wildlife move through the local landscape such as birds, bats, and invertebrates. The green corridors should be created/enhanced along the Site boundaries to facilitate connectivity to the wider landscape. The green corridors should also facilitate connectivity from new bat roost and bird breeding provision on Site to the wider landscape. Green corridors can include line of trees and hedges.

The planting scheme of new features should be of locally sourced native species of benefit to wildlife and should include tree species. Gunnell *et al.* (2012) ‘Landscape and Urban Design’ (free to download) has suggested planting lists which are of benefit to invertebrates.

This enhancement links to local planning policy ENV5 Green Infrastructure.

6.4 Insect Habitats

At least four insect walls, insect boxes, bee banks and dead wood piles could be included in the landscape design to provide shelter and hibernating habitat for a range of insects. These should be installed in areas adjacent to species rich habitats, like new species-rich grassland.

The insect wall must be carefully designed and maintained, since poorly designed and maintained insect houses or walls can kill off the insects designed to inhabit them through parasites and mould (Carlton, 2015). It is recommended that properly designed insect houses are used, such as those available from Nurturing Nature

(http://nurturing-nature.co.uk/wild-bee-nest-boxes/) rather than those available from garden centres which often are not suitable for insect species found in the UK.

Alternatively, a bee bank could be built using excess spoil created during the works. The bee bank provides warm, sheltered patches of bare ground where solitary bees can nest. The bee bank should be in a sunny location sheltered from the weather and be orientated to face south or southeast. A crescent shape allows bees to make use of varying microclimates. The surrounding areas of habitat should provide a rich nectar and pollen source so should be planted with wildflowers or native shrub planting. Advice on creating and maintaining a bee bank is provided here: https://www.buglife.org.uk/creating-a-bee-bank

Dead wood piles are of benefit to beetles, spiders, woodlice, centipedes, ants, and earthworms. Logs could be stacked in associated with the swale. Burying some logs will create a range of suitable habitats. Advice on creating a dead wood pile is provided here:

https://www.buglife.org.uk/sites/default/files/Deadwood%20for%20beetles_0.pdf

Full instructions for the management of the insect walls or boxes will be provided by the manufacturer.

The planting scheme of new features should be of locally sourced native species of benefit to wildlife. *Gunnell et al*. (2012) 'Landscape and Urban Design' (free to download) has suggested planting lists which are of benefit to invertebrates.

6.5 Bird Boxes

It is recommended that at least three bird boxes should be incorporated into the building design and at least two boxes should be installed on the trees adjacent to the Site, or on trees on Site once they have matured.

Boxes suitable for swift and house sparrow would be suitable on the building, as habitat suitable for these species is often lost in modern building design.

Swift Conservation provides advice on design and location of swift boxes, available at http://www.swift-conservation.org/Nestboxes%26Attraction.htm. The RSPB provides advice on sparrow nest box design and fitting available from https://www.rspb.org.uk/get-involved/activities/give-nature-a-home-in-your-garden/garden-activities/createasparrowstreet/. Sparrows are communal nesters so benefit from having several boxes in proximity or adjoining boxes.

A range of boxes for passerine species would be suitable to use on trees including small boxes, large boxes, boxes with holes entrances or open fronted boxes. Advice on box design and locating boxes is provided by the British Trust of Ornithology https://www.bto.org/about-birds/nnbw/make-a-nest-box

Bird boxes should be appropriately located at least four metres above ground level, and out of reach of predators. Bird boxes should not be positioned to face south to avoid hot sun.

6.6 Bat Boxes

As the Site presently has no bat roosting opportunities, it is recommended that at least two bat boxes are included in the new building design. The addition of bat boxes will increase roosting opportunities in the local area and have a positive impact on biodiversity at the Site and local level.

Biodiversity for Low and Zero Carbon Buildings: A Technical Guide for New Builds (Williams, 2010) suggests various ways of including a roost void compliant with Building Regulations within a variety of modern structures.

Products such as cavity bat boxes, bat bricks and bat tiles could also be utilised to match external fabrics. Alternatively, roost space could be provided by fitting pre-made bat boxes to the external face of the new building. The choice of bat box should be suitable for crevice dwelling species.

All new roost provision should be situated away from light spill, with clear flight paths towards corridors and foraging suitable to be used by bats, especially the hedge on the southern boundary. Advice from a suitable qualified ecologist should be sought when drawing up the specifications for bat roosts and locations. Bat boxes should be positioned at least 4 m above ground level to protect any resident bats from disturbance or predation by domestic pets. Each box can be positioned with a different orientation between southeast and southwest to provide a range of microclimate options.

6.7 Hedgehog Houses

Habitats could be enhanced, and new provisions provided for hedgehogs to shelter. This would include provision of at least two log piles, leaf piles and/or purpose-built or ready-made purchased hedgehog house. Guidance on

building hedgehog houses is provided by the Wildlife Trust, which could be incorporated into a design technology project https://www.wildlifetrusts.org/sites/default/files/2018-05/Hedgehogsml.jpg.

Log piles, leaf piles and hedgehog houses should be placed adjacent to suitable hedgehog habitats, including hedges and species-rich grasslands, which can be advised by an ecologist.

Habitats for hedgehogs could be enhanced by leaving strips of grassland unmown around the edges of the Site and adjacent to suitable areas of habitat including hedges and dense/continuous scrub.

7. Ecosystem Resilience (Section 2 Environment (Wales) Act 2016)

The Environment (Wales) Act 2016 states a duty to maintain and enhance biodiversity as well as to promote the resilience of ecosystems. As such, it is vital that new developments ensure new and existing habitats are resilient to pressures and changes from the variety of threats to biodiversity, including the fragmentation of habitats and climate change. This will allow habitats to persist in the long term for the benefit of biodiversity and people. Examples of how new and existing habitats can be made more resilient include:

- Planting native species suitable to the local context and in relation to climate change. This way they are likely to remain to be locally suitable within the next 25 to 50 years;
- Designing the landscaping at the Site to promote local landscape connectivity and create a mosaic of habitats on the Site where feasible. This includes creating green corridors where possible and minimising external light spill onto these corridors; and,
- Increasing the number of species present on Site. More biodiverse habitats are generally more resilient to change.

8. BREEAM Landscape and Ecology Assessment

Opportunities for BREEAM Credits and Ecological Enhancement are discussed within Sections 9, 10, 11 and 12 along with recommendations for the mitigation and protection of legally protected species within the Site.

The BREEAM Issues covered by these sections are LE02, LE03, LE04 and LE05. The potential for gaining credits under each Issue is discussed.

8.1.1 Summary of BREEAM Credits

The following table summarise the potential credits considered to be achievable. Achieving these credits will require the client and contractors to implement the report's recommendations. Liaison between ecologists and the architects will also be required.

Table 8.1 Ecological Credits Available Based on the Current Development Plan

Issue	Total Available	Credits Likely Achievable Under Current Landscaping Plan
LE02	3	3*
LE03	3	2**
LE04	5	2+
LE05	2	2++
LE Total	13	9

Notes:

* LE02 Achieving the first and second credits is dependent on recommendations being implemented by the client/contractor. Achieving the third credit is dependent on the determination of the criteria under HE 07, Pol 03 and Pol 05.

** LE03 Achieving the first credit is dependent on recommendations being implemented by the client/contractor. Under the current landscaping designs (Roberts Limbrick Architects, 2021), the credit under Criterion 8b is available. As the design is still in its early stages, the additional credit under Criterion 8a is achievable and will depend on the recommendations for enhancement being implemented, in particular the inclusion of new habitats such as species-rich grassland or a green roof/living wall.

+ LE04 Achieving the first credit is dependent on recommendations being implemented by the client/contractor. At this stage, only one other credit cannot be achieved without changes to the post development landscape plan; in particular new and/or species-rich habitats will need to be included to compensate for loss of habitats on Site.

++LE05 Commitment is required from the client/contractor to meet the prerequisites under LE05. It is likely that the two credits under LE05 will be achievable.

Credits will be confirmed once a detailed Site plan including final landscape design has been issued.

9. BREEAM LE02: Identifying and Understanding the Risks and Opportunities for the Project

9.1 Survey and Evaluation (One Credit)

- Criterion 3: Two ecologists were appointed in March 2023 to undertake a Phase 1 Habitat Survey and prepare a PEA report (Section 1 to 7). A SQE has reviewed and verified the Phase 1 Habitat Survey and PEA report (Appendix D). The information in the PEA report was used to help inform the detailed design of the Proposed Development.
- Criterion 4: Two ecologists have undertaken a Phase 1 Habitat Survey resulting in the PEA report which includes the baseline data and considers the ZoI. This has been reviewed and verified by SQEs (Appendix D).
- Criteria 5a, 5b and 5c: The PEA report includes an assessment of the potential impacts of the Proposed Development (pg 19, Roberts Limbrick Architects, 2021; see Figure 2) on ecological receptors within the Site; and makes recommendations for ecological enhancement of the Site post-development. The PEA report has been shared with the project team and will be used to inform Site preparation, design and construction works.

This credit can be awarded.

9.2 Determining the Ecological Outcomes for the Site (One Credit)

- Criterion 6: Criteria 3 – 5 under Survey and Evaluation have been achieved.
- Criterion 7: SQEs have, and will continue to, liaise, and collaborate with the design team and County Ecologist to identify the optimal ecological outcome for the Site. These actions are detailed in Section 5 and 6 of this report.
  - The SQEs identified measures early in the project process to influence the ecological outcome of the Site as part of the PEA and paid due regard to the Mitigation Hierarchy in the CIEEM guidelines for PEA (CIEEM, 2017). This is detailed in Section 5 and 6 of this report.
  - The optimal outcome for the Site has been recommended in the PEA (Sections 5 and 6) which was passed to the project team through this report. For this Site the optimal outcome is recommended to be:
    - Further surveys of the specific habitats/species to inform the Proposed Development (see Section 5.1 for details; required mitigation);
    - Pollution and surface water control during construction and/or operation (required mitigation);
    - External lighting design that is sensitive to the surroundings and promotes ‘darker’ areas for wildlife (required mitigation);
    - Protection of retained habitat, including the RPA of line of trees and hedges (required mitigation);
    - Pre-works checks for bluebells, and a protective buffer applied if found (required mitigation);
    - Directional removal of grassland and scrub in the summer to encourage invertebrates to move towards retained habitats (required mitigation);
    - Avoidance of works during the breeding bird season where possible, or a pre-works check for birds and application of a protective species-specific buffer if not (required mitigation);
    - PWM for dormouse, to be further informed by dormouse surveys (required mitigation);
    - Pre-works checks and watching brief for hedgehogs when dismantling brash and log piles and clearing scrub (required mitigation);
    - Planting of species-rich grassland (required enhancement);
    - Incorporation of a green roof and/or living wall into the new building (required enhancement);
    - Planting/enhancing green corridors, including line of trees and edges along boundaries of the Site (recommended enhancement);
    - Installation of at least four insect walls and/or boxes, bee banks and/or dead wood piles (recommended enhancement);

- Installation of at least five bird boxes on the new buildings and adjacent/new trees to benefit common passerine species (recommended enhancement);
- Installation of at least two bat boxes within the new buildings (recommended enhancement);
- Installation of at least two dormouse nest boxes within the western boundary of the Site (recommended enhancement);
- Installation of at least two log piles, leaf piles and/or purpose built/ready-made hedgehog houses (recommended enhancement); and,
- Ongoing management of the Site to benefit biodiversity.

It is likely this credit can be awarded. All mitigation measures and recommendations for enhancement must be followed to achieve this credit. Mitigation measures and recommendations may change following results from further surveys.

9.3 Exemplary Level Criteria (One Credit)

To achieve this credit the following must be achieved:

- Criterion 8: Criterion 7 must be achieved to enable this Exemplary Level Criteria Credit to be available;
- Criterion 9: Wider Site sustainability-related activities and the potential for ecosystem related benefits should be considered, including as a minimum landscape, health and wellbeing, resilience, infrastructure, and community and end user involvement; and,
- Criterion 10 - Achievement of the credits of the following assessment issues:
  - HE 07 Safe and Healthy Surroundings (both credits);
  - Pol 03 Flood and Surface Water Management: achieve credits for ‘Surface water run-off’, and ‘Minimising watercourse pollution’; and,
  - Pol 05 Reduction of Noise Pollution.

The achievement of the Exemplary Level Criteria Credit will require input from the SQE into the detailed design. It will be determined once the detailed design has been confirmed and on the determination of the credits achieved under HE 07, Pol 03 and Pol 05.

This credit is potentially available, dependent on the fulfilment of Criteria 9 and 10.

10. BREEAM LE03 Managing Negative Impacts on Ecology

10.1 Prerequisite – Identification and Understanding the Risks and Opportunities for the Site

To make the credits under LE03 available the following prerequisite Criteria must be achieved:

- Criterion 1: LE02 must be achieved.

At least one credit under LE02 can be achieved; therefore, credits under LE03 are available.

10.2 Planning, Liaison, Implementation and Data (One Credit)

- Criterion 2: SQEs have the role and responsibility of defining the potential negative impacts on ecology. This is provided in the PEA report (Sections 1 to 7). Recommendations for further surveys, mitigation, and enhancements made by SQEs are provided in the PEA report (Sections 5 and 6) and are summarised in Section 9.2. The Project Manager is responsible for informing the design team of ecological features at an early enough stage to influence the Preparation and Brief of Concept Design. This will be determined by the Project Manager and the BREEAM Assessor.
- Criterion 3: Potential impacts of the Proposed Development, including construction works, have been assessed and requirements for mitigation ad recommendations for enhancement have been made with regard to Protected and Priority species on Site. This is detailed in provided in the PEA report (Sections 5 and 6) and is summarised in Section 9.2.
- Criterion 4: SQEs have proposed solutions and measures (avoidance and mitigation) to be implemented during Site preparation and construction works as part of the PEA report. These solutions were passed on to the project team via submission of this report. These are summarised in Section 9.2.

This credit can be awarded.

10.3 Managing Negative Impacts of the Project (up to Two Credits)

To achieve this credit the following must be achieved:

- Criterion 7: Criteria 2 – 4 must be achieved to enable these two credits to be available.
- Criterion 8: Negative impacts from Site preparation and construction works will be managed according to the hierarchy and either:
  - Criterion 8a: No overall loss of ecological value has occurred under LE04 (2 credits),
  - OR
  - Criterion 8b: The loss of ecological value has been minimised under LE04 (1 Credit).

Recommendations to avoid and minimise ecological impacts are provided in the PEA report (Sections 1 to 7) and are summarised in Section 9.2.

Under the current concept design (Roberts Limbrick Architects, 2021), at least one credit under Criterion 8b is achievable as it is mainly arable land, with minimal ecological value that will be lost. As the design is still in its early stages, the additional credit under Criterion 8a is achievable and will depend on the recommendations for enhancement being implemented, in particular the inclusion of new habitats such as species-rich grassland or a green roof/living wall.

11. BREEAM LE04: Change and Enhancement of Ecological Value

11.1 Prerequisite – Managing Negative Impacts on Ecology

To make the credits under LE04 available the following prerequisite criteria must be achieved:

- Criterion 1: Under LE03, Criterion 8 must have been achieved.

Under the current layout design (Robert Limbricks Architects, 2021), Criterion 8b under LE03 can be achieved.

- Criterion 2: The client or contractor confirms compliance is monitored against all relevant UK, EU or international legislation relating to the ecology of the Site.

The meeting of statutory obligations by the client or contractor underpins the awarding of the credits under LE02 and subsequent credits. Statutory obligations have been met to make this credit under LE04 available.

It is considered likely that these prerequisites can be achieved once the client commits to implementing the required mitigation and the majority of the recommendations for enhancements as summarised in Section 9.2; therefore, credits under LE04 are discussed below.

11.2 Liaison, Implementation and Data Collation (One Credit)

This credit can be achieved when the client has committed to achieving the following:

- Criterion 4: The project team, liaising and collaborating with representative stakeholders and taking into consideration data collated and shared, have implemented the solutions and measures selected in a way that enhances ecological value in the following order:
  - On Site, and where this is not feasible,
  - Off site within the ZoI.

A list of recommended enhancements to be made are provided in the PEA report (Section 6).

- Criterion 5: The data collected as part of the ecological surveys will be submitted to SEWBReC by the SQE at the end of the Project. Data submitted will be limited to records of Protected or Priority species only.

This credit is achievable once the client commits to implement the biodiversity recommendations for mitigation and enhancement as summarised in Section 9.2.

11.3 Change and Enhancement of Ecology (up to Three Credits)

- Criteria 6: Up to three credits can be awarded dependent on the calculation of the change in ecological Biodiversity Units as result of the Proposed Development.

Credits are awarded as follows:

- Criteria 6.a Minimising loss of ecological value (one credit - percentage score of 75-94);
- Criteria 6.b No net loss of ecological value (two credits - percentage score of 95-104); and,
- Criteria 6.c Net gain of ecological value (three credits - percentage score of greater than 105).

Tables 11.1 – 11.5 below show the Biodiversity Unit calculations (BREEAM UK, 2018b) for ‘habitat areas’.

Tables 11.6 – 11.7 below show the Biodiversity Unit calculations for ‘linear (foliage) habitats’.

These tables use the Phase 1 Habitat survey map (Figure 1) and the proposed Site layout design shown on page 19 (option 7) of the ‘Heronsbridge School. Bridgend, Feasibility Study’ (Roberts Limbrick Architects, 2021), as shown in Figure 2.

There are no watercourses habitats on Site and as such no Biodiversity Unit calculations (BREEAM UK, 2018b) have been undertaken for watercourses.

The linear percentage change must be assessed in conjunction with the area percentage change and the lowest percentage change from the two used to inform the BREEAM credits available.

The Percentage Change in Area Biodiversity Units = **87.71%**

The Percentage Change in Linear Biodiversity Units = **0%**

The Percentage Change in Biodiversity Units is between 0 and 87.71%. Therefore, under the current layout design (Roberts Limbrick Architect, 2021) **one credit is achievable.**

One credit under Criterion 6a is achievable based on the current proposed layout design (Roberts Limbrick Architect, 2021). As the design is still in the early stages, it is feasible to achieve all three credits under Criterion 6c with the inclusion of new and/or species-rich habitats, for example species-rich grassland and/or green roof/living wall. The achievement of this/these credit/s will require collaboration between the SQE, stakeholders, project managers, and the design team (including architects and landscape architects).

11.4 Exemplary Level Criteria

- Criterion 7: The change in ecological value occurring is calculated in accordance with the process set out in GN36 - BREEAM, CEEQUAL and HQM Ecology Calculation Methodology – Route 2 (BREEAM UK, 2018b). The credit is awarded as follows:
  - Criterion 7.a Significant net gain of ecological value (percentage score of 110 or above).

To achieve one Exemplary Level Criteria credit there must be a significant net gain of ecological value (percentage score of 110 or above).

This credit is not currently achievable at this Site based on the current proposed layout design (Roberts Limbrick Architects, 2021).

Table 11.1 Total Post Development Area Biodiversity Units Calculation Formula

Calculation	Values
Total Post-Dev Area Biodiversity Units for the Proposed Development (G) **G = (B - D) + (E+F)** Where:	68,889.28
B = Total Pre-Dev Area Biodiversity Units	84,312.38
D = Total Post-Dev Area Biodiversity Units Lost Due To Proposed Development	84,208.42
E = Post-Dev Area Biodiversity Units Created Due To Proposed Development	68,785.32
F =Post-Dev Area Biodiversity Units Enhanced Due To Proposed Development	0
Percentage Change in Area Biodiversity Units = (G ÷ B) x 100	**81.71**

Table 11.2 Area-Based Biodiversity Units Pre-Development (B)

Parcel Number	Habitat Type	Distinctiveness	Condition	Area (m^2)	Biodiversity Units
1	Arable Land	Low	Poor	31242.75	62485.50
2	Improved Grassland	Low	Poor	3071.59	6143.18
3	Neutral Semi-Improved Grassland	Medium	Poor	25.99	103.96
4	Dense/Continuous Scrub	Low	Poor	1151.12	2302.24
5	Scattered Scrub	Low	Poor	280.43	560.86
6	Tall Ruderal	Low	Poor	702.55	1405.10
7	Bare Ground	Low	Poor	4440.97	8881.94
8	Other Habitat-Manure Piles	Low	Poor	1214.80	2429.60
TOTAL				**42,130.20**	**84,312.38**

Table 11.3 Area-Based Biodiversity Units Area-Based Habitat Loss (D)

Parcel Number	Habitat Type	Distinctiveness	Condition	Area (m^2)	Biodiversity Units
1	Arable Land	Low	Poor	31242.75	62485.50
2	Improved Grassland	Low	Poor	3071.59	6143.18
4	Dense/Continuous Scrub	Low	Poor	1151.12	2302.24
5	Scattered Scrub	Low	Poor	280.43	560.86
6	Tall Ruderal	Low	Poor	702.55	1405.10
7	Bare Ground	Low	Poor	4440.97	8881.94
8	Other Habitat-Manure Piles	Low	Poor	1214.80	2429.60
TOTAL				**42,104.21**	**84,208.42**

Table 11.4 Area-Based Habitat Created (E)

Parcel Number	Habitat Type	Distinctiveness	Condition	Area (m^2)	Delivery Risk	Temporal Risk	Spatial Risk	Biodiversity Units
9	Buildings	N/A	N/A	8568.00	Low	0	Not making a contribution to local strategy	0
10	Soft Outdoor PE, informal & social areas*	Low	Poor	6250.00	Low	1	Within 500 m of the area of loss	12,125.00
11	Hard Outdoor PE, informal & social areas*	N/A	N/A	2050.00	Low	0	Not making a contribution to local strategy	0
12	Habitat Areas*	High	Good	500.00	Low	2	Within 500 m of the area of loss	8370.00
13	Trees**	Medium	Moderate	167.00	Medium	10	Within 500 m of the area of loss	626.05
14	Amenity Grassland***	Low	Poor	24,569.21	Low	1	Within 500 m of the area of loss	47,664.27
TOTAL				**42,104.21**				**68,785.32**

*Habitats unspecified by Roberts Limbrick Architects (2021). Habitats assumed for purpose of the calculation are as follows: Parcel 10) amenity grassland; Parcel 11) hardstanding; and, Parcel 12) species-rich grassland. Parcel 12 includes a small lagoon area, but no specific area was given to allow this habitat to be separated.

**Area of trees is equivalent to their root protection area. 37 trees are included in the landscaping design. For the purposes of this calculation, a tree diameter of 10 cm has been used to represent young semi-mature trees.

***Remaining habitat area in the landscaping design was unspecified by Roberts Limbrick Architects (2021). This habitat has been assumed to be amenity grassland

Table 11.5 Total Post Development Area Biodiversity Units

Pre-Development Area Biodiversity Units	Area Based Units Lost	Area Based Units (Creation)	Area Based Units (Enhancement)	Total Post Development Area Biodiversity Units	Biodiversity Unit Score
84,312.38	84,208.42	68,785.32	0	68,889.28	**81.71%**

Table 11.6 Linear Habitats - Percentage Change in Biodiversity Units

Calculation	Values
Total Post-D Linear Biodiversity Units for the Development (G) **G = (B - D) + F** Where:	312.00
B = Total Pre-D Linear Biodiversity Units	312.00
D = Total Post-D Linear Biodiversity Units Lost Due To Development	0
F = Total Post-D Linear Biodiversity Units Created and/or Enhanced Due to Development	0
Percentage Change in Linear Biodiversity Units = (G ÷ B)	**0%**

Table 11.7 Linear-Based (Foliage) Biodiversity Units Pre-Development (B)

Parcel Number	Habitat Type	Length (m)	Condition	Biodiversity Units
15	Line of Trees	129.00	Moderate	258.00
16	Intact Hedge (Species-Poor)	9.00	Poor	9.00
17	Intact Hedge (Species-Poor)	19.00	Poor	19.00
18	Intact Hedge (Species-Poor)	26.00	Poor	26.00
TOTAL		**183**		**312.00**

12. BREEAM LE05: Long Term Ecology Management and Maintenance

12.1 Prerequisite – Roles and Responsibilities, implementation, Statutory Obligations

For the credits under LE05 to be available, the following prerequisite Criteria must first be achieved:

- Criterion 1: The client or contractor confirms that compliance is being monitored against all relevant UK, EU and international standards relating to the ecology of the Site.
- Criterion 2: Under LE03, criteria 2-3 have been achieved and at least one credit under LE04 for 'Change and Enhancement of Ecology' has been awarded.

Of the prerequisites, Criteria 1 and 2 can be achieved. The first credit under LE04 'Change and Enhancement of Ecology' can be achieved, and likely the remaining two credits under Criterion 6 as well once the client commits to implementing the majority of the recommended enhancements.

These prerequisites can likely be achieved and therefore the credits under LE05 can be made available. These are discussed below.

12.2 Planning, Liaison, Data, Monitoring and Review Management and Maintenance (One Credit)

This credit can be achieved when the client has committed to achieving the following:

- Criterion 3: The project team liaise and collaborate with representative stakeholders, taking into consideration data collated and shared, on solutions and measures implemented to:
  - 3.a Monitor and review the effectiveness with which the plans for LE03 and LE04 are implemented.
  - 3.b Develop and review management and maintenance solutions, actions, or measures.
- Criterion 4: In support of the above, and to help ensure their continued relevance over the period of the project, the following should be considered:
  - 4.a Monitoring and reporting of the ecological outcomes for Site implemented at the design and construction stage.
  - 4.b Monitoring and reporting of outcomes and successes from the project.
  - 4.c Arrangements for the ongoing management of landscape and habitat connected to the project (on and, where relevant, off Site).
  - 4.d Maintaining the ecological value of the Site and its relationship or connection to its ZoI.
  - 4.e Maintaining the Site in line with any sustainability linked activities, e.g., ecosystems benefits (LE 02).
  - 4.f Remedial or other management actions are carried out which relate to those identified in LE02, LE03 and LE04.
- Criterion 5: As part of the tenant or building owner information supplied, include a section on Ecology and Biodiversity to inform the owner or occupant of local ecological features, value, and biodiversity on or near the Site.
- Criterion 6: The Landscape and Habitat Management Plan (LHMP) or similar is updated as appropriate to support maintenance of the ecological value of the Site.

It is possible that this credit will be achievable once the client commits to implementing the Criteria above, including the commitment to having a LHMP, and meets the requirements for the prerequisites in relation to LE04.

It is **important the client maintains good record keeping** throughout the project such as file notes, photos, Site diary, documents, email etc. to be able to be able to demonstrate that the measures have been completed.

12.3 Landscape and Habitat Management Plan Development (One Credit)

- Criterion 6: The LHMP, or equivalent, is developed in accordance with BS 42020:2013 Section 11.1 (BS, 2013), covering as a minimum the first five years after project completion and includes:

  6.a Actions and responsibilities, prior to handover, to give to relevant individuals.

  6.b The ecological value and condition of the Site over the Proposed Development life.

  6.c Identification of opportunities for ongoing alignment with activities external to the Proposed Development project and which supports the aims of BREEAM's Strategic Ecology Framework.

  6.d Identification and guidance to trigger appropriate remedial actions to address previously unforeseen impacts.

  6.e Clearly defined and allocated roles and responsibilities.

- Criterion 7: The LHMP or similar is updated as appropriate to support maintenance of the ecological value of the Site.

Although it is possible to produce a full five-year LHMP at the Design Stage, the document may need substantial revision by the Post Construction Stage (when it is handed over to the occupier). A more efficient method that is possible under the BREEAM process is to provide ‘a copy of the specification requiring the development of the plan and outlining the scope of its content’ at the Design Stage, followed by the full five-year LHMP once the landscaping plan has been finalised. The LHMP will be produced in accordance with BS 42020:2013 Section 11.1 (BS, 2013) and a suggested format is included in Appendix E.

This credit is achievable, when the client commits to having a LHMP and meets the requirements for the prerequisites in relation to LE04.

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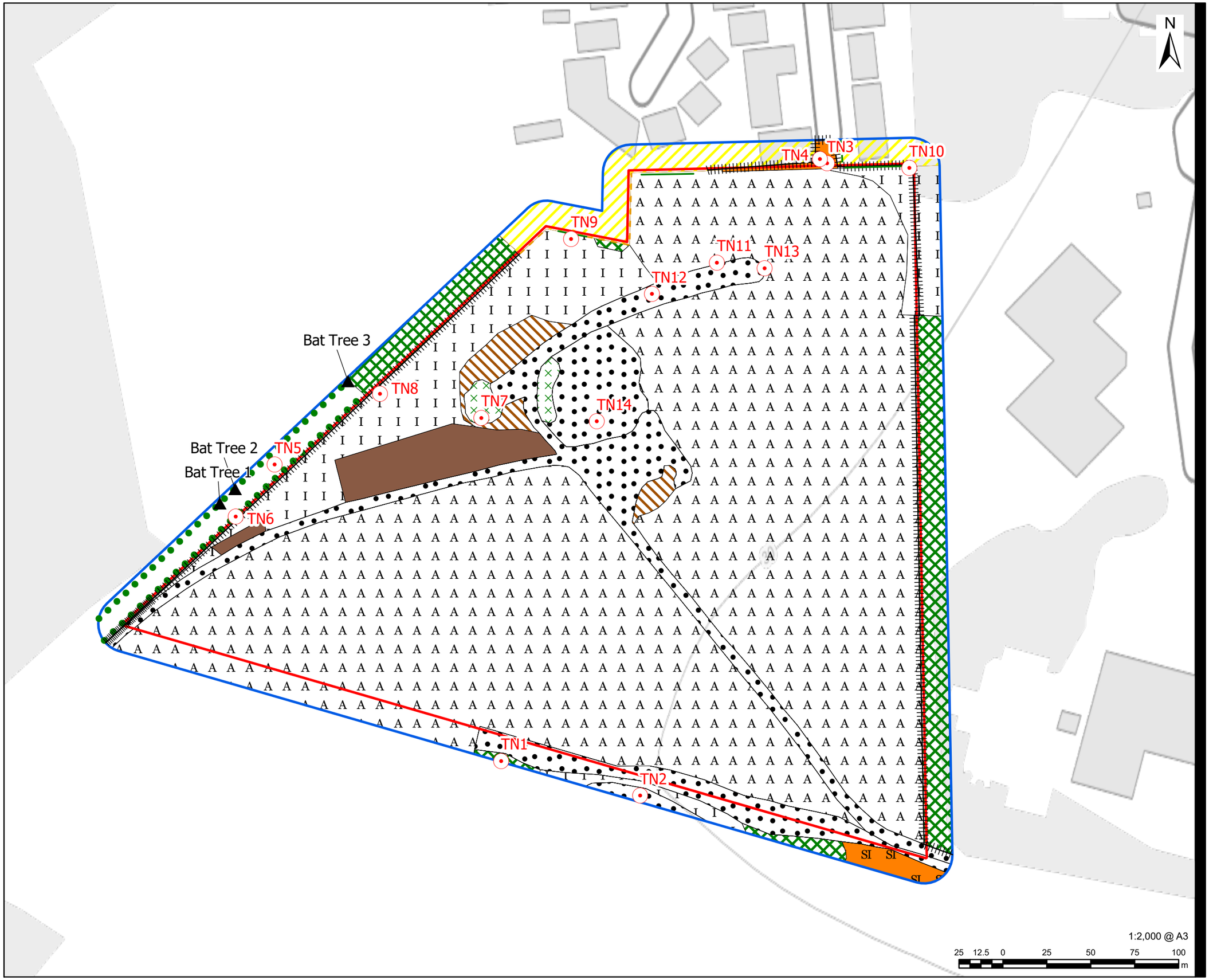
Figure 1: Phase 1 Habitat Map



AECOM

PROJECT

Heronsbridge School

CLIENT

Bridgend County Borough Council

CONSULTANT

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LEGEND

- Site boundary
- Zone of influence
- Area not accessible
- Bat tree
- Target note
- Broadleaved parkland/scattered trees
- Intact hedge - species-poor
- Defunct hedge - species-poor
- Fence
- Wall
- Scrub - dense/continuous
- Scrub - scattered
- SI Neutral grassland - semi-improved
- I Improved grassland
- Other tall herb and fern - ruderal
- A Cultivated/disturbed land - arable
- Bare ground
- Manure Piles

INSET

NOTES

ISSUE PURPOSE

FINAL

PROJECT NUMBER

60704349

FIGURE TITLE

Heronsbridge School Phase 1 Habitat Map

FIGURE NUMBER

Figure 1

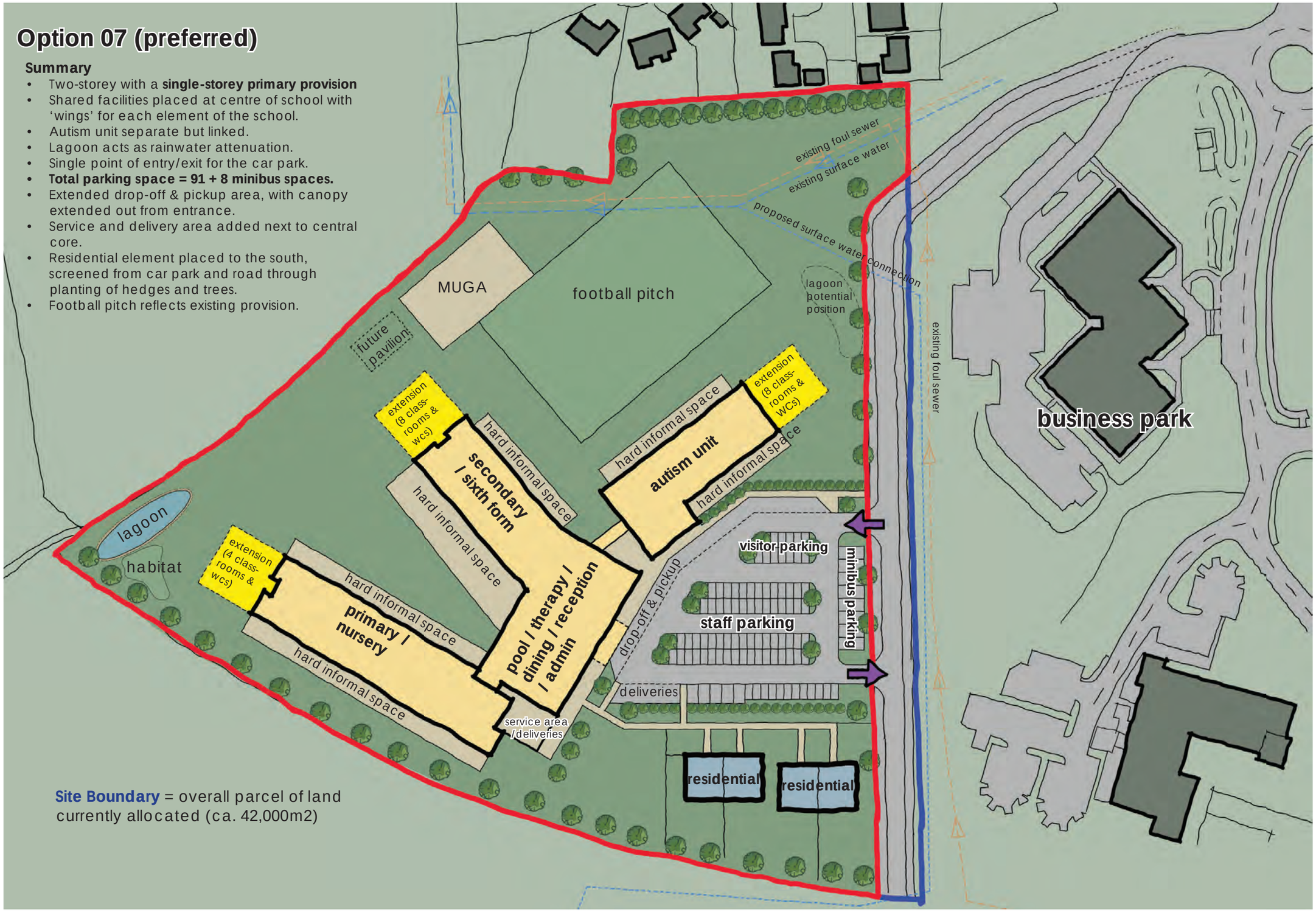
Figure 2: Proposed Post Development Plan

03: Sketch Options

Option 07 (preferred)

Summary

- Two-storey with a **single-storey primary provision**
- Shared facilities placed at centre of school with 'wings' for each element of the school.
- Autism unit separate but linked.
- Lagoon acts as rainwater attenuation.
- Single point of entry/exit for the car park.
- **Total parking space = 91 + 8 minibus spaces.**
- Extended drop-off & pickup area, with canopy extended out from entrance.
- Service and delivery area added next to central core.
- Residential element placed to the south, screened from car park and road through planting of hedges and trees.
- Football pitch reflects existing provision.



Roberts Limbrick ARCHITECTS

Appendix A: Wildlife Legislation and Local Planning Policy

A.1 Legislation – Habitats

A variety of sites are designated in the UK, under Conventions, Directives and Regulations for their nature conservation importance and interest. The general aim of these designations is to conserve and protect ecological resources, as well as raising awareness and understanding. Other non-statutory sites are afforded some protection through local plans. The following outlines the most common statutory and non-statutory designations:

Designation	Brief Description
Special Areas of Conservation (SAC)	SACs are sites selected to conserve the natural habitat types and species of wild flora and fauna as stated in the Conservation of Habitats and Species Regulations. They are the best areas to represent the range and variety of habitats and species within the European Union (EU).
Special Protection Area (SPA)	SPAs are strictly protected sites for the most important habitats for rare and migratory birds within the EU.
Ramsar Sites	Ramsar Sites are wetlands of international importance. Ramsar Sites are protected, through the planning system, under the Wildlife and Countryside Act 1981 (as amended), and the Countryside and Rights of Way Act 2000 through their notification as SSSIs and through other regulatory systems addressing water, soil and air quality.
National Nature Reserve (NNR)	NNRs are nationally important areas of wildlife habitat and geological formations in Britain. NNRs are designated and protected under the National Parks and Access to the Countryside Act 1949 and the Wildlife and Countryside Act 1981 (as amended). They receive additional protection under the Countryside and Rights of Way Act 2000. They are managed for the benefit of nature conservation.
Site of Special Scientific Interest (SSSI)	A SSSI is a site of at least national importance for nature conservation designated under the Wildlife and Countryside Act 1981 (as amended) due to its special interest in terms of flora, fauna or geological or physiographical features. Protection afforded to SSSI's was strengthened by the Countryside and Rights of Way Act 2000. It should be noted that under the Countryside and Rights of Way Act 2000 owners of SSSIs must give Natural Resources Wales (NRW) written notice before they begin any of the operations listed in the notification as likely to damage the special interest features, or if they allow others to carry out these activities. None of the listed operations can be carried out without NRW's consent.
County Wildlife Site (Local site)	A County Wildlife Site is a non-statutory site designated by a local authority as being of local nature conservation value.
Ancient Woodland Inventory	Ancient Woodland is a term applied to woodlands which have existed from at least Medieval times to the present without ever having been cleared for uses other than wood or timber production. A convenient date used to separate ancient and secondary woodland is about the year 1600. In special circumstances semi-natural woods of post-1600 but pre-1900 origin are also included.
Wildlife Trust Reserve	These non-statutory sites are managed by the Wildlife Trusts with the purpose of conserving wildlife.

A.2 Legislation – Protected Species

In addition to habitats, a number of species have been afforded protection through international/European and national law. Other species are considered to contribute to our 'quality of life'. Although these species do not benefit from legal protection, they can be material considerations in the planning process. The table below outlines the key forms of protection afforded to species. The Conservation of Habitats and Species Regulations 2017 (as amended), the Wildlife and Countryside Act 1981 (as amended), Convention on Biological Diversity and the Countryside and Rights of Way Act 2000, and the Environment (Wales) Act 2016 are the main legislative framework for protection of wild animals in Wales, UK.

Species including bats, otters and great crested newts are listed under Schedule 2 of the Conservation of Habitats and Species Regulations 2017. Badgers are protected under their own Act: The Protection of Badgers Act 1992. Activities affecting protected species must usually be conducted under licence obtained from the

appropriate body (in Wales, this is Natural Resources Wales). Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) covers birds, Schedule 5 covers other animals and Schedule 8 covers plants.

Developers must be able to show that all reasonable measures have been taken to ensure that protected species are not subject to disturbance. The habitats which regularly support the Conservation of Habitats and Species Regulations 2017 Schedule 2 species, the Wildlife and Countryside Act 1981 (as amended) Schedule 1 species and some Wildlife and Countryside Act 1981 (as amended) Schedule 5 species are also protected from disturbance and destruction. Again, all reasonable precautions should be taken to ensure that this does not happen. The Countryside and Rights of Way Act 2000 has strengthened enforcement powers and introduced a new offence of "reckless disturbance" that applies to both protected sites and species. The table below provides a summary of the relevant legislation with regards to protected and priority species.

Designation	Brief Description
Conservation of Habitats and Species Regulations, 2017 (as amended)	The Conservation of Habitats and Species Regulations 2017 are intended to remain in place for some time. This is due to the Government ceasing to have the power of consolidating regulations derived from EU law after the date of exit from the European Union. The Regulations are designed to transpose Council Directive 92/43/EEC, on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive), into national law. Additionally, they transpose elements of the EU Wild Birds Directive in England and Wales. The Conservation of Habitats and Species Regulations 2017 extend to England and Wales, including the adjacent territorial sea (12 nautical miles from the mean low-water mark of a coastal state), to a limited extent in Scotland in respect of reserved matters and Northern Ireland in respect of excepted matters. The Conservation of Habitats and Species Regulations 2017 protects habitat sites supporting vulnerable and protected species, as listed within the Directive. The need for an assessment of impacts on Natura 2000 sites (the collective name for European designated sites, including SPAs and SACs); and provides a framework for the protection, management and control of all species of naturally occurring wild birds in the European territory of EU Member States.
Wildlife and Countryside Act (1981) (as amended)	The Wildlife and Countryside Act 1981 (as amended) is the principal mechanism for the legislative protection of wildlife in Great Britain. This legislation is the means by which the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and (partially) the Birds Directive and the Habitats Directive are implemented in the UK. The Countryside and Rights of Way Act 2000 has strengthened this legal protection (see below). A small number of plant species are listed under Schedule 9 of the Wildlife and Countryside Act 1981, as amended, which includes species such as Japanese knotweed, Himalayan balsam, montbretia, giant hogweed (*Heracleum mantegazzianum*) and some cotoneaster species (Cotoneaster sp.). It is illegal to plant or to cause these plants to grow in the wild, and legal disposal methods for vegetation and soil subject to disturbance or clearance from a site must be used.
Convention on Biological Diversity and the Countryside and Rights of Way Act 2000	The Countryside and Rights of Way Act 2000 provides a statutory framework for biodiversity conservation. The Act places a duty on Government Departments and the National Assembly for Wales to have regard for the conservation of biodiversity and maintain lists of species and habitats for which conservation steps should be taken or promoted, in accordance with the Convention on Biological Diversity. Schedule 9 of the Act amends SSSI provisions of the Wildlife and Countryside Act 1981, including provisions to change SSSIs and providing increased powers for their protection and management. The provisions extend powers for entering into management agreements; place a duty on public bodies to further the conservation and enhancement of SSSIs; increases penalties on conviction where the provisions are breached; and introduce a new offence whereby third parties can be convicted for damaging SSSIs. Schedule 12 of the Act amends the species provisions of the Wildlife and Countryside Act 1981, strengthening the legal protection for threatened species. The provisions make certain offences 'arrestable' and create a new offence of reckless disturbance. The UK Biodiversity Action Plan (BAP) was published in 1994, and was the UK Government's response to the Convention on Biological Diversity (CBD), which the UK signed up to in 1992. It provides the framework for fulfilling the UK's responsibilities towards the Convention on Biological Diversity. Conservation of biodiversity (the variety of life on earth) is an essential element of sustainable development.
Environment (Wales) Act 2016	The Environment (Wales) Act puts in place the legislation needed to plan and manage Wales' natural resources in a more proactive, sustainable and joined-up way. Part 1 relates to the sustainable management of natural resources. This ensures that the way in which the use of and the impacts on natural resources do not result in long term decline. The aim is to sustainably manage natural resources in a way and rate that meets the needs of present and current generations without compromising the needs of future generations. The Act also contains at section 7, a duty for the Welsh Ministers prepare and publish a list of the living organisms and types of habitat which in their opinion are of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales. This section replaces the duty in section 42 of the NERC Act 2006.

A.3 Local Planning Policy

The table below provides a summary of relevant local planning policies found in the Bridgend County Borough Council Local Development Plan (adopted September 2013). For the precise wording of each specific policy please refer back to the source document (Bridgend County Borough Council, 2013).

Planning Policy	Purpose / Relevant Sections
SP2 Design and Sustainable Place Making	All developments should contribute to creating high quality, attractive, sustainable places which enhance the community in which they are located, whilst having full regard to the natural, historic and built environment by: 8) Avoiding or minimising noise, air, soil and water pollution; 9) Incorporating methods to ensure the site is free from contamination (including invasive species); 10) Safeguarding and enhancing biodiversity and green infrastructure; and, 14) Make a positive contribution towards tackling the causes of, and adapting to, the impacts of Climate Change.
ENV5 Green Infrastructure	Green infrastructure will be provided through the protection and enhancement of existing natural assets and the creation of new multi-functional areas of green space. Green infrastructure corridors will connect locations of natural heritage, green space, biodiversity or other environmental interest. They will be safeguarded through: 1) Not permitting development that compromises their integrity and therefore that of the overall green infrastructure framework; 2) Using developer contributions to facilitate improvements to their quality and robustness; 3) Investing in appropriate management, enhancement and restoration, and the creation of new resources.
ENV6 Nature Conservation	Proposals for development or redevelopment will be required to: 1) In the first instance, retain, conserve, restore and enhance wherever possible existing: a) Trees; b) Other Natural Features or Habitats.

Appendix B: Site Photographs

Photograph 1: Line of trees on southwestern boundary of the Site.

Photograph 2: Entrances to rabbit warren found under line of trees on southwestern boundary of the Site (Appendix C: TN 6).

Photograph 3: Dense bramble scrub south of the cinder block wall located in the northwest of the Site.

Photograph 4: Example of scattered scrub in the west of the Site.

Photograph 5: Neutral semi-improved grassland in north of the Site and wooden fence on northern boundary.

Photograph 6: Improved grassland in the northwest of the Site. To the right is tall ruderal vegetation growing through the grassland (Appendix C: TN 8).

Photograph 7: Open brash pile constructed from cut hazel to the north of the northwest improved grassland (front/red arrow; Appendix C: TN 9) and hazel and beech species poor intact hedge (back).

Photograph 8: Brash pile in northeast improved grassland (Appendix C: TN 10).

Photograph 9: Tall ruderal vegetation in the northwest of the Site.

Photograph 10: Arable land to the right and farm track to the centre.

Photograph 11: Rabbit warren entrance in the northern area of the arable land (Appendix C: TN 11).

Photograph 12: Intact species poor hedge in the north of the Site.

Photograph 13: Intact species poor hedge in the northeast of the Site.

Photograph 14: Wooden fence with wire on western boundary.

Photograph 15: Wooden fence with wire on eastern boundary.

Photograph 16: Cinder block wall in northwest corner.

Photograph 17: Section of the farm track running to the northeast corner with scattered perennial ephemeral vegetation (Appendix C: TN 12).

Photograph 18: Pile of large tree stumps, logs, and smaller branches at the end of the northeast section of farm track (Appendix C: TN 13).

Photograph 19: Bare soil with perennial ephemeral vegetation north of the centre of the Site.

Photograph 20: Manure pile in the west of the Site.

Photograph 21: Ash within line of trees within ZoI to west of Site with High suitability for roosting bats. Figure 1: Bat Tree 1.

Photograph 22: Oak within line of trees within ZoI to west of Site with Low suitability for roosting bats. Figure 1: Bat Tree 2. Location of woodpecker hole marked by red arrow.

Photograph 23: Close up of woodpecker hole, approximately 8 m above the ground on oak with Low suitability for roosting bats. Figure 1: Bat Tree 2.

Photograph 24: Pedunculate oak within line of trees within ZoI to west of Site with Precautionary Moderate suitability for roosting bats. Figure 1: Bat Tree 3.

Appendix C: Target Notes

Target Note	Description
1	Large rubble pile under scrub.
2	Shallow, ephemeral pools on bare ground.
3	1 x 1.5 m pile of brick and stones, approximately 20 cm high.
4	Approximately 20 Spanish bluebell and common bluebell hybrids in semi-improved grassland.
5	Habitat between line of trees with bluebell present.
6	Two entrances to a rabbit warren. Not active as spider webs in entrances.
7	Rubble pile.
8	Strip of ruderal vegetation of edge of improved grassland.
9	Open brash pile from cut coppiced hazel.
10	3 x 2 m brash pile within light bramble scrub.
11	Two entrances to a rabbit warren.
12	Perennial ephemeral vegetation over farm track.
13	8 x 3 m pile of large stumps, logs, and smaller branches at one end of the farm track with moss and scattered vegetation over it.
14	Ground substrate is rockier.

Appendix D: Suitably Qualified Ecologists-Staff Pen Portraits

Charlie Hobbs MCIEEM – Principal Ecologist - AECOM Plymouth – SQE

Charlie Hobbs has national and international project experience, a good understanding of EcIA, BNG, HRA and a range of environmental technical disciplines. Charlie has also assisted with noise, and water quality field surveys. Charlie has experience in the preparation of protected species licence applications, the development of mitigation strategies, and supervising site works.

Charlie Hobbs MCIEEM complies with the written definition of an SQE and has reviewed the PEA and BREEAM report.

Melanie Barnicott MCIEEM – Associate Ecologist- AECOM Plymouth – SQE

Melanie Barnicott has over 15 years' experience within ecological consultancy. Melanie has worked on a diverse and interesting range of projects both locally and internationally including many large-scale projects. Melanie's key skills include coordinating and resourcing the team, providing technical support for protected species and habitat surveys, writing and quality assurance of technical reports, and liaising with clients, planning authorities and consultees. Melanie has experience of undertaking surveys in a range of habitats and environments. She holds protected species licenses for dormice, great crested newt, bat (level 2) and barn owl.

Melanie Barnicott MCIEEM complies with the written definition of an SQE and has verified the PEA and BREEAM report.

Appendix E: Landscape Habitat Management Plan - Scope of Contents

Site Description

- 1.1. Introduction
- 1.2. General Information
  - 1.2.1. Location
  - 1.2.2. Summary Description
  - 1.2.3. Land Tenure
  - 1.2.4. Map Coverage
  - 1.2.5. Photographic Coverage
- 1.3. Environmental Information
  - 1.3.1. Physical Information
  - 1.3.2. Biological Information
  - 1.3.3. Cultural information
  - 1.3.4. Historic and Current management
  - 1.3.5. Ecological Relationships and Implications for Management

2. Evaluation and Objectives

- 2.1. Conservation Status of the Site
  - 2.1.1. Historic Nature Conservation
  - 2.1.2. Site Status
  - 2.1.3. Site definition and Boundaries
- 2.2. Evaluation of Site Features
  - 2.2.1. Criteria for Evaluation
  - 2.2.2. The Site in the Wider Perspective and Implications for Management
  - 2.2.3. Specified Limits
  - 2.2.4. Ideal Management Objectives
- 2.3. Factors Influencing Management
  - 2.3.1. Natural Trends
  - 2.3.2. Man Induced Trends
  - 2.3.3. External Factors
  - 2.3.4. Legal and Non-legal Obligations

3. Prescriptions