

St Nicholas Church In Wales Primary School

Preliminary Ecological Appraisal (PEA) and BREEAM
Ecology Report

Vale of Glamorgan Council

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1. Executive Summary

AECOM was instructed by Vale of Glamorgan Council to carry out a Preliminary Ecological Appraisal (PEA) and BREEAM Landuse and Ecology assessment of the site at St Nicolas Church in Wales Primary School, hereafter referred to as 'the Site'. The central grid reference for the Site is ST 08894 74367 and the boundary of the Site is shown on Figure 1.

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 the demolition of the existing school building and construction of a new single storey school building on the existing playing field. The Site will include new sports pitches (grass), games court (MUGA), soft play, hard play, car parking, service area and habitat areas. Detailed landscaping designs and lighting designs are not yet available.

The proposed site plan layout HLM Architects (June 2019) Drawing Number 15-1094-01-SK-001_P02 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 is an existing active school, dominated by amenity grassland, hardstanding and buildings with other habitats comprising mixed plantation woodland, poor semi-improved grassland standalone trees, hedgerow with trees, species poor hedgerow, species poor hedgerow, row of trees and introduced shrub. There is one Pond (standing water) within the Site Boundary. (Figure 1). Within the Site boundary there is potential for common amphibians (not great crested newt *Triturus cristatus*), breeding birds, foraging and commuting bats and hedgehog *Erinaceus europaeus*. There is low suitability for reptiles. Invasive Non-Native Species New Zealand pygmy weed *Crassula helmsii* and parrots feather *Myriophyllum aquaticum* are present in the Pond on Site. The suitability of habitats for reptiles is low.

The proposed Site plan layout shows that the boundary features will be retained. Amenity grassland, standalone trees, poor semi-improved grassland and mixed plantation woodland will be partially retained. The pond, buildings, and introduced shrub will be removed during construction.

There will be complete removal of all buildings, the pond and introduced shrubs and partial removal of amenity grassland, poor semi-improved grassland plantation woodland and hardstanding during construction. All boundary features will be retained. During construction there is potential for damage of retained habitat through root compaction caused by tracking of vehicles or storage of material over the root zone of retained trees/hedgerows. Habitats suitable for supporting common amphibians, individual reptiles, breeding birds, foraging bats, and foraging hedgehog are being removed.

Without mitigation, Potential impacts are: loss of breeding bird habitat, killing/injury of breeding bird and destruction of nests, loss of amphibian breeding habitat, low risk of killing/injury of individual reptiles and amphibians, loss of some hedgehog habitat, potential injury of hedgehog and potential to spread of Invasive Non-Native Species of aquatic plants. All boundary features including hedgerows and rows of trees will be retained however, without mitigation new external lighting during construction and operation has the potential to reduce the suitability of these features for foraging and commuting bats and hedgehog.

Recommendations have been made with regards to further surveys, mitigation and opportunities for enhancement. The following surveys were undertaken in 2019 as recommended by AECOM following the Phase 1 Survey: Great crested newt eDNA Survey (AECOM 2019a); and, Bat Roost Survey (AECOM 2019b).

The eDNA survey returned negative results concluding absence of great crested newt at the Site. Roosting bats were not recorded during the bat survey.

The 'before development' BREEAM LE04 calculations are based on the Phase 1 Habitat Survey. 'Post development' calculations are based on the proposed site plan layout HLM Architects (June 2019) Drawing

Number 15-1094-01-SK-001_P02. This Report can be used to guide Site design to achieve credits under BREEAM Issues LE03, LE04 and LE05.

Summary of BREEAM Issues and Potential Credits

Issue	Total Available	Credits likely achievable under current landscaping proposals*
LE02	3	1
LE03	3	2
LE04	5	2
LE05	2	2
LE Total	13	7*

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

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

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

2. Introduction

2.1 Introduction

AECOM was instructed by Vale of Glamorgan Council to carry out a Preliminary Ecological Appraisal (PEA) and BREEAM Landuse and Ecology assessment of land at St Nicolas Church in Wales Primary School, hereafter referred to as 'the Site'. The central grid reference for the Site is ST 08894 74367 and the boundary of the Site is shown on Figure 1.

This PEA was commissioned to identify whether there are known or potential ecological receptors (nature conservation designations, and 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, 2017a). The PEA addresses relevant wildlife legislation and planning policy as summarised in this report.

In order to deliver the PEA, a desk study and an extended Phase 1 Habitat Survey were undertaken by an appropriately experienced ecologist, to identify ecological features within the proposed development site and the wider potential zone of influence of the proposed development. The potential zone of influence was defined with reference to the project description provided by Vale of Glamorgan Council as shown on Figure 1 and 2. Additional details are provided in Section 3: Methodology.

The BREEAM 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).

2.2 Site Location and Description

The Site is approximately 12,600 m² and located in a predominantly rural area on the outskirts of St Nicholas village, Vale of Glamorgan, CF5 6SG (National Grid Reference ST 08894 74367). The Site is shown on Figure 1.

The Site is an existing active school, dominated by amenity grassland, hardstanding and buildings with other habitats comprising mixed plantation woodland, poor semi-improved grassland, standalone trees, hedgerow with trees, species poor hedgerow, species poor hedgerow, row of trees and introduced shrub. There is one Pond (standing water) within the Site Boundary. (Figure 1).

2.3 Proposed Development

The proposed development is for the demolition of the existing school building and construction of a new single storey school building on the existing playing field. The Site will include new grass sports pitches, Multi Use Games Area (MUGA), soft play areas, hard play areas (playgrounds), car parking, service vehicle yard and areas set aside to for retention/creation of wildlife habitat. Detailed landscaping designs and lighting designs are not yet available.

The construction programme is currently unconfirmed, and the commencement and completion dates are unknown at the time of writing.

The proposed site plan layout HLM Architects (June 2019) Drawing Number 15-1094-01-SK-001_P02 has been used for this assessment. This PEA and BREEAM Report will be used to inform the final detailed design of the proposed development.

2.4 Objectives

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

- To identify any designated nature conservation sites on or in the vicinity of the Site;
- To identify any known records of Protected, notable or scarce species in the vicinity of the Site;

- To record and map the main habitats and features of ecological interest;
- To assess the ecological value of the Site and the surrounding area;
- To assess ecological impacts including potential change in diversity;
- To outline requirements for further surveys, if required;
- To make suggestions for mitigation, compensation and enhancement of the natural features identified on the Site; and,
- To help inform the design of the Site to minimise ecological impacts and ecological constraints.

The purpose of this report is to inform the design of the proposed development 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. High level recommendations are made on potential options for the avoidance, mitigation or compensation of the potential impacts of the proposed development (where known) on the identified ecological receptors, and of potential enhancements to the biodiversity and ecosystem services.

2.5 Wildlife Legislation and Planning Policy

2.5.1 Wildlife Legislation

There are several different acts of legislation and regulations which refer to the protection of wildlife. These are summarised in Appendix B. In particular, the legislation relating to possible protected species on site is outlined. This is a brief 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 is potentially relevant to the proposed development:

- The Wildlife and Countryside Act (WCA) 1981 (as amended);
- The Countryside and Rights of Way (CROW) Act 2000;
- The Conservation of Habitats and Species and Planning (Various Amendments) (England and Wales) Regulations 2018;
- Environment (Wales) Act 2016; and,
- The Hedgerow Regulations 1997.

The above legislation has been considered when planning and undertaking this PEA, 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.

2.5.2 National Planning Policy

2.5.2.1 Planning Policy Wales (9th Ed. November 2016)

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

Chapter 5, Conserving and Improving the Natural Heritage and the Coast, outlines Welsh Government's objectives for the conservation and improvement of natural heritage. The relevant measures in place to conserve landscape and biodiversity include:

- Statutory designations;
- Non-statutory designations;
- LANDMAP Information System (LANDMAP describes and evaluates aspects of the landscape and provides the basis of a consistent Wales-wide approach to landscape assessment);

- Development plans and the conservation and improvement of the natural heritage;
- Development management and the conservation and improvement of the natural heritage;
- Development management and statutory designations;
- Trees and woods; and,
- Protected species.

Paragraph 5.3.10 states that "potential SPAs and candidate SACs (included in the list sent to the European Commission) should be treated in the same way as classified SPAs and designated SACs. Sites which the UK and the European Commission have agreed as Sites of Community Importance and which are to be designated as SACs attract the same legal protection as if they had already been designated. The same considerations should, as a matter of policy, be applied to listed Ramsar sites".

Paragraph 5.2.9 states that "Local planning authorities should seek to protect trees, groups of trees and areas of woodland where they have natural heritage value or contribute to the character or amenity of a particular locality. Ancient and semi-natural woodlands are irreplaceable habitats of high biodiversity value which should be protected from development that would result in significant damage."

Paragraph 5.5.4 states that "For all planning applications likely to result in disturbance or harm to a protected species or likely to have a significant adverse effect on sites of more than local importance, or on a designated area, local planning authorities should seek the advice of Natural Resources Wales and should always consult them before granting permission".

2.5.2.2 Technical Advice Note 5 (TAN5) Nature Conservation and Planning (September 2009)

The Planning Policy Wales (PPW) is supplemented by a series of Technical Advice Notes. 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.

2.5.3 Local Planning Policy

A Local Development Plan (LDP) must be produced by every Local Planning Authority in Wales. Any development proposal will be tested against the policies within the LDP. The LDP follow the planning guidance provide in Planning Policy Wales (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 Vale of Glamorgan Council are detailed in the following document:

- Vale of Glamorgan Local Development Plan 2011-2026, Local Development Plan Written Statement. June 2017.

Appendix C provides a summary of relevant local planning policies. For the precise wording of each specific policy please refer back 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.

2.5.4 Quality Assurance

This survey and subsequent report was 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 establishing and maintaining our certification to the international standards BS EN ISO 9001:2015 and 14001:2004 and BS OHSAS 18001:2007. 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 are members of (at the appropriate level) the Chartered Institute of Ecology and Environmental Management (CIEEM) and follow their code of professional conduct (CIEEM, 2017b) when undertaking ecological work.

3. Methodology

3.1 Preliminary Ecological Appraisal

3.1.1 Desk Study

A desk study was undertaken in May 2019. The objectives of the desk study were to review the existing information available in the public domain concerning species and habitats to identify the following:

- Internationally, nationally and locally designated sites, up to 2 km from the Site boundary using the Multi Agency Geographic Information for the Countryside (MAGIC) website (www.magic.gov.uk);
- Locally designated sites, up to 2 km from the Site boundary using South East Wales Biodiversity Record Centre (SEWBRc);
- Protected and Priority species records and records of locally designated sites up to 2 km from the Site, boundary using SEWBRc;
- Special Areas of Conservation (SAC) and Sites of Special Scientific Interest (SSSI) designated for bats within a 10 km radius of the Site boundary in accordance with Bat Conservation Trust (Collins, 2016) recommendations;
- Section 7 list of Species and Habitats of Principal Importance for Conservation in Wales;
- 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 2011 Ancient Woodland Inventory data set downloaded from the Lle website (NRW, 2018);
- Trees with a Tree Protection Orders (TPO) within or adjacent to the Site, from Vale of Glamorgan Council interactive map tool;
- The County Ecologist, Glamorgan bat group and South and West Wales Amphibian and Reptile Group (SWWARG) were contacted for local records or knowledge about the project area; and,
- 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 (hedgerows, watercourses, railway lines).

3.1.2 Extended Phase 1 Habitat Survey

A Phase 1 Habitat Survey (JNCC, 2010) of the Site was undertaken by experienced AECOM ecologists (BSc, MCIEEM and BSc ACIEEM) on 03 May 2019.

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 Site were recorded. Evidence of any Invasive Non-Native Species (INNS) of plant subject to legal controls was recorded.

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.

Habitat outside of but adjacent to the Site boundary was noted to aid in the determination of the Zone of Influence.

3.1.3 Assessment of Bat Habitat Suitability

During the Phase 1 Habitat Survey, where access allowed, trees and buildings throughout the Site were classified into categories dependent on the presence of features suitable as bat roost habitat. This was conducted via an external appraisal from the ground using binoculars where necessary. Collins, (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines provides descriptions of the categories for buildings and trees.

Habitats on Site were classified into categories dependent on the presence of features suitable for bats to commute and forage. Collins (2016) provides descriptions for commuting and foraging habitats.

Table 3.1: Tree and Building Bat Roost Suitability Categories

Roost Suitability	Descriptions for Buildings	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.	Confirmed signs of bat presence/ occupation (droppings, oily staining around entry points, insect remains, odour, scratching) and actual bat presence.
High	<p>A structure 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.</p> <p>Can include structures with points of access to the interior of the building and poorly maintained fabric providing ready access points for bats into structures, but at the same time not draughty. Structures of traditional stone, brick or timber construction. Structures with large (>20cm) roof timbers with mortice joints, cracks and holes. Structures of pre or early 20th century construction. Structures with large complicated and/or uncluttered roof spaces providing unobstructed flying spaces. Structures with weather boarding and/or hanging tiles with gaps. Structures with accessible south facing roofs. Structures with proximity to good foraging habitat such as woodland, wetland, water and /or good hedgerows.</p>	<p>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.</p>
Moderate	<p>A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions (e.g. temperature, humidity, height above ground level, light levels or levels of disturbance) and surrounding habitat but unlikely to support a roost of high conservation status.</p> <p>Can include structures with some potential to support roosting bats, but fewer features than a high risk building. Features may include areas suitable for crevice dwelling and/or access points into structures. Some proximity to foraging habitat.</p>	<p>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.</p>
Low	<p>A structure with one or more potential roost sites that could be used by individual bats opportunistically.</p> <p>However these potential roost sites do not provide enough space, shelter protection, appropriate conditions and/or suitable habitat to be used on a regular basis or by large numbers of bats (i.e. unlikely to be suitable for maternity or hibernation).</p>	<p>Tree of sufficient size and age to contain potential roost features but with none seen from the ground or features seen have only very limited roosting potential.</p>

Roost Suitability Descriptions for Buildings**Descriptions for Trees**

Negligible	No features suitable for roosting bats. Can include structures constructed from unsuitable materials e.g. prefabricated with steel and sheet material. Structure is draughty, light and cool buildings with no roosting opportunities. High levels of regular disturbance including external and/or internal lighting. Building is isolated from areas of foraging habitat.	Trees with no potential to support bats.
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Source: Category descriptions drawn from Collins, 2016 and Mitchell-Jones, 2004 to be applied using professional judgement

Table 3.2: Commuting and Foraging Habitat Suitability Categories

Commuting and Descriptions**Foraging Suitability**

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

3.2 Habitat Suitability Assessment for Great Crested Newt

A great crested newt *Triturus cristatus* Habitat Suitability Index (HSI) assessment was undertaken on one pond located in the Forest Schools nature area in the north of the Site. The HSI assessment was undertaken in line with the approach outlined in Amphibian and Reptile Group (ARG) UK Advice Note 5, 2010.

The HSI assessment was undertaken by experienced AECOM ecologists (BSc ACIEEM, NRW great crested newt survey licence holder) on 03 May 2019.

The HSI was developed by Oldham et al. (2000). It is a measure of habitat suitability. It is not a substitute for newt surveys. In general, water bodies with high HSI scores are more likely to support great crested newt than those with low scores. However, the system is not sufficiently precise to allow the conclusion that any particular water body with a high score will support newts, or that any water body with a low score will not do so. However, when used in conjunction with information collected from the ecological desk study and local record centres HSI can provide a good indication of the likelihood for a pond to support great crested newt.

There is also a positive correlation between HSI scores and the numbers of great crested newt observed in water bodies. So, in general, high HSI scores are likely to be associated with greater numbers of great crested newt.

However, the relationship is not sufficiently strong to allow predictions to be made about the numbers of newts in any particular water body.

HSI scoring can be useful in:

- Evaluating the general suitability of a sample of ponds for great crested newt;
- Comparing general suitability of ponds across different areas; and,
- Evaluating the suitability of receptor ponds in a proposed mitigation scheme.

3.2.1.1 Categorisation of HSI Scores

ARG has developed a system for using HSI scores to define water body suitability for great crested newts on a categorical scale. The results of the HSI assessment are scored in accordance with this criteria.

HSI Water Body Suitability:

- <0.5 = poor
- 0.5 – 0.59 = below average
- 0.6 – 0.69 = average
- 0.7 – 0.79 = good
- > 0.8 = excellent

3.3 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 as the pre-development habitats within the Site total more than 0.05 hectares.

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 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.

3.4 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 3.3: 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
	Determining the ecological outcomes for the site	1	The second and third credits under LE02 are only achievable once the previous credits have been achieved.
	Exemplary criteria	1	
LE03*: Managing Negative Impacts on Ecology	Planning, liaison and implementation	1	Total available credits: 3
	Managing negative impacts of the project (limitation or compensation)	Up to 2	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.
LE04*: Change and Enhancement of Ecological Value	Liaison, implementation and data	1	Total available credits: 4
	Change and enhancement of ecology	Up to 3	Credits within LE04 can only be achieved if Criteria 2 and 3 under LE03 have been achieved.
	Exemplary criteria	1	
LE05*: Long Term Ecology Management and Maintenance	Planning, liaison, data, monitoring and management and maintenance	1	Total available credits: 2
	Landscape and ecology management plan (or similar) development	1	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.

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

3.5 Limitations

3.5.1 Desk Study and Phase 1 Habitat Survey

Biological records can be received from a wide variety of sources and may or may not be comprehensive and accurate. However, if assessed in conjunction with a Phase 1 Habitat survey, they 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 between [03 May 2019 and 19 August 2019 and is based on the conditions encountered and the information available during the said period of 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.

There are deemed to be no significant limitations to this PEA.

3.5.2 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 the SQE.

The 'before development' BREEAM LE04 calculation is based on the Phase 1 Habitat plan (Figure1).

Calculations for 'after development' have been provisionally calculated using site plan layout Drawing Number 15-1094-01-SK-001 at this stage to inform the design of the Site. A further calculation will need to be undertaken once a detailed development and landscaping plan for the Site has been produced. This report can be used to guide Site design and to help achieve credits under LE04.

4. Baseline Conditions

4.1 Desk Study Results

The designated habitats, sites and features within proximity to the Site are listed in Table 4.1 below.

Table 4.1: Desk Study Results

Designation / Feature	Description
Internationally and Nationally Designated Sites Within 2 km	<p><u>Ely Valley SSSI</u> Distance and Direction: 1.6 km northwest Description: Ely Valley is known for having a strong population of monkshood <i>Aconitum anglicum</i> growing on the banks of the river and its tributary ditches, spanning several miles of the River Ely. The Vale of Glamorgan is one of its strongholds in Great Britain. In addition, the River Ely is important for otters <i>Lutra lutra</i>, which have re-colonised the Vale of Glamorgan in recent years (Natural Resource Wales, 1983).</p>
Locally Designated Sites Within 2 km	<p>Descriptions have been derived from Vale of Glamorgan LDP 2011-2026- Identification of SINCs and Priority Habitats.</p> <p><u>East of Homri Farm SINC</u> Distance and Direction: 0.6 km north east Description: Ancient semi-natural broadleaved woodland.</p> <p><u>East of Glyncory Water Works SINC</u> Distance and Direction: 0.7 km north east Description: Ancient semi-natural broadleaved woodland.</p> <p><u>Cottrel Wood SINC</u> Distance and Direction: 0.8 km north west Description: Semi-natural broadleaved woodland on an ancient woodland site.</p> <p><u>Land at Winchpit SINC</u> Distance and Direction: 0.8 km south east Description: Semi-natural broadleaved woodland on an ancient woodland site.</p> <p><u>Coed y Cwm SINC</u> Distance and Direction: 0.8 km south west Description: Semi-natural broadleaved woodland, part on an ancient woodland site.</p> <p><u>Kingsland SINC</u> Distance and Direction: 0.9 km north west Description: Ancient semi-natural broadleaved wet woodland.</p> <p><u>East of Kingsland SINC</u> Distance and Direction: 1 km north Description: Part ancient semi-natural broadleaved woodland.</p> <p><u>Land South West of Ffordd Cottages SINC</u> Distance and Direction: 1.2 km north east Description: Ancient semi-natural broadleaved woodland.</p>

Designation / Feature	Description
<u>Gwern-y-Steeple SINC</u>	Distance and Direction: 1.2 km north west Description: Semi-natural broadleaved wet woodland.
<u>Land along River Waycock SINC</u>	Distance and Direction: 1.2 km south Description: Semi-natural broadleaved woodland.
<u>Coed Sion Hywel SINC</u>	Distance and Direction: 1.3 km south Description: Predominantly ancient semi-natural broadleaved woodland with areas of mixed plantation on an ancient woodland site.
<u>Coed Nant-Bran SINC</u>	Distance and Direction: 1.3 km south east Description: Ancient semi-natural broadleaved woodland with areas of broadleaved and mixed woodland on an ancient woodland site.
<u>Land North West of Coed Nant Bran SINC</u>	Distance and Direction: 1.3 km south east Description: Species-rich neutral grassland.
<u>Brook Wood SINC</u>	Distance and Direction: 1.3 km south west Description: Ancient semi-natural broadleaved woodland.
<u>Betty Lucas Wood SINC</u>	Distance and Direction: 1.4 km south west Description: Predominantly ancient semi-natural broadleaved woodland.
<u>Redland Wood SINC</u>	Distance and Direction: 1.5 km south west Description: Predominantly ancient semi-natural broadleaved woodland.
<u>Log Wood SINC</u>	Distance and Direction: 1.6 km north west Description: Ancient semi-natural broadleaved woodland.
<u>The Downs SINC</u>	Distance and Direction: 1.6 km east Description: Area of common land supporting mosaic of relict species-rich neutral and acidic grassland, scrub and bracken.
<u>Dyffryn Gardens SINC</u>	Distance and Direction: 1.6 km south east Description: A large estate supporting a mosaic of habitats including parkland, arboretum, formal gardens, woodland (part on an ancient site), ponds, buildings and areas of species-rich neutral grassland. Buildings support Section 7 bat species (including lesser horseshoe Rhinolophus hipposideros, brown long-eared Plecotus auritus and whiskered/brandt's bats Myotis mystacinus); ponds support great crested newts.

Designation / Feature	Description
<u>Land North of Coedarhydyglyn SINC</u>	Distance and Direction: 1.6 km north east Description: Ancient semi-natural broadleaved woodland.
<u>Coed Uchaf SINC</u>	Distance and Direction: 1.7 km north Description: Ancient semi-natural broadleaved woodland.
<u>Land South East of Fford Cottages SINC</u>	Distance and Direction: 1.7 km north east Description: Two meadows supporting species-rich purple moorgrass and rush pasture with areas of mire and tall swamp.
<u>Land near Fford Cottages SINC</u>	Distance and Direction: 1.7 km north east Description: Ancient semi-natural broadleaved woodland.
<u>North West of Croes-y-Parc Baptist Church SINC</u>	Distance and Direction: 1.7 km north west Description: Species-rich neutral meadows.
<u>East of Ty'n-y-Pwll SINC</u>	Distance and Direction: 1.7 km north west Description: Two distinct groups of meadows supporting species-rich mosaic of purple moorgrass and rush pasture and mire.
<u>Land along Nant Bran SINC</u>	Distance and Direction: 1.9 km south east Description: Semi-natural broadleaved woodland with pond on an ancient woodland site.
<u>Land to North of Dyffryn SINC</u>	Distance and Direction: 1.9 km south east Description: A large meadow with areas of unimproved neutral grassland and occasional mature parkland trees.

Designated Sites Within 10 km Designated for Bats There are no SSSIs or SACs within 10 km designated for bats.

Protected and Priority Species Records from the last 10 years within 2 km

The following recent (last 10 years) species have been recorded within 2 km of the Site:

Plants: Bluebell Hyacinthoides non-scripta

Birds : Linnet Linaria cannabina, house sparrow Passer domesticus, dunnock Prunella modularis, bullfinch Pyrrhula pyrrhula, starling Sturnus vulgaris, redwing Turdus iliacus, song thrush Turdus philomelos, fieldfare Turdus pilaris, kestrel Falco tinnunculus, skylark Alauda arvensis, yellowhammer Emberiza citrinella, reed bunting Emberiza schoeniclus, brambling Fringilla montifringilla, red kite Milvus milvus, barn owl Tyto alba, lapwing Vanellus vanellus.

Bats: Pipistrelle Pipistrellus pipistrellus agg (Roosts in stone walls, 70 m east), serotine Eptesicus serotinus (Roost identified within church porch, 70 m east), Myotis species (1.2 km northwest), lesser horseshoe (1.6 km northwest)

Other Mammals: West European hedgehog Erinaceus europaeus (0.3 km west), Eurasian badger Meles meles (found dead on westbound carriageway, 0.9 km

Designation / Feature	Description
	southwest)
Priority Habitats and Species – Section 7 List	The full list of Section 7 Habitats and Species of Principle Importance in Wales has been reviewed. Those priority habitats present on site and priority species with potential to be on site are listed in Table 4.2 and Table 4.3 respectively.
Surrounding Land Use	Immediately south and east of the Site boundary is residential housing within the village of St Nicholas. The A48 is situated 100 m south of the Site boundary. The northern boundary of the Site is bordered by species poor hedgerows which are connected to additional hedgerows. The adjacent land to the north and west are pasture fields for livestock grazing. Approximately 300 m west is a golf course.
Ancient Woodland	There are no Ancient Woodland designations within or adjacent to the Site boundary.
Tree Protection Orders (TPO)	The County Council interactive map shows there are trees with a TPO both on and adjacent to the south and west boundaries of the Site. These are: <ul style="list-style-type: none"> • 029 - 1972 - 05 - G07; • 029 - 1972 - 05 - T018; and, • 029 - 1972 - 05 - T019. (No tree species or any other information was provided)
Ponds within 500 m	There is one pond within the Site boundary, which is discussed in Section 4.4. There are three ponds within 500 m of the Site boundary: <ul style="list-style-type: none"> • Pond 1: Approximately 600 m² and 260 m northeast from the nearest Site boundary. The pond is adjacent to the right-hand side of Well Lane. Well Lane is situated between the Site and the pond. The pond is surrounded by trees and shrubs and is connected to hedgerow. The pond is separated from the Site by Well Lane; • Pond 2: Approximately 150 m² and 270 m north from the nearest Site boundary. The pond is located along the hedgerow boundary of a field and is surrounded by trees and shrubs. The land cover between the pond and the nearest site boundary is pasture with no obvious barriers. • Pond 3: Approximately 230 m² and 450 m north-east from the nearest Site boundary. The pond is situated along the hedgerow boundary of a field, surrounded by trees and shrubs. Well Lane is situated between the Site and the pond.
Council Ecologist and Local Specialist Recorders	County Council: Vale of Glamorgan Records were requested from the County Ecologist. The County Ecologist responded stating 'No records are held by the council; all records are sent directly to SEWBReC'. The County Ecologist provided further detail regarding the distribution of great crested newts across the Vale of Glamorgan. She stated that there are extensive meta-populations across the county and they are often present in ponds which are sub-optimal (Erica Dixon, County Ecologist). No response was received from SWWARG or Glamorgan bat group. We are aware that these groups provide all their records to SEWBReC.

4.2 Extended Phase 1 Habitat Survey

4.3 Habitats

The habitats present within the Site boundary and their descriptions are shown in Table 4.2. A plan of the Site showing the location and distribution of these habitats is shown in Figure 1.

Table 4.2: Phase 1 Habitats and Descriptions

Habitat	Description	Section 7 Habitat
Mixed Plantation Woodland	Area of plantation woodland located in the north west corner of the Site within the Forest Schools nature area. Species include lodgepole pine <i>Pinus contorta</i> , field maple <i>Acer campestre</i> , hawthorn <i>Crataegus monogyna</i> , holly <i>Ilex aquifolium</i> , cherry <i>Prunus</i> sp., nettle <i>Urtica dioica</i> , lesser celandine <i>Ficaria verna</i> , selfheal <i>Prunella vulgaris</i> , dock <i>Rumex</i> sp. and lords and ladies <i>Arum maculatum</i> (Appendix D: Photograph 10).	No
Poor Semi-Improved Grassland	Area of poor semi-improved grassland located within the Forest Schools nature area in the north of the Site. Species include perennial rye grass <i>Lolium perenne</i> , common mouse ear <i>Cerastium fontanum</i> , daisy <i>Bellis perennis</i> , ribwort plantain <i>Plantago lanceolata</i> , creeping buttercup <i>Ranunculus repens</i> , Yorkshire fog <i>Holcus lanatus</i> , dandelion <i>Taraxacum</i> agg, thistle <i>Cirsium</i> sp. and selfheal. Scattered trees include hazel <i>Corylus avellane</i> , field maple (Appendix D: Photograph 7). A grass mound is located within this area which is colonised by bracken <i>Pteridium aquilinum</i> (Figure 1: Target Note 11; Appendix D: Photograph 9), dock, thistle and selfheal. A firepit is located in this area with wooden stumps designed for sitting (Figure 1: Target Note 12). Rabbit holes are common within this area especially along the northern boundary (Figure 1: Target Note 16).	No
Amenity Grassland	Amenity grassland is the dominant vegetated habitat type at the Site. Species include: perennial rye grass, common daisy, dandelion, white clover <i>Trifolium repens</i> , creeping buttercup, willowherb <i>Epilobium</i> sp. (Appendix D: Photograph 1). The majority of amenity grassland is comprised of a playing field. Raised beds, a play area and seating area are located along the southern edge of the playing field (Figure 1: Target Note 3-5; Appendix D: Photograph 20, 21 and 23). Areas of amenity grassland are located around the buildings. Additional species in this area include ribwort plantain, violet <i>Viola</i> sp. and daffodil <i>Narcissus</i> sp.	No
Standalone Trees	There are 8 standalone trees located across the Site. <ul style="list-style-type: none"> Tree 1: Hawthorn approximately 4 m in height, multi-stemmed (Appendix D: Photograph 13). Tree 2: Silver birch <i>Betula pendula</i> approximately 7 m in height with a Diameter at Breast Height (DBH) of 0.3 m (Appendix D: Photograph 14). Tree 3: Willow <i>Salix</i> sp. approximately 2 m in height, multi-stemmed, DBH not recorded (Appendix D: Photograph 15). Tree 4: Bay <i>Laurus nobilis</i> approximately 3 m in height, DBH not recorded (Appendix D: Photograph 16). Tree 5: Ash <i>Fraxinus excelsior</i> approximately 10 m in height with a DBH of 0.5 m (located outside of Site boundary but immediately adjacent with some overhanging branches) (Appendix D: 	No

Habitat	Description	Section 7 Habitat
	<p>Photograph 17).</p> <ul style="list-style-type: none"> Tree 6: Field maple approximately 8 m in height with a DBH of 0.5 m (Appendix D: Photograph 18). Tree 7: Field maple approximately 7 m in height with a DBH of 0.5 m (Appendix D: Photograph 19). Tree 8: Maple sp. Acer sp. approximately 12 m in height with a DBH of 0.4 m. 	
Hedgerow with Trees	<p>There is a hedgerow with trees along the entire eastern boundary of the Site adjacent to the Public Right of Way (Figure 1: Target Note 15; Appendix D: Photograph 11). Species include common beech <i>Fagus sylvatica</i>, sycamore <i>Acer pseudoplatanus</i> and bay <i>Laurus nobilis</i>.</p> <p>A hedgerow with trees runs along the entire western boundary (Appendix D: Photograph 12). Species include cherry <i>Prunus</i> sp., hawthorn, elder <i>Sambucus nigra</i>, field rose <i>Rosa arvensis</i>, hornbeam <i>Carpinus betulus</i>, ash, holly, nettle, ivy <i>Helix hedera</i> and hazel.</p>	Yes
Species-Poor Intact Hedgerow	<p>A species poor hedgerow runs along the entire northern boundary of the Site. Species include bramble, hawthorn, hazel, elder and nettle.</p> <p>A species-poor hedgerow runs along the southern boundary of the Site. Species include hawthorn, sycamore, ivy, lords and ladies, bay, nettle and elder (Appendix D: Photograph 4).</p>	Yes
Species-Poor Intact Hedgerow	<p>A species-poor hedgerow is located in the south of the Site adjacent to a gravel courtyard. Species include <i>leylandii</i>, elder and bay.</p>	No
Row of Trees	<p>A row of trees is located adjacent to the carpark. Trees are 2-3 m in height and include ash, bay and cherry (Appendix D: Photograph 22).</p>	No
Standing Water	<p>One pond located in northeast corner of the Site (Figure 1: Target Note 10; Appendix D: Photograph 8). The Pond is approximately 8 m². Plant species include New Zealand pygmy weed <i>Crassula helmsii</i>, parrots feather <i>Myriophyllum aquaticum</i>, marsh marigold <i>Caltha palustris</i>, water lily <i>Nymphaea</i> sp., common reed <i>Phragmites australis</i> and bogbean <i>Menyanthes trifoliata</i>.</p> <p>New Zealand pygmy weed and parrots feather are Invasive Non-Native Species (INNS).</p>	No (due to presence of INNS)
Buildings	<p>There are six buildings within the Site. The main school being an amalgamation of 4 buildings/extensions. There is a large shed storing play equipment and shipping container.</p> <p>An electrical substation is located in the south of the Site within a walled and fenced area (Figure 1: Target Note 13).</p> <p>These buildings were assessed for their suitability to support roosting bats. A detailed description of bat roost suitability for the buildings is provided in Table 4.5.</p>	No
Introduced Shrub	<p>A strip of introduced shrub is located adjacent to the east of Building 3. Within the amenity grassland are raised beds with ornamental planting, a bughouse and a bird bath (Figure 1: Target Note 6-8; Appendix D: Photograph 25).</p> <p>A courtyard with gravel paths and planted borders with ornamental shrubs is located in the south of the Site (Figure 1: Target Note 5; Appendix D: Photograph 3).</p>	No

Habitat	Description	Section 7 Habitat
Bare Ground	A Public Right of Way comprised of a dirt footpath runs along the eastern boundary of the Site. This has no ecological value.	No
Hard Standing	<p>There are several areas of hard standing including an asphalt playground, an asphalt car park, a block paved walkway entrance, asphalt walkways, a gravel courtyard, a wooden stage and a wooden platform by the pond. This habitat has no ecological value.</p> <p>A courtyard with gravel paths and planted borders with ornamental shrubs is located in the south of the Site (Figure 1: Target Note 5; Appendix D: Photograph 3).</p> <p>An area with a membrane and bark chippings is located in the south of the Site. Within this area are some piles of materials and rubbish (Figure 1: Target Note 9; Appendix D: Photograph 5).</p>	No
Fences	There are several fences within the Site boundary. These are mostly metal post and rail or wooden post and rail fences. These have no ecological value.	No
Wall	A stone wall runs along part of the western edge of the Site boundary. This has no ecological value.	No

4.4 Protected or Priority Species

The potential for Protected and Priority Species in habitats on Site is discussed in Table 4.3.

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 E.

Table 4.3: Protected and Priority Species Potential

Species/ Species Group	Associated habitat	Description	Section 7 Species
Invertebrates	Mixed plantation woodland, poor semi-improved grassland, amenity grassland, standalone trees, hedgerows, rows of trees, standing water.	The mosaic of habitats on Site provide habitats for a range of generalist terrestrial and aquatic invertebrate species. A bug hotel provides potential habitat for common invertebrates (Figure 1: Target Note 6). The Site is unlikely to support any Protected or Priority Species Invertebrates are not discussed further in term of potential impacts and impact mitigation.	No
Amphibians	Poor semi-improved grassland, hedgerows, standing water.	The HSI Assessment on Pond 1 scored 0.61 indicating Average suitability for great crested newt. Records of great crested newt were not returned from within 2 km of the Site during the LERC data search. The County Ecologist stated that great crested newts are present across the county in meta-populations. There are three ponds within 500 m which are connected to the Site via hedgerows. Following the desk study and HSI, the potential for the Site to support great crested newt could not be ruled out. An eDNA survey was undertaken at the Site on 12 June 2019 (See Section 6.1) (AECOM, 2019a). The eDNA results indicate that eDNA of great crested newts was <u>not</u> detected in the sample. No degradation or inhibition was detected in the sample, and all controls performed as expected. The results are therefore considered conclusive. Great crested newts are not present in the Pond (AECOM, 2019a). No amphibian records were returned in the LERC data within 2 km. However, the Pond provides habitat for common amphibian species such as common toad (a Priority Species) and common frog <i>Rana temporaria</i> . Adjacent hedgerows provide suitable habitat for terrestrial amphibians and connects the Site to the surrounding landscape which provides further suitable common amphibian habitat.	Yes
Reptiles	Poor semi-improved grassland, hedgerows.	No reptile records were returned in the LERC data within 2 km of the Site.. The Site is not optimal for reptiles and is of low suitability for reptiles such as slow-worm or common lizard, if they are present locally. The poor semi-improved grassland in the Forest Schools nature area is short and often mown (Appendix D Photographs 7, 9 and 10), it does not have a dense sward, grassland lacks the structure and 'thatch' required to provide optimal habitat/shelter. The grass mound, approx. 0.5-1m high (Figure 1: Target Note 11) could provide a raised south-facing mound for basking reptiles. Hedgerows along the northern boundary adjacent to the Forest Schools nature	Yes

Species/ Species Group	Associated habitat	Description	Section 7 Species
		area could provide shelter for reptiles. Adjacent habitats off-site to the north are dominated by improved grassland which offer little suitability for reptiles, and suitability would be limited to narrow hedgerow/field margins. So the like hood of reptiles moving on to Site from adjacent habitats is low. The Site is not of a size or condition that would support a population of reptiles, but the risk of individuals being present near the northern boundary cannot be entirely ruled out.	
Breeding Birds	Mixed plantation woodland, standalone trees, hedgerows, rows of trees, buildings.	Active blue tit <i>Cyanistes caeruleus</i> and house sparrow <i>Passer domesticus</i> (a Priority Species) nests were recorded in a bird box and an old vent on Building 1 and 2, respectively during the Phase 1 Habitat Survey. Hedgerows, woodland and trees provide opportunities for breeding passerine species. The grassland is not suitable to support ground nesting birds. There is no potential for Schedule 1 or Annex 1 species at the Site because habitats are unsuitable. During the survey the following species were recorded active on Site: goldfinch <i>Carduelis carduelis</i> , house sparrow, robin <i>Erithacus rubecula</i> , black cap <i>Sylvia atricapilla</i> , wren <i>Troglodytes troglodytes</i> , great tit <i>Parus major</i> , blue tit, blackbird <i>Turdus merula</i> , dunnock <i>Prunella modularis</i> and magpie <i>Pica pica</i> .	Yes
Bats	Mixed plantation woodland, poor semi-improved grassland, standalone trees, hedgerows, rows of trees, standing water.	The Site has been assessed as having Moderate suitability to support commuting and foraging bats. Records of roosting bats were returned during the LERC search within 70 m of the Site. The Site includes hedgerows and rows of trees which could provide connectivity between roosts and surrounding foraging habitats. The suitability of buildings to support roosting bats is discussed in Table 4.5.	Yes
Hedgehog	Mixed plantation woodland, poor semi-improved grassland, amenity grassland, hedgerows, rows of trees.	Habitats on Site provide a range of habitats for hedgehog. The Site is well connected to adjacent fields and hedgerows which provide further opportunities for hedgehog in the local area. The fences on Site are mostly open post and rail style fences which allow potential hedgehog access and egress to the Site.	Yes

4.5 Invasive Non-Native Species Subject to Legal Controls

The following INNS plant species, identified on Site, are listed on Schedule 9 of the Wildlife and Countryside Act 1981 making it an offence to cause the spread of these species in the wild. The location of INNS is shown on Figure 1.

Table 4.4 Invasive Non Native Species Subject to Legal Controls

Invasive Species Point	Species	Description
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Invasive Species Point	Species	Description
1	New Zealand pygmy weed	Extensive cover of pond. Approximately 70% of pond inundated by New Zealand pygmy weed and parrots feather combined.
1	Parrots feather	Extensive cover of pond. Approximately 70% of pond inundated by New Zealand pygmy weed and parrots feather combined.

4.6 Bat Roost Assessment

Features suitable for supporting roosting bats were assessed during the site visit and are listed in Table 4.5. The locations of suitable roost features are shown on Figure 1. Bat roost emergence/re-entry surveys were undertaken by AECOM in 2019. No bat roosts were identified (AECOM, 2019b).

Table 4.5 Features Assessed as Having Suitability to Support Roosting Bats

Feature	Description	Bat Roost Suitability Category
Building 1	<p>Single storey flat roof building with wooden fascia boards (approximately 40cm wide). These are offset from the wall by approx. 5-6cm. Building is clad in wood.</p> <p>Features identified suitable to support roosting bats comprise:</p> <ul style="list-style-type: none"> • Gaps under all the fascia boards, some covered in cobwebs but several are clear and suitable for bat access, namely crevice-dwelling species; • Facia holes blocked with cobwebs; and, • A small elevated section constructed of brick with wooden fascia boards and a flat roof. No gaps were visible on the east, west and south faces. The north face could not be viewed. 	<p>Moderate</p> <p>**No roost identified during surveys (AECOM, 2019b)**</p>
Building 2	<p>Single storey rendered toilet block with plastic fascia boards and flat roof. No gaps for bats. No lights at the rear of the school.</p>	Negligible
Building 3	<p>Single story building with a shallow sloping roof. Wooden fascia boards (approximately 40 cm wide) and soffit box (approximately 30 cm).</p> <p>Features identified suitable to support roosting bats comprise:</p> <ul style="list-style-type: none"> • Gap in stonework near fascia board (Target Note 7) which could potentially give access to bats, no evidence of cobwebs over it or bat droppings below it; and, • Warped fascia board has created gap which could provide access for bats into soffit box. 	<p>Low</p> <p>**No roost identified during surveys (AECOM, 2019b)**</p>
Building 4	<p>Two storey height school hall with flat roof. One wall has glass windows and elsewhere is clad in wood.</p> <p>Features identified suitable to support roosting bats comprise:</p> <ul style="list-style-type: none"> • Gaps under all the fascia boards, some covered in cobwebs but several are clear and suitable for bat access, namely crevice-dwelling species. 	<p>Moderate</p> <p>**No roost identified during surveys (AECOM, 2019b)**</p>
Building 5	<p>Wooden shed with felt roof and windows on one side. Light inside which is in use.</p>	Negligible
Building 6	<p>Shipping container used to store sports equipment</p>	Negligible

4.7 Zone of Influence

BREEAM defines the zone of influence 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 surrounding the Site were noted when undertaking the Phase 1 Survey and as part of the desk study (see Table 4.1).

There are no watercourse connections from the Site connecting to areas of habitat outside of the Site. Within St Nicholas village there are some old buildings with suitability to support roosting bats. Records of bat roosts were returned during the desk study within 70 m of the Site. Any buildings immediately adjacent or immediately adjacent vegetated corridors which may connect potential roosts to the Site are considered to be within the zone of influence.

For this PEA and BREEAM Assessment the zone of Influence has been defined as all areas within the Site boundary and buildings immediately adjacent or immediately adjacent vegetated corridors which may connect potential roosts to the Site.

5. Ecological Constraints and Potential Impacts

At present, the final design and landscaping plan for the Site is not confirmed. The site plan HLM Architects (June 2019) layout Drawing Number 15-1094-01-SK-001_P02 (see Figure 2) has been used to inform the assessment of potential impacts below.

If the proposed design changes, the assessment of potential impacts will need to be reassessed.

5.1 Development Proposal

The proposed development is for the demolition of the existing school building and construction of a new single storey school building on the existing playing field. The Site will include new grass sports pitches, Multi Use Games Area (MUGA), soft play areas, hard play areas (playgrounds), car parking, service vehicle yard and areas set aside to for retention/creation of wildlife habitat. Detailed landscaping designs and lighting designs are not yet available.

The construction programme is currently unconfirmed, and the commencement and completion dates are unknown at the time of writing.

5.2 Designated Nation Conservation Sites

5.2.1 International Nature Conservation Sites

There are no internationally designated sites within 2 km or SACs designated for bats within 10 km. The works will have no impacts on internationally designated Sites.

5.2.2 National Nature Conservation Sites

There are no SSSI designated for bats within 10 km. Ely Valley SSSI is located 1.6 km north west of the Site. This is designated for plants, habitats and otter. The proposed works are unlikely to have an impact on this SSSI, due to the distance from the Site and nature of the proposed development (i.e. no chemicals or gases being released). There are no hydrological links and no pollution pathways between the Site and the SSSI.

5.2.3 Local Nature Conservation Sites

There are 27 SINCs within 2 km of the Site. The closest SINC is 0.6 km from the Site and designated for habitats. The proposed works are unlikely to have an impact on any SINCs, due to the distance from the Site and nature of the proposed development (i.e. no chemicals or gases being released). There are no hydrological links and no pollution pathways between the Site and the SINCs.

5.3 Habitats

5.3.1 Mixed Plantation Woodland

Mixed plantation woodland will be partially removed during construction and replaced with grass sports pitches (approximately 15 m² removed). None of these trees have a TPO.

There is potential for retained trees to be damaged during construction due to root compaction caused by tracking of vehicles or storage of materials on the root zone or knocking off/damaging overhanging limbs.

Removal of this habitat will have an impact on any species using it for shelter, foraging and breeding. Woodland habitat of equal or greater value is available in the local area. This will have an impact at Site level only.

5.3.2 Poor Semi-Improved Grassland

Poor semi-improved grassland will be partially removed and replaced with grass sports pitches (approximately 575 m² removed). This will include removal of the grass mound.

Grassland habitat of equal or greater value is available in the surrounding landscape. Removal of this habitat will have an impact at Site level only.

5.3.3 Amenity Grassland

Areas of amenity grassland will be partially removed and replaced with buildings and hardstanding. Some areas of amenity grassland will be retained, these may be damaged during construction by tracking of vehicles and machinery.

New areas of amenity grassland will be created; these will include sports pitches and soft play.

Amenity grassland is of low value at the Site and widely available in the surrounding area. Removal of amenity grassland will have an impact at Site level only.

5.3.4 Standalone Trees

Standalone trees in the centre of the Site will be removed. None of these trees have a TPO.

Standalone trees along the boundary will be retained. A 5 m 'no build zone' has been applied around the boundary of the Site. However, there is potential for damage of retained trees through root compaction caused by tracking of vehicle or storage of materials over the root zone or damage to overhanging limbs.

Trees are widely available in the surrounding area. Removal of trees will have an impact on any species using them for shelter, breeding and foraging. Impact will be at Site level only.

5.3.5 Hedgerow with Trees

All boundary features including hedgerows with trees will be retained. A 5 m 'no build zone' will be applied around boundaries to protect hedgerows from root compaction from buildings. There is potential for root compaction of retained hedgerows by tracking of vehicles over the root zone or knocking off/damaging overhanging limbs.

5.3.6 Species Poor Intact Hedgerow

All boundary features including species poor hedgerows will be retained. A 5 m 'no build zone' will be applied around boundaries to protect hedgerows from root compaction from buildings. There is potential for root compaction of retained hedgerows by tracking of vehicles over the root zone or knocking off/damaging overhanging limbs.

5.3.7 Species Poor Intact Hedgerow

The hedgerow surrounding the courtyard will be removed. This hedgerow provides no significant connectivity across the Site.

All boundary features including species poor hedgerows will be retained. A 5 m 'no build zone' will be applied around boundaries to protect hedgerows from root compaction from buildings. There is potential for root compaction of retained hedgerows by tracking of vehicles over the root zone or knocking off/damaging overhanging limbs.

5.3.8 Row of Trees

All boundary features including rows of trees will be retained. A 5 m 'no build zone' will be applied around boundaries to protect trees from root compaction from buildings. There is potential for root compaction of retained trees including trees with a TPO along the south east and south west boundaries by tracking of vehicles over the root zone or knocking off/damaging overhanging limbs.

5.3.9 Standing Water (Pond)

The pond will be removed and replaced by a grass sports pitch. Removal of the pond will impact any species using the pond including amphibians and aquatic invertebrates. Without mitigation, removal of the pond has the

potential to cause the spread of New Zealand pygmy weed and parrots feather on and off Site. This is an offence under the Wildlife and Countryside Act 1981.

Ponds are a valuable ecological resource and rely on connectivity at landscape level. Removal of the pond will have an impact at Site level and local level.

5.3.10 Buildings

All buildings are being demolished. The buildings provide habitat for nesting birds. Roosting bats were not recorded in the Buildings during surveys undertaken by AECOM in 2019. Demolition of buildings during the breeding bird season (1 March until 1 September) will result in destruction of nest sites and potential killing/injury of breeding birds which will have an impact at a local level.

5.3.11 Introduced Shrub

Introduced shrub will be completely removed during construction. This habitat is of Low ecological value, removal will have a negligible ecological impact.

5.3.12 Bare Ground

The Public Right of Way will be retained.

5.3.13 Bare Ground (Hard Standing)

Hardstanding has no ecological value. Removal of hardstanding will have no impact.

5.3.14 Fences

Fences may be removed. Fences have no ecological value. Removal of fences will have no impact.

5.3.15 Wall

The wall may be removed. The wall has no ecological value. Removal of walls will have no impact.

5.4 Protected or Notable Species

5.4.1 Amphibians

There will be no impact on great crested newt, as they are absent from the Site.

Hedgerows will be retained. Removal of the pond and poor semi-improved grassland will have an impact on any common toads by removing aquatic and terrestrial habitat. In the absence of mitigation there is potential for killing/injury of common toad.

5.4.2 Reptiles

Hedgerows will be retained. Removal of poor semi-improved grassland including the grass mound will remove habitat with low suitability to support reptiles from the Site. Without mitigation, there is potential for killing/injury of individual reptiles during any construction within the poor semi-improved grassland from tracking of vehicles and machinery over reptile habitat and potential ground-breaking works in the area. There will be Negligible impact on local reptile populations.

5.4.3 Breeding Birds

If buildings are demolished or trees and woodland removed during the breeding bird season there is potential for destruction of nests and killing/injury of breeding birds.

Removal of the woodland and standalone trees will result in the loss of suitable nesting and foraging habitat for breeding birds. Hedgerows and rows of trees will be retained so breeding bird habitat will still be available on site.

5.4.4 Bats

No bat roosts were identified during the bat emergence/re-entry roost surveys undertaken in 2019 (AECOM, 2019b). Demolition of the buildings will have no impacts on roosting bats.

There will be no removal of boundary features, 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 has not yet been confirmed. If boundary features or newly created roost provisions are lit or there is light spill onto these features there will be a negative impact on bats and could deter bats from foraging areas or sever commuting routes.

5.4.5 Hedgehog

Removal of plantation woodland, poor semi-improved grassland and amenity grassland will have an impact on any hedgehogs using these habitats. Alternative foraging habitat is available in the surrounding landscape, and new areas of grassland will be created on Site.

Hedgerows will be retained which provide habitat and connectivity for hedgehogs.

The lighting plan has not yet been confirmed. If boundary features or newly created foraging habitat is lit or there is light spill onto these features there will be a negative impact on hedgehogs and could deter them from using or accessing the Site.

During construction there is potential for killing/injury of hedgehog by collision with vehicles or entrapment in excavations if left open overnight.

6. Further Surveys and Recommendations for Mitigation

6.1 Further Surveys

Following the PEA recommendations were made to Vale of Glamorgan Council to undertake additional surveys. These were undertaken in summer 2019 to avoid any delay to the program caused by ecological constraints.

6.1.1 Reptiles

The Site is not of a size or condition that would support a population of reptiles, but the risk of individual slow-worm or common lizard being present, near the northern boundary, cannot be entirely ruled out. Reptiles surveys are not recommended, but a precautionary approach during habitat clearance near the northern boundary is recommended, as detailed in Section 6.2.

6.1.2 Bat Emergence/Re-entry Roost Surveys

Bat surveys were undertaken by AECOM in June and July 2019 to assess the current use of the buildings by bats and identify the requirement for mitigation and a European Protected Species License (EPSL) (AECOM, 2019b).

Surveys followed guidelines provided in Bat Surveys for Professional Ecologists – Good Practice Guidelines (Collins 2016). Buildings were assessed as having Moderate (Building 1 and 4) and Low (Building 3) suitability to support roosting bats.

No roosts were identified during the surveys. No further surveys are recommended and a European Protected Species License (EPSL) for bats is not required.

Foraging and commuting bats were recorded at the Site during the roost surveys, mostly along the boundaries. Species included common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, noctule *Nyctalus noctula* and serotine *Eptesicus serotinus* (AECOM, 2019b).

6.1.3 Bat Activity Surveys

The Site has been assessed as having Moderate suitability to support commuting and foraging bats. Removal/severance of boundary features is not proposed. It is recommended that external lighting is designed to avoid light spill onto boundary features including rows of trees, hedgerows and woodland edges. If light spill can be avoided, no surveys for bat activity will be required.

If external lighting will not be designed to avoid impacts in the first instance, then activity surveys will be required. The Site has been assessed as having Moderate suitability to support foraging and commuting bats. A walked transect around the Site will be undertaken once per month between April and October and static detectors deployed for 5 days per month between April and October. If the surveys find that bats are using these features, which is highly likely, then mitigation will be required. This which will include the need to avoid light spill onto the linear features used by bats. Thereby coming full circle back to the original recommendation. It is recommended that external lighting is designed to avoid light spill in the first instance, to avoid the requirement of bat activity surveys.

6.1.4 Great Crested Newt Surveys

During the Phase 1 Habitat survey, a HSI of the Pond assessed it as having Average suitability to support great crested newts. An eDNA survey was undertaken at the Site on 12 June 2019. The eDNA results indicate that eDNA for great crested newts was not detected in the sample submitted. No degradation or inhibition was detected in the sample, and all controls performed as expected. The results are therefore considered conclusive. Great crested newts are not present in the Pond (AECOM, 2019a). No further surveys are required.

6.2 Recommendations for Mitigation

The mitigation hierarchy has been considered and implemented when designing the new development. The ecological constraints at the Site have been considered at an early stage and much of the mitigation has been included by design. Recommendations for mitigation are discussed in combination with LE04. A summary is provided below.

Mitigation Hierarchy:

1. Enhance positive impacts and opportunities;
2. Avoidance – Alternative site or technology, or timing to eliminate impact;
3. Minimise – Actions during design construction and operation to minimise or eliminate impacts; and,
4. Compensation – Used as last resort to offset impacts.

6.2.1 Designated Sites

No mitigation is required for designated sites.

6.2.2 Habitats

Retain areas of natural habitat where possible. At this Site, retaining and enhancing current habitats will be of greater value to wildlife than creating new areas of green space. Where possible, As much of the existing Forest schools nature area should be retained and protected during construction.

There will be a 'No-Build' zone, a 5 m buffer around all vegetated site boundaries.

All retained habitats should be protected during construction to avoid damage to these features. Hedgerows, retained woodland and trees should be fenced off to avoid and reduce the impacts of direct damage or trampling and root compaction during construction by vehicles and people. Tracking of vehicles over retained habitats should be avoided. Where possible, vehicles should be kept on existing areas of hardstanding.

The planting scheme should be of locally sourced native species of benefit to wildlife. Gunnell et al. (2013) 'Landscape and Urban Design' (free to download) has suggested planting lists which are of benefit to invertebrates and foraging bats.

Landscaping at the Site should be designed to include locally native species suitable for the area (i.e. shade, sun, soil type). Recommendations to enhance habitats on Site are provided in Section 10 LE04.

A Landscape Habitat Management Plan (LHMP) will be produced as part of BREEAM LE05 which will help avoid and reduce any impacts from habitat loss or management during operation.

6.2.3 Pollution Control During Construction

Pollution control measures as required Guidance for Pollution Prevention (GPPs) and where these have not been replaced the Environment Agencies Pollution Prevention Guidelines (PPGs) will be implemented in order to avoid and minimise adverse effects of pollution and runoff on the surrounding environment. This will be implemented via the Site Construction Management Plan (CMP).

As of the 17 December 2015 all Pollution Prevention Guidance 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 in order to deal with pollution incidents efficiently.

In order to avoid potential pollution effects to the sites during construction, all refuelling and servicing of vehicles will be carried out within a designated area with an impermeable base. To prevent spillages, refuelling will be carried

out by pumping through a trigger delivery nozzle. Fuel, oil and other potential contaminants will be stored within bunded tanks to 110% of the volume stored and only the minimum quantity required will be stored on site. The designated area will be maintained in a secure and clean manner. An adequate quantity of oil absorbent material will be stored on site and spillages cleared up immediately. All construction equipment will be maintained in good working order and checked regularly for spillages/leaks.

Concrete will either be imported from a local batching plant or a concrete batching plant will be established on site. The final choice will depend on the chosen contractor, the availability of local supply and the time of year. If concrete is to be batched on site, appropriate containment and clean-up measures and procedures will be put in place that are in accordance with industry standards. Care will be taken when pouring concrete at foundations, following specific method statements to ensure there is no spillage risk or contamination of soils and vegetation.

6.2.4 Amphibians - Common Toad

The Pond should be removed during the autumn to reduce the disturbance and potential killing/injury of common toad. Spring should be avoided, as this is when amphibians breed.

6.2.5 Reptiles

The Site is not of a size or condition that would support a population of reptiles, but the risk of individuals being present near the northern boundary cannot be entirely ruled out. Reptiles surveys are not recommended. But a precautionary approach during habitat clearance near the northern boundary is recommended. Poor semi-improved grassland must be removed under a Method Statement. This will involve habitat manipulation, a staged directional cut of vegetation where reptiles are encouraged to move out of the area into adjacent suitable habitats, which will be unaffected by construction. This should be done in a south to north direction moving from the centre towards the northern boundary. Vegetation clearance for habitat manipulation must be supervised by an ecologist.

The mitigation for reptiles is covered as a 'mandatory requirement' in Section 10 LE04.

6.2.6 Breeding Birds

The current plans include demolition of buildings suitable to support nesting birds and removal of woodland and trees suitable to support nesting birds. To protect breeding birds, all demolition works and vegetation clearance should be undertaken outside of the breeding bird season (works completed between 1 September and end February).

If works must be undertaken during the breeding bird season an ecologist must be consulted, a nesting bird check must be undertaken a maximum of 48 hrs prior to works commencing. If breeding birds are present then a 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. A buffer must be applied adjacent to these areas to avoid damage or disturbance of nests during the breeding bird season (1 March-1 September). Lighting of these areas should be avoided.

The mitigation for breeding birds is covered as a 'mandatory requirement' in Section 10 LE04.

6.2.7 Bats

6.2.7.1 Boundary Features

Vegetated site boundary features are being retained, so will maintain bat commuting corridors across the Site and avoid the risk of severing local flight paths.

New vegetated corridors (e.g. treelines, hedgerows) should be designed into the proposed development, wherever possible, to create new opportunities for foraging and commuting bats. The planting scheme of new features should be of locally sourced native species of benefit to wildlife. Gunnell et al. (2013) 'Landscape and Urban Design' (free to download) has suggested planting lists which are of benefit to invertebrates and foraging bats.

6.2.7.2 External Lighting

There is no legislation requiring an area or road to be lit (ILP, 2018). There are British Standards that relate to various components of lighting and there are also guidelines that relate to crime prevention, prevention of vehicular accidents and amenity use (ILP, 2018). There is legislation requiring bats are protected against disturbance, which includes light disturbance.

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

- Light spill onto any new bat roost boxes 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.

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 (BCT, 2009, BCT 2014 and 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 (2005);
- 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 <2700Kelvin) 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 550nm to avoid the component of light most disturbing to bats (Stone, 2012);
- 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 luminaires 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 min) 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; and,
- Do not use a lamp greater than 150W for security lighting.

This will increase the value of the Site for a number of other nocturnal species, as well as for bats.

The mitigation for bats is covered as a 'mandatory requirement' in Section 10 LE04.

6.2.8 Hedgehog

Lighting should be controlled along woodland edge, hedgerows and rows of trees as detailed above in relation to bats.

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

The mitigation for hedgehog is a requirement in Section 10 BREEAM LE04.

6.2.9 Invasive Non-Native Species

Steps must be taken to avoid the spread of New Zealand pygmy weed and parrots' feather.

It is recommended that the entire Pond is completely removed (dug up) under a Method Statement. The Method Statement will include the following actions:

- The soil around the pond (minimum of 1 m), the pond liner, stone bank, deck platform and all plant material from within the Pond must be removed from Site under supervision of an experienced ecologist. All waste from this action must be sent to a Controlled Waste Facility.
- A Tool box talk will be given to all Site personal by the supervising ecologist to inform them of the INNS present, the risk associated with the INNS on Site and the controls /working methods that must be used.
- Biosecurity measures (such as controlled access, defined access routes and controlled wash down facilities) will be required during any work near the Pond.
- We recommend the Pond is removed in autumn to reduce the disturbance to common amphibians. Spring should be avoided, as this is when amphibians breed.

6.3 Recommendations for Enhancements

The National Planning Policy Framework (February 2019) and the Environment (Wales) Act 2016, requires that developments enhance biodiversity, as well as just mitigating impacts. The requirement for enhancement to promote biodiversity also forms part of the BREEAM Ecology Assessment

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

6.3.1 Create New Pond

A new pond should be created to compensate for the loss of the existing pond. This should be the same size or greater than the existing pond. This could be part of a Sustainable Urban Drainage System (SUDS). Planting a diverse mix of locally sourced native aquatic vegetation is recommended within the Pond and around the margins. No plants or landscaping material from the existing Pond must be re-used, due to the presence of INNS plants.

6.3.2 Create New Biodiversity Area

A new biodiversity area is proposed along the south west boundary of the Site. The area should incorporate a range of habitats to benefit wildlife and compensate for the loss of the existing 'Forest School nature area'. This could include species rich grassland, a woodland area and a pond. All planting should be of locally native species. Grassland should be planted with a species rich grassland mix (suitable to the local area and local soil/shade etc). It has been assumed that the top soil will be derived from on Site. The seed mixes used should be appropriate for the subsoil type used and need to be approved by the SQE 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>).

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, 2007), available online. New areas of grassland

should be 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. Grassy mounds with a south facing slope should be created within the grassland to create habitat for basking reptiles.

New woodland should be managed sympathetically to benefit wildlife. Saplings should be planted and monitored, any dead trees should be replaced. If pruning or cutting of overhanging branches is required, this should be undertaken in late autumn or winter after the tree has flowered and fruited.

Log piles should be provided in the woodland and grassland areas to provide shelter for amphibians, reptiles and hedgehogs.

This could be calculated as part of the change in ecological value to the Site as part of LE04 and will provide habitat for invertebrates, birds, foraging bats and hedgehogs.

6.3.3 Insect Habitats

An insect wall, insect boxes or bee banks 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. Aspect will depend on which species are to be targeted.

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; Macivor & Packer, 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. There are two designs to choose from for bumblebees and solitary bees, each suitable for supporting the requirements of their intended hosts.

Alternatively, a bee bank could be built within the wildlife area in the southern corner of the Site 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 south east. 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 can be stacked in the wildlife area in the southern corner of the Site. 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

The success of the invertebrate habitats could be monitored. Use could be monitored by a local invertebrate group and/or by students as part of an outdoor-based learning session, observing invertebrates leaving or returning to the wall; or during the yearly cleanout operations. The results of the surveys should be held on file and submitted to local records centre.

Full instructions for the management of the boxes will be provided by the manufacturer and will require cleaning out by identifying at the end of the summer any cells that remain in a walled-up condition from the previous year because no young bees emerged. The contents of these cells will be dead and should be removed and destroyed.

The planting scheme of new features should be of locally sourced native species of benefit to wildlife. Gunnell et al. (2013) 'Landscape and Urban Design' (free to download) has suggested planting lists which are of benefit to invertebrates.

6.3.4 Bird and Bat Boxes

Bird Nest Boxes

At least five bird boxes should be installed on a mix of trees along the boundaries and some included within the new building design. Boxes suitable for swift and house sparrow would be suitable for use on buildings 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 close 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/nbw/make-a-nest-box>

Bird boxes should be appropriately located at least 4 m above ground level, and out of reach of predators. Bird boxes should not be positioned to face south in order to avoid hot sun. Further boxes could be provided in the newly created habitat area once trees are mature.

In addition, it is possible to install bird box cameras with links to computers within the school. This allows pupils to track the development of chicks from egg to fledgling without disturbing the resident birds.

Bat Roost Boxes

It is recommended that bat boxes are included in the development design. Although not a legal requirement at this Site, the addition of bat boxes will increase roosting opportunities in the local area and have a positive impact on biodiversity at Site and local level. Pipistrelle, noctule and serotine foraging and commuting activity was recorded during the bat roost surveys.

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 or refurbished buildings. 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. 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 south east and south west to provide a range of microclimate options.

6.3.5 Kitchen Garden

An area within the school grounds should be designed to be used as a kitchen garden. The garden would include a mix of vegetables, herbs, fruit trees and other flowering plants which will attract insects to the area. The practicalities of maintaining the garden could be undertaken by an 'Eco Club' or by a rotation of PSHE classes. The concept of producing locally sourced healthy food could be used in many lessons from health to sustainable development and the produce could be used in home economics and even the school canteen.

Species could include aromatic herbs such as thyme, rosemary, mint, sage and chives; fruit trees such as native apple and plum trees; vegetables such as squashes, lettuces, peas, beans, carrots and parsnips; and flowering plants such as marigold, geranium and lavender.

This could be calculated as part of the change in ecological value to the Site as part of LE04 and will provide habitat for invertebrates, foraging birds and foraging bats.

6.3.6 Sensory Garden

An area designated for seating could incorporate a range of native scented plants to stimulate and soothe the senses whilst also providing habitat for wildlife, most notably pollinating invertebrates such as butterflies, bees and hoverflies using plants such as lavender, honeysuckle, rosemary, mint, thyme and wild garlic.

The emphasis should be on plant species native to the UK to be beneficial for pollinating insects. Butterflies and moths are both aesthetically interesting and useful, often being brightly coloured and important pollinators. Butterflies and moths need plants both for food and as host plants to complete their lifecycle. They are often particularly attracted to brightly coloured or highly scented flowers, making planting that is good for butterflies attractive to humans too.

Gunnell et.al. 2012, Landscaping and urban design for bats and biodiversity (free to download online) has planting lists which are beneficial for invertebrates and are often scented with attractive flowers or forms. Using such species in planting, especially in proximal or linked areas, is likely to increase the value of a Site for butterflies and moths. Note that not all of the plant will be suitable for all soil types. Planting should be chosen based on the ability of the species to thrive in the local conditions.

This could be calculated as part of the change in ecological value to the Site as part of LE04 and will provide habitat for invertebrates, foraging birds and foraging bats.

6.3.7 Hedgehog Habitat

Habitats on Site currently have potential to support hedgehog. Habitats could be enhanced and new provisions provided for hedgehogs to shelter. This would include provision of at least 3 log piles or leaf piles and a purpose built or ready-made purchased hedgehog house. Guidance on building hedgehog houses is provided by the Wildlife Trust, this could be incorporated into a design technology project <https://www.wildlifetrusts.org/sites/default/files/2018-05/Hedgehogsm1.jpg>.

Log piles, leaf piles and hedgehog houses should be placed adjacent to suitable hedgehog habitats including hedgerows and woodland and can be advised by an ecologist. Habitats for hedgehogs could be enhanced by leaving strips of grassland unmown around the edges and adjacent to suitable areas of habitat such as hedgerows and woodland.

Hedgehog highways can be created by making holes in fences to allow hedgehogs to move between habitats. This would require agreement with adjacent land owners.

6.3.8 Green Corridors

All boundary features will be retained. These should be managed sympathetically to benefit wildlife. Where there are any gaps, these should be infilled/planted with locally native species of benefit to wildlife.

A native species rich seed mix, suitable for the location (such as a woodland mix or verge mix) should be used at the base of at least 50% of retained hedgerows, to create a 'field margin' of at least 1 m from the base of the hedgerow. This should be kept 'dark' and light spill onto the features should be avoided, to maximise its benefits.

Generally, any landscape planting proposed, should seek to create green corridors which provide new connectivity across or around the Site for species such as birds, bats, invertebrates and species such as hedgehogs. New planting which provides connectivity from any new bat or bird boxes to the boundary features will be important.

This could be calculated as part of the change in ecological value to the Site as part of LE04.

6.3.9 Ecosystem Resilience (Section 2 Environment (Wales) Act 2016)

Small, isolated populations of species are far more vulnerable to extinction than populations that can disperse and interbreed with other populations. The effects of climate change are likely to increase local extinctions among small isolated populations. It is important to maintain and enhance ecological networks of semi-natural habitats that have a high degree of connectivity.

The landscaping at the Site should be designed to promote local landscape connectivity and create a mosaic of habitats on Site.

Green corridors should be retained and enhanced where possible and external light spill onto these corridors should be avoided.

Any planting should be of native species suitable to the local context and in relation to climate change; they are likely to remain to be locally suitable within the next 25 to 50 years.

7. BREEAM Landscape and Ecology Assessment

Opportunities for BREEAM Credits and Ecological Enhancement are discussed within Sections 8, 9, 10 and 11 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.

The BREEAM methodology is provided in Appendix A.

7.1.1 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 6.7.1 Ecological Credits Available Based on the Current Development Plan

Issue	Total available	Credits likely achievable under current landscaping proposals
LE02	3	1*
LE03	3	2**
LE04	5	2***
LE05	2	2****
LE Total	13	7

* 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. The second credit is achievable based on the current landscaping plans. The third credit is dependent on the outcomes of the calculation of ecological change under LE04. At this stage the third credit is not achievable, but with minor changes to the landscaping can be.

*** LE04 Achieving the first credit is dependent on recommendations being implemented by the client/contractor. The second credit is achievable under current plans. At this stage the third credit is not achievable, but with minor changes to the landscaping can be. The fourth and fifth credits will require substantial changes to the landscaping and are not currently achievable.

**** 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.

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

8.1 Survey and Evaluation (1 Credit)

- Criteria 4 - An ecologist was appointed in May 2019 to undertake a Phase 1 Habitat Survey and prepare a PEA report. A SQE has undertaken the Phase 1 Habitat Survey and reviewed and approved the Phase 1 Habitat Survey and PEA report. The information in the PEA report will be used to help inform the detailed design of the proposed development.
- Criteria 5 – An ecologist has undertaken a Phase 1 survey and has produced a PEA report which includes the baseline data and considers the zone of influence. This has been reviewed and approved by an SQE
- Criteria 5a, 5b and 5c - The PEA includes an assessment of the potential impacts of a proposed development on ecological receptors within the Site and zone of influence (if applicable); and makes recommendations for ecological enhancement of the Site post-development. This is detailed in Sections 4, 5 and 6 of this Report.
- Criteria 6 - The PEA will be shared with the project team and will be used to inform Site preparation design and construction works.

This credit can be awarded.

8.2 Determining the Ecological Outcomes for the Site (1 Credit)

- Criteria 7 - Criteria 4 – 6 under Survey and Evaluation have been achieved.
- Criteria 8 - The SQE has 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 4 of this Report.
- Criteria 9 - The SQE has identified measures early on 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 Preliminary Ecology Appraisal (CIEEM, 2018). This is detailed in Section 6 of this Report.
- Criteria 10 – The optimal outcome for the Site must be selected after liaising with stakeholders and project team. All existing boundary features will be retained, as discussed in Section 5 and 6 of this Report. The final design has not yet been determined, so the selection of the optimal ecological outcome has not yet been confirmed.

This credit cannot currently be awarded. However, it is likely that by following the ecological recommendations for mitigation, the optimal ecological outcome of the Site can be achieved, and the Credit can be awarded. This will be confirmed once the design is finalised.

8.3 Exemplary Level Criteria (1 Credit)

To achieve this credit the following must be achieved:

- Criteria 8 – 10 must be achieved to enable this Exemplary Level Criteria Credit to be available.
- Criteria 12 – 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 (further detail in Appendix A).
- Criteria 13 - 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 not currently available.

9. BREEAM LE03 Managing Negative Impacts on Ecology

9.1 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:

- Criteria 1: LE02 must be achieved.

One credit under LE02 can be achieved; therefore, credits under LE03 are available.

9.2 Planning, Liaison, Implementation and Data (1 Credit)

- Criteria 3 - Potential impacts to the proposed development, including construction works have been assessed and Recommendations and Mitigation have been made with regard to protected and priority species on Site. This is detailed in Section 5 and 6 of this Report.
- Criteria 2 - The SQE has the role and responsibility of defining the potential negative impacts on ecology. This is provided in Section 5 of this report. Recommendations for further surveys, enhancement and mitigation have been made by the SQE. This is provided in Section 5 of this Report. The Project Manager is responsible for informing the design team of ecological constraints 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.
- Criteria 4 - The SQE has proposed solutions and measures (avoidance and mitigation) to be implemented during Site preparation and construction works as part of the PEA. These solutions will be passed on to the project team via submission of this report. These are detailed in Section 6 of this Report.

This credit is achievable, once Criteria 2 and 4 are met.

9.3 Managing Negative Impacts of the Project (up to 2 Credits)

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

Recommendations to avoid and minimise ecological impacts have been made in Sections 5 and 6 of this Report.

One credit under Criteria 8a can be achieved. Net loss has been minimised under LE04. It is possible, that a second credit could be achieved with a minor alteration to the landscaping – see Criteria 6b and 6c under LE04.

The credit under Criteria 8b cannot be achieved under the current plan. The loss of ecological value has been minimised under LE04.

10. BREEAM LE04: Change and Enhancement of Ecological Value

10.1 Prerequisite – Managing Negative Impacts on Ecology

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

- Criteria 1: Under LE03 Criteria 2 – 3 must have been achieved.

Criteria 2 and 3 under LE03 can be achieved in regard to the SQE. This credit under LE03 can be available when the client has committed to achieving Criteria 2 under LE03.

It is considered likely that this prerequisite can be achieved; therefore, credits under LE04 are discussed below.

10.2 Liaison, Implementation and Data Collation (1 Credit)

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

- Criteria 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 zone of influence.

Existing boundary features including hedgerows and rows of trees will be retained, as discussed in Section 5 and 6 of this Report. A list of suggested enhancements to be made on Site is provided in Section 6.

- Criteria 5: The data collected as part of the ecological surveys will be submitted to the Local Environmental Records Centre (SEWBRc) 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 selected biodiversity enhancements.

10.3 Change and Enhancement of Ecology (up to 3 Credits)

- Criteria 6: Up to three credits can be awarded based on the calculation of the change in ecological Biodiversity Units as result of the 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 105-109).

Tables 10.1 – 10.6, below show the Biodiversity Unit calculations for 'habitat areas' using the proposed layout Drawing Number 15-1094-01-SK-001.

Tables 10.7 – 10.11 below show the Biodiversity Unit calculations for 'linear (foliage) habitats' using the proposed layout Drawing Number 15-1094-01-SK-001.

There are no watercourses on Site and as such no Biodiversity Unit calculations have been undertaken for habitat watercourses.

The Percentage Change in Area Biodiversity Units = **88%**

The Percentage Change in Linear Biodiversity Units = **99%**

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 Biodiversity Units is between 75% and 94%. Therefore, **one credit can be awarded.**

The achievement of this credit will require collaboration between the SQE, stakeholders, project managers, and the design team (including architects and landscape architects).

To enhance ecological value at the Site the following landscaping and enhancements could be considered.

- If 1 m strip of grassland adjacent to 50% of hedgerows was seeded with a species rich grass mix and managed sympathetically the Percentage Change in Area Biodiversity Units would be 101%.
- If a 25 m² kitchen garden and a 25 m² sensory garden were included in the design the Percentage Change in Area Biodiversity Units would be 91%.
- If 20% of hedgerows and rows of trees were enhanced by planting native species the Percentage Change in Linear Biodiversity Units would be 107%.

It is possible that the third and fourth credits could be available if further changes were made to the landscaping to include additional areas of habitat and enhancement of existing areas of habitat.

The credit under Criteria 6a can be achieved based on the current plan.

The credits under Criteria 6b and 6c cannot be achieved based on the current plan.

It is possible the credit under Criteria 6b could be achieved if either a sensory and kitchen garden were created or 1 m strip of grassland adjacent to 50% of hedgerows was seeded with a species rich grass mix and managed sympathetically.

It is possible the credit under Criteria 6c could be achieved if a sensory and kitchen garden were created and 1 m strip of grassland adjacent to 50% of hedgerows was seeded with a species rich grass mix and managed sympathetically.

Determining this would require input from the project team and ecologist.

A rework of calculations will be required when the final design is issued.

10.4 Exemplary Level Criteria

- Criteria 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. The credit is awarded as follows:
 - Criteria 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, only with substantial changes to the landscaping; it may be possible to achieve this credit. The best way to achieve this would be to retain the existing Forest Schools nature area.

Table 10.1: Total Post Development Area Biodiversity Units Calculation Formula

Calculation	Values
Total Post-Dev Area Biodiversity Units for the Development (G) G = (B - D) + (E+F) Where:	18966.9
B = Total Pre-Dev Area Biodiversity Units	21372.5
D = Total Post-Dev Area Biodiversity Units Lost Due To Development	9291.2
E = Post-Dev Area Biodiversity Units Created Due To Development	6885.6
F =Post-Dev Area Biodiversity Units Enhanced Due To Development	0.0
Percentage Change in Linear Biodiversity Units = (G ÷ B) x 100	88%

Table 10.2: Area -Based Biodiversity Units Pre Development (B)

Parcel Number	Habitat Type	Distinctiveness	Condition	Area (ha or m2)	Biodiversity Units
1	Mixed Woodland - Plantation	Medium	Moderate	73.92032	591.4
2	Poor Semi-Improved Grassland	Low	Moderate	718.670718	2874.7
3	Amenity Grassland	Low	Poor	8795.115757	17590.2
4	Introduced Shrub	Low	Poor	4.520627	9.0
5	Buildings	Hard Standing or Building	Hard Standing or Building	613.687883	0.0
6	Bare Ground	Hard Standing or Building	Hard Standing or Building	629.842726	0.0
7	Hardstanding	Hard Standing or Building	Hard Standing or Building	1777.402953	0.0
8	Standalone Trees	Medium	Moderate	38.4	307.2
TOTAL				6359.7	9291.2

Table 10.3: Area-Based Habitat Loss (D)

Parcel Number	Habitat Type	Distinctiveness	Condition	Area (ha or m2)	Biodiversity Units
1	Mixed Woodland - Plantation	Medium	Moderate	15	120.0
2	Poor Semi-Improved Grassland	Low	Moderate	575	2300.0
3	Amenity Grassland	Low	Poor	3355.1	6710.2
4	Introduced Shrub	Low	Poor	4.5	9.0
5	Buildings	Hard Standing or Building	Hard Standing or Building	613.7	0.0
6	Bare Ground	Hard Standing or Building	Hard Standing or Building	0.0	0.0
7	Hardstanding	Hard Standing or Building	Hard Standing or Building	1777.4	0.0
8	Standalone Trees	Medium	Moderate	19.0	152.0
TOTAL				6359.7	9291.2

Table 10.4: Area-Based Habitat Created (E)

Parcel Number	Habitat Type	Distinctiveness	Condition	Area (ha or m2)	Delivery Risk	Temporal Risk	Spatial Risk	Biodiversity Units
5	Buildings	Hard Standing or Building	Hard Standing or Building	1531	Low	0	Within 500m of the area of loss or in same ecological network	0.00
7	Hardstanding	Hard Standing or Building	Hard Standing or Building	3627	Low	0	Within 500m of the area of loss or in same ecological network	0.00
9	New Habitat areas	High	Good	690	Medium	5	Within 500m of the area of loss or in same ecological network	6885.6
TOTAL								6885.6

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Table 10.5: Area Biodiversity Units – Habitat Enhanced (F)

Pre Dev Parcel Number	Pre Dev Biodiversity Units	Distinctiveness	Condition	Area Enhanced (ha or m2)	Delivery Risk	Temporal Risk	Spatial Risk	Biodiversity Units due to Enhancement
N/A	0	N/A	N/A	0	N/A	N/A	N/A	0
TOTAL				0				0

Table 10.6: 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
21372.5	9291.2	6885.6	0.00	18966.9	88%

Table 10.7: Linear Habitats - Percentage Change in Biodiversity Units

Calculation	Values
Total Post-D Linear Biodiversity Units for the Development (G) G = (B - D) + F	1199.5
Where:	
B = Total Pre-D Linear Biodiversity Units	1211.2
D = Total Post-D Linear Biodiversity Units Lost Due To Development	11.7
F = Total Post-D Linear Biodiversity Units Created and/or Enhanced Due to Development	0.0
Percentage Change in Linear Biodiversity Units = (G ÷ B)	99%

Table 10.8: Linear-Based (Foliage) Biodiversity Units Pre Development (B)

Parcel Number	Habitat Type	Length (m)	Condition	Biodiversity Units
1	Row of Trees	24.9	Moderate	49.8
2	Species-Rich Intact Hedgerow	78.7	Moderate	157.4
3	Species-Poor Intact Hedgerow	11.7	Poor	11.7
4	Hedgerow with Trees	402.6	Moderate	805.2
5	Fence	162.5	Poor	162.5
6	Wall	24.6	Poor	24.6
TOTAL		705		1211.2

Table 10.9: Linear-Based (Foliage) Habitat Loss (D)

Parcel Number	Habitat Type	Length (m)	Condition	Biodiversity Units
2	Species-Poor Intact Hedgerow	11.7	Poor	11.7
TOTAL		11.7		11.7

Table 10.10: Linear-Based (Foliage) Habitat Created or Enhanced (F)

Parcel Number	Habitat Type	Length	Biodiversity Units
N/A	N/A	0	0
TOTAL		0	0

Table 10.11: Total Post Development Linear (Foliage) Biodiversity Units

Pre Development Linear (Foliage) Biodiversity Units	Linear (Foliage) Units Lost	Linear (Foliage) Based Units Created and/or Enhanced	Total Post Development Linear (Foliage) Biodiversity Units	Biodiversity Unit Score
1211.2	11.7	0	1199.5	99%

11. BREEAM LE05: Long Term Ecology Management and Maintenance

11.1 Prerequisite – Roles and Responsibilities, implementation, Statutory Obligations

To make the credits under LE05 available the following prerequisite criteria must be achieved:

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

Criteria 2 and 3 under LE03 will likely be achieved in regard to the SQE. The credits under LE05 can be available when the client has committed to achieving Criteria 2 under LE03. The first credit under LE04 'Change and Enhancement of Ecology' can be achieved.

It is possible that these prerequisites can be achieved and therefore the credits under LE05 can be made available. These are discussed below.

11.2 Planning, Liaison, Data, Monitoring and Review Management and Maintenance (1 Credit)

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

- Criteria 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 LE 03 & LE 04 are implemented.
 - 3.b Develop and review management and maintenance solutions, actions or measures.
- Criteria 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 zone of influence.
 - 4.e Maintaining the site in line with the 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 LE 02, LE 03 and LE 04.
- Criteria 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.

- Criteria 6: The landscape and management plan 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 and meets the requirements for the prerequisites in relation to LE03.

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 demonstrate that the measures have been completed.

11.3 Landscape and Ecology Management Plan Development (1 Credit)

Criteria 7: Landscape and ecology management plan (LEMP), or equivalent, is developed in accordance with BS 42020:2013 Section 11.1, covering as a minimum the first five years after project completion and includes:

- 7.a Actions and responsibilities, prior to handover, to give to relevant individuals.
- 7.b The ecological value and condition of the site over the development life.
- 7.c Identification of opportunities for ongoing alignment with activities external to the development project and which supports the aims of BREEAM's Strategic Ecology Framework.
- 7.d Identification and guidance to trigger appropriate remedial actions to address previously unforeseen impacts.
- 7.e Clearly defined and allocated roles and responsibilities.

Although it is possible to produce a full 5-year LEMP 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 5-year LEMP once the landscaping plan has been finalised. The LEMP will be produced in accordance with BS 42020:2013 Section 11.1 and a suggested format is included in Appendix G.

It is possible that this credit will be achievable, once the client commits to having a LEMP and meets the requirements for the prerequisites in relation to LE03.

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Figure 1: Phase 1 Habitat Map

Project Title:

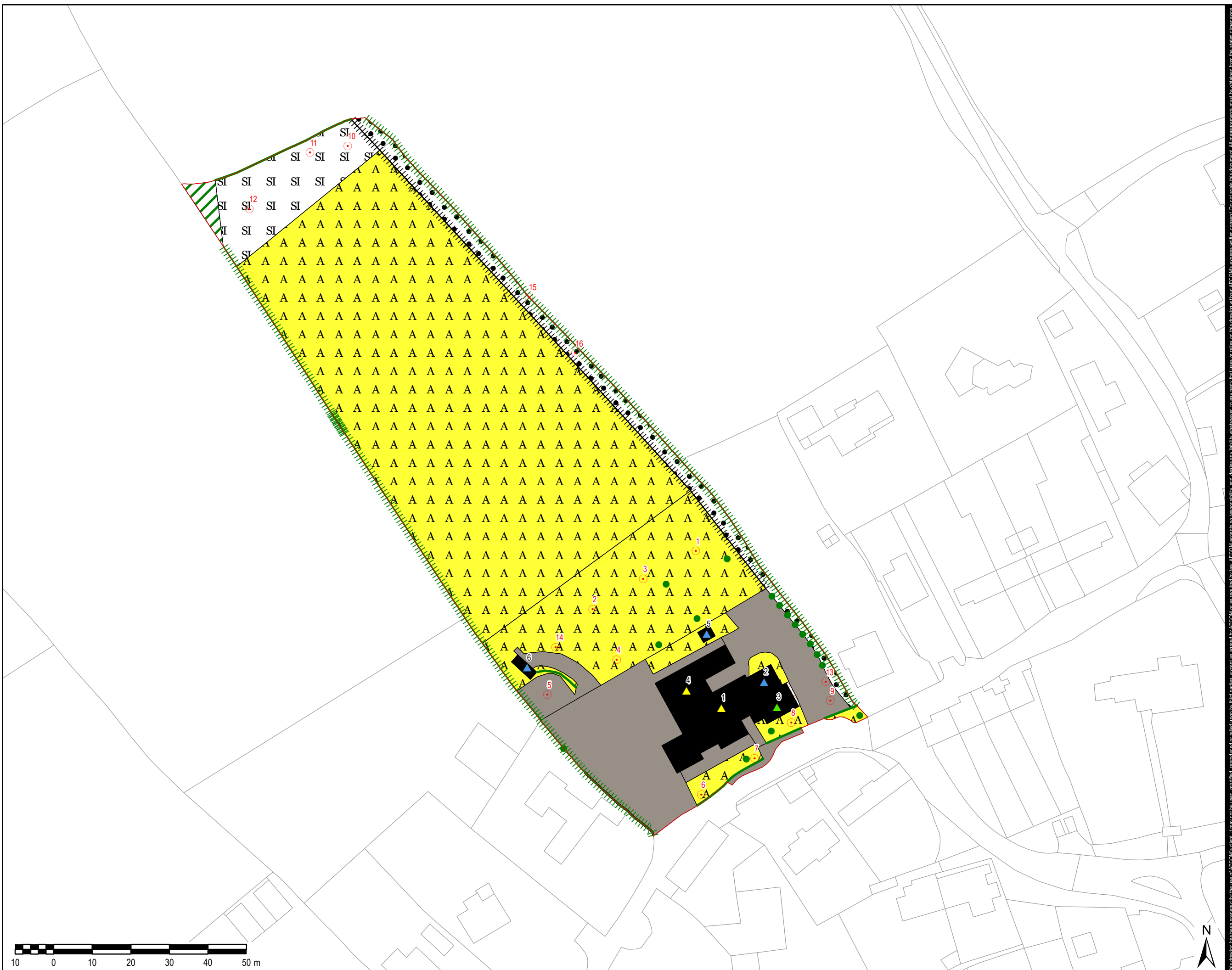
**ST NICHOLAS CHURCH
IN WALES PRIMARY
SCHOOL**

Client:

**VALE OF
GLAMORGAN COUNCIL**

LEGEND

- Site Boundary
- Target Note
- Trees
- Bat Suitability Buildings**
- ▲ Moderate Suitability
- ▲ Low Suitability
- ▲ Negligible
- Phase 1 Linear Habitats**
- Broadleaved parkland/scattered trees
- Fence
- Hedge with trees - species-poor
- Intact hedge - species-poor
- Wall
- Phase 1 Habitat Areas**
- Broadleaved Woodland - Plantation
- Poor Semi-Improved Grassland
- Cultivated/Disturbed Land - Amenity Grassland
- Introduced Shrub
- Buildings
- Bare Ground
- Hardstanding



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**PHASE 1 HABITAT
PLAN**

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FIGURE 1 001

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GM JM LN 04/09/19

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Figure 2: Proposed Development Plan

Notes

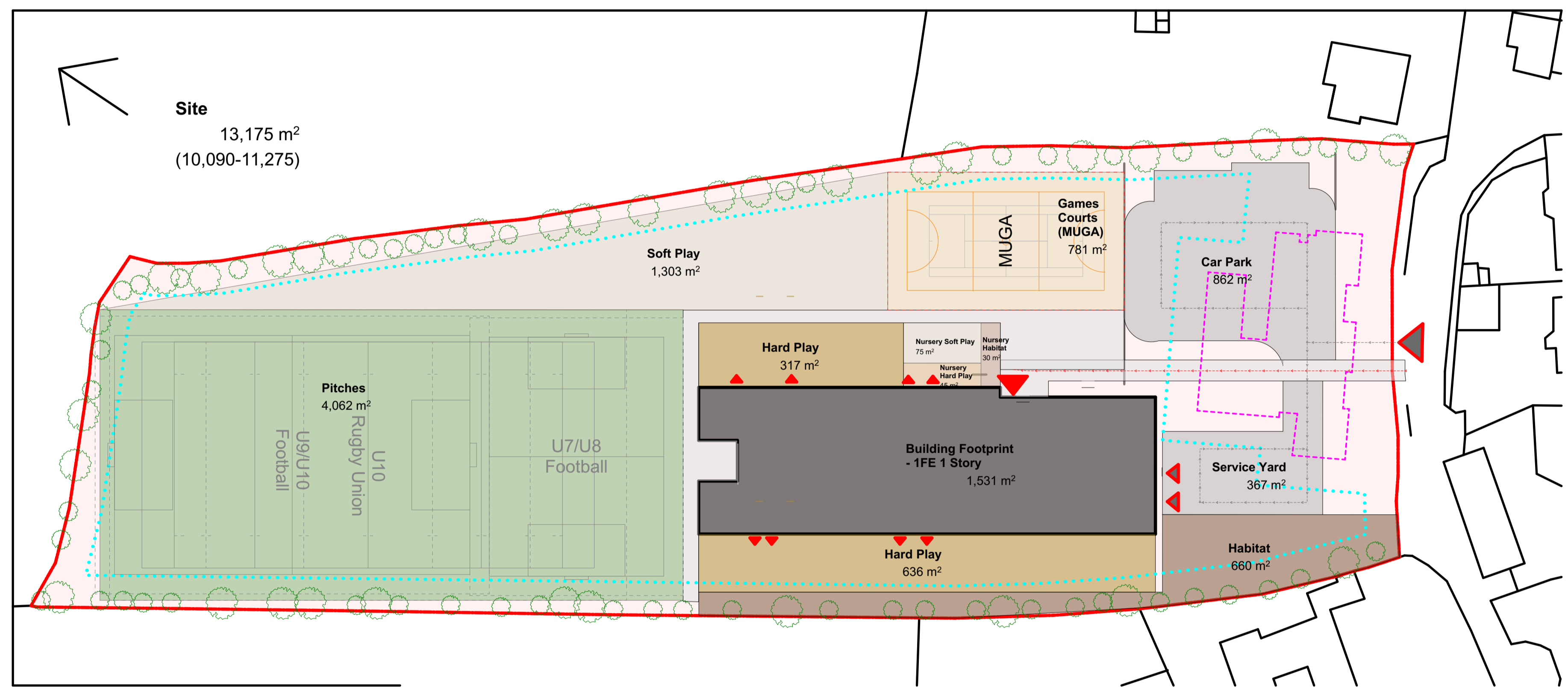
Check all dimensions on site. Do not scale from this drawing.
Report any discrepancies and omissions to HLM Architects.
This Drawing is Copyright ©

DESIGN/SKETCH DESIGN
Unless stated otherwise the designs shown are subject to detailed site survey investigations and legal definition the CDM Regulations and the comments and / or approval of the various relevant Local Authority Statutory Undertakers - Fire Officers Engineers and the like. They are copyright project specific and confidential and no part is to be used or copied in any way without the express prior consent of HLM Architects.

PHOTOCOPIED/SCANNED INFORMATION
NB: This drawing is based on photocopied / scanned information liable to distortion in scale.

- Site Boundary - Existing / Potential School
- Site Boundary - Community Hall
- Existing Building Footprint - to Be Retained
- Existing Building Footprint - to Be Demolished
- 6m 'no build zone' - proximity to existing building or boundary.
- Potential 'secure line'
- Entrance Route - Pedestrian
- Entrance Route - Vehicle / Delivery access
- Pedestrian / Vehicle flows conflict - crossing point required.
- Existing Tree
As per 2006 School car park planning application

Category (& BB99 Brief Area)	Measured Area (m ²)
Nicholas Standard 1 Storey	
Sports Pitches (4,200)	4,062
Games Courts (1,020)	781
Soft Play (1,325)	1,303
Soft Play - Nursery (75)	75
Hard Play (715)	953
Hard Play - Nursery (45)	45
Habitat (410)	660
Habitat - Nursery (30)	30
Non Net site - Vehicular	1,229
Non Net site - Pedestrians	638



Rev	Description	Date	By	Chk
P02	Building Footprint Amended	12.07.19	AMS	GW
P01	ISSUE FOR COMMENT - Test Fit amended to show standard footprint	02.07.20	AMS	GW

Revisions

Project

15-1094-01
St Nicholas School

Client

Title

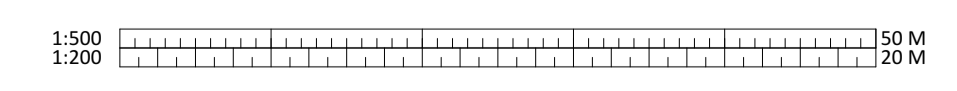
Site Zoning - 1 Storey - Standard Footprint

Drawing No.	Revision
15-1094-01-SK-001	P02
Scale @ A1	Drawn
1:500	AMS
Date	Checked
12.07.19	GW

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Appendix A : BREEAM Land Use and Ecology Criteria

The BREEAM Land Use and Ecology Category (Assessment Route 2) for LE02 to LE05 is described below. The numbering directly relates to the Criteria numbers in the technical manual. The full detail and methodology is available within the technical manual (BREEAM, 2018a).

LE02: Identifying and Understanding the Risks and Opportunities for the Project

Prerequisite – Assessment Route Selection

5. An assessment route for the project has been determined using BREEAM Guidance Note GN34 BREEAM Ecological Risk Evaluation Checklist.
6. The client or contractor confirms compliance is monitored against all relevant UK and EU or international legislation relating to the ecology of the site.

Survey and Evaluation

4. A Suitably Qualified Ecologist (SQE) is appointed at a project stage that ensures early involvement in site configuration and, where necessary, can influence strategic planning decisions.
5. Prior to the completion of the Preparation and Brief project stage, an appropriate level of survey and evaluation has been carried out to determine the ecological baseline of the site, taking account of the zone of influence to establish:
 - a. Current and potential ecological value and condition of the site, and related areas within the zone of influence;
 - b. Direct and indirect risks to current ecological value; and,
 - c. Capacity and feasibility for enhancement of the ecological value of the site and, where relevant, areas within the zone of influence.
6. Data are collated and shared with project team to inform the site preparation, design and construction works.

Determining the Ecological Outcomes for the Site

7. Survey and evaluation criteria have been achieved.
8. During Concept Design, the project team liaise and collaborate with representative stakeholders to identify the optimal ecological outcome for the site.
9. The ecological outcome for the site is determined by identifying, appraising and selecting specific solutions and measures. The solutions and measures must be identified sufficiently early in the project to influence key project planning decisions and must be done in accordance with the following hierarchy of action, which is dependent on the route being used:
 - a. Route 2:
 - i. Avoidance
 - ii. Protection
 - iii. Reduction or limitation of negative impacts
 - iv. On site compensation and
 - v. Enhancement, considering the capacity and feasibility within the site, or where viable, off-site.
10. The optimal ecological outcome for the site is selected after liaising with representative stakeholders and the project team.

Exemplary Level Criteria

To achieve one exemplary performance credit:

Determine the ecological outcomes for the site (sustainability-related activities)

11. Achieve criteria 7 to 9 above
12. When determining the optimal ecological outcome for the site consider, in addition to those outlined in criteria 7 to 9 above, the wider site sustainability-related activities and the potential for ecosystem service related benefits. Refer to the Methodology on Page 299 of the technical manual for full details (BREEAM, 2018a)
13. Achieve the credits of the assessment issues outlined below:
 - a. Assessment scope on Page 121 of the technical manual - Both credits
 - b. Assessment scope on Page 331 of the technical manual - Achieve credits for 'Surface water run-off' and 'Minimising watercourse pollution'
 - c. Assessment scope on page 348 of the technical manual.

LE03: Managing Negative Impacts on Ecology

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

14. LE 02 has been achieved.

Planning, Liaison, Implementation and Data (One Credit)

15. Roles and responsibilities for managing negative impacts on the ecology are clearly defined and allocated to support successful delivery of project outcomes at an early enough stage to influence the Preparation and Brief or Concept Design.
16. The potential impact of site preparation and construction works on ecology are identified at an early project stage to optimise benefits and outputs.
17. The project team, liaising and collaborating with representative stakeholders and, taking into consideration data collated and shared, have proposed solutions and selected measures to be implemented during site preparation and construction works.

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

7. Criteria 2-4 have been achieved
8. Negative impacts from site preparation and construction works have been managed according to the hierarchy and, either:
 - a. No net loss of ecological value has occurred (2 credits)OR
 - b. The loss of ecological value has been minimised (Minimising Loss) (1 credit)

LE04: Change and Enhancement of Ecological Value

Prerequisite - Managing Negative Impacts on Ecology:

9. Criteria 2-3 in LE 03 have been achieved.
10. The client or contractor confirms compliance is monitored against all relevant UK, EU or international legislation relating to the ecology of the site.

Liaison, Implementation and Data collation (One Credit)

11. 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:
 - a. On site, and where this is not feasible,
 - b. Off site within the zone of influence.
12. Data collated are provided to the local environmental records centres nearest to, or relevant for, the site.

Change and Enhancement of Ecology (up to Three Credits)

13. Up to three credits are awarded based on the calculation of the change in ecological value occurring as a result of the project. This must be calculated in accordance with the process set out in GN36 - BREEAM, CEEQUAL and HQM Ecology Calculation Methodology – Route 2. Credits are awarded as follows:
 - a. Minimising loss of ecological value (one credit - percentage score of 75-94)
 - b. No net loss of ecological value (two credits - percentage score of 95-104)
 - c. Net gain of ecological value (three credits - percentage score of 105-109)

Exemplary Level Criteria

To achieve one exemplary performance credit:

14. 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. The credit is awarded as follows:
 - a. Significant net gain of ecological value (percentage score of 110 or above)

Calculation of Biodiversity Units Methodology

The methodology requires the calculation of Biodiversity Units for both Linear and Area Based Habitats impacted by a project and is carried out Pre and Post Development.

The methodology is based on three main attributes:

- i. the area or length of habitats (dependent on their type),
- ii. their condition and,
- iii. their distinctiveness.

These attributes are assigned numerical values to allow Biodiversity Units to be calculated for each habitat type. The number of Biodiversity Units can then be compared before and after the development to determine a change and so give an indication of the change in overall ecological value.

The methodology is split into a full approach and a simplified approach. The simplified approach can only be used for developments with low level risks to ecological value and biodiversity.

There are two options as follows:

15. 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.
16. 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

Calculation of Biodiversity Units

Condition

Condition is calculated by using the BREEAM guidance GN36 - BREEAM, CEEQUAL and HQM Ecology Calculation Methodology (BREEAM, 2018b) and Natural England's' Higher Level Stewardship Farm Environment Plan (FEP) Manual (NE, 2010).

Table A1 defines the condition levels.

Table A1: Habitat Condition Bands and Scores

Condition Band	Condition Score	Criteria for Assigning Condition
Good	3	Any habitat which passes all the FEP criteria
Moderate	2	Any habitat which fails one FEP criterion
Poor	1	Any habitat which fails two or more FEP criteria

Where an FEP condition assessment is not possible and the condition cannot be based on local relevant data (such as surveys on other similar habitats within the Development Footprint) the condition of the habitats should be assumed to be moderate, giving a condition score of 2, unless there is other evidence that the habitat is of good condition, such as the presence of species of principal importance. If a different methodology is used the SQE should set out why it has been used and provide evidence to demonstrate why that methodology is more appropriate.

When the habitat present is not covered by the Farm Environment Plan (FEP) condition assessment methodology (NE,2010) the Default Condition Assessment should be used (see Table A2 below). If some of the criteria are not relevant for the habitat being assessed the SQE should use their expert judgement to select the appropriate criteria.

Table A2: Default Condition Assessment

Criterion	Commonly Used Habitat Condition Assessment Criteria in the FEP
1	A diverse age range
2	A diverse species mix
3	Diverse structure variety/diverse form
4	Presence of protected species
5	None or a limited presence of invasive species
6	No or limited damage for example by machinery

Distinctiveness

Distinctiveness is calculated using Appendix C of the BREEAM guidance GN36 - BREEAM, CEEQUAL and HQM Ecology Calculation Methodology (BREEAM, 2018b)

In line with the guidance, the following steps are required to calculate Pre Development Biodiversity Units:

Score each habitat for distinctiveness

- Score each habitat for distinctiveness as high (6), medium (4) or low (2) (see Table A3). For hedgerows and watercourses assume distinctiveness is high,
- Assess the condition of the habitat using the methodology described in Natural England's Farm Environment Plan (FEP) Manual (NE, 2010). Score each habitat for condition as good (3), moderate (2) or poor (1). Please note that if a different methodology is used its use needs to be justified within the report,
- Measure the area (in hectares or square metres) or length (in metres) of the habitat (ensuring the same unit is used throughout the assessment).

Table A3: Habitat Distinctiveness Bands and Scores

Distinctiveness Band	Distinctiveness Score	Habitat Types Included
High	6	Habitats of Principal Importance i.e. those which meet the criteria to qualify as Habitats of Principal Importance (JNCC 2011) as they are not included in the assessment. This excludes ancient woodland and other habitats which are irreplaceable.
Medium	4	Other semi-natural habitats that do not fall within the scope of Habitats of Principal Importance definitions, i.e. all other areas of woodland (e.g. mixed woodland), other grassland (e.g. semi-improved grasslands), uncultivated field margins, road verge and railway embankments (excluding those that are intensively managed).
Low	2	Improved grassland, arable fields (excluding any uncultivated margins), built up areas, domestic gardens, regularly disturbed bare ground (e.g. quarry floor, landfill sites etc.), verges associated with transport corridors.

Habitat distinctiveness is a measure of biodiversity that has regard for the number and variety of species found there (richness and diversity), how rare the species are, and how many species the habitat supports that are not common elsewhere.

For the purpose of the BREEAM family assessments habitat distinctiveness is scored against a three category scale (high, medium and low) as detailed in Table A3. Broadly, all Habitats of Principal Importance will be assigned high distinctiveness, other habitats which are not Habitats of Principal Importance will be assigned medium distinctiveness and any habitats which have been intensively managed such as improved grassland or arable pasture will be assigned low distinctiveness.

LE05: Long Term Ecology Management and Maintenance

Prerequisite - Roles and Responsibilities, Implementation and Statutory Obligations

17. The client or contractor has confirmed that compliance is being monitored against all relevant UK, EU and international standards relating to the ecology of the site.
18. Criteria 2-3 in LE 03 have been achieved, and at least one credit under LE 04 for 'Change and Enhancement of Ecology' has been awarded.

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

19. The project team liaise and collaborate with representative stakeholders, taking into consideration data collated and shared, on solutions and measures implemented to:
 - a. Monitor and review the effectiveness with which the plans for LE 03 & LE 04 are implemented
 - b. develop and review management and maintenance solutions, actions or measures.
20. In support of the above and to help ensure their continued relevance over the period of the project the following should be considered:
 - a. Monitoring and reporting of the ecological outcomes for site implemented at the design and construction stage
 - b. Monitoring and reporting of outcomes and successes from the project
 - c. Arrangements for the ongoing management of landscape and habitat connected to the project (on and, where relevant, off site)
 - d. Maintaining the ecological value of the site and its relationship or connection to its zone of influence
 - e. Maintaining the site in line with the any sustainability linked activities, e.g. ecosystems benefits (LE 02).
 - f. Remedial or other management actions are carried out which relate to those identified in LE 02, LE 03 and LE 04.
21. 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.
22. The landscape and management plan or similar is updated as appropriate to support maintenance of the ecological value of the site.

Landscape and Ecology Management Plan (or similar) Development (One Credit)

23. Landscape and ecology management plan, or equivalent, is developed in accordance with BS 42020:2013 Section 11.1(BSI, 2013) covering as a minimum the first five years after project completion and includes:
 - a. Actions and responsibilities, prior to handover, to give to relevant individuals
 - b. The ecological value and condition of the site over the development life.
 - c. Identification of opportunities for ongoing alignment with activities external to the development project and which supports the aims of BREEAM's Strategic Ecology Framework
 - d. Identification and guidance to trigger appropriate remedial actions to address previously unforeseen impacts
 - e. Clearly defined and allocated roles and responsibilities.

Methodology

Tenant/occupier/building manager

This information pack should include the following content, as appropriate:

- a) Details of the ecological value within the property boundary (e.g. public and private gardens, green roofs), common areas (e.g. communal garden), and the surrounding area (e.g. public recreational space).
- b) The benefits of the ecological value to the occupants and the broader community.
- c) Guidance on how the occupants can make the most of the local ecology and contribute to its management, (e.g. planting ecologically appropriate species in their property), as well as things that should be avoided doing (e.g. disrupting wildlife corridors);
- d) Highlight relevant actions that can be taken to enhance value within the property that is owned or occupied to help ensure its ongoing management and maintenance.
- e) Contact details for those responsible for the management and maintenance of the local ecology and sources of local information on biodiversity and ecological management including management companies and local wildlife trusts.

Data collation and application in throughout the project lifecycle

In addition to the data collated during LE 02, data collated during assessment of this issue should be shared with the project team to inform decisions relating to the site preparation, design or construction works.

Appendix B : Wildlife Legislation

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 listed in the Annexes of the Habitats Directive (further information regarding the Habitats Directive is set out in more detail in the table below). 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 classified in accordance with Article 4 of the Birds Directive information regarding the Birds Directive is set out in more detail in the table below).
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

Designation	Brief Description
	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.

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 Countryside and Rights of Way Act, the Wildlife and Countryside Act 1981 (as amended), The Protection of Badgers Act 1992 and the Conservation of Habitats and Species Regulations 2018 are the main legislative framework for protection of wild animals in the UK. Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) covers birds, Schedule 5 covers other animals and Schedule 8 covers plants.

Species including bats, otters and great crested newts are listed under Schedule 2 of the Conservation of Habitats and Species Regulations 2018. 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).

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 2018 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
The Habitats Directive	The Habitats Directive 1992 (Directive 92/43/EEC sets out the legal framework requiring EU member states to protect 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) is set out within Article 6 of the Directive. The Directive is transposed into UK law through the Conservation of Habitats and Species Regulations 2018 (the "Habitats Regulations") and the Wildlife & Countryside Act 1981 (as amended).
The Birds Directive	The Directive on the Conservation of Wild Birds (Directive 2009/147/EC (the codified version of Council Directive 79/409/EEC as amended)) provides a framework for the protection, management and control of all species of naturally occurring wild birds in the European territory of Member States, including the UK. The provisions of the Birds Directive are transposed into UK law by the Conservation of Habitats and Species Regulations, 2018 and the Wildlife & Countryside Act 1981 (as amended).
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

Designation

Brief Description

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 (*Reynoutria japonica*), Himalayan balsam (*Impatiens glandulifera*), montbretia (*Crococsmia x crocosmiiflora*), 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.

Protection of Badgers Act 1992 The Protection of Badgers Act 1992 makes it an offence to wilfully take, kill, injure or ill-treat a badger, possess a dead badger or any part of a badger. Setts interference includes damaging or destroying a sett, obstructing access to a sett, and disturbing a badger whilst it is occupying a sett. The Act defines a badger sett as 'any structure or place, which displays signs indicating the current use by a badger' and Natural England takes this definition to include seasonally used setts.

Work that may disturb badgers or their setts is illegal without a development

Designation**Brief Description**

licence from the relevant statutory body (in this case Natural Resources Wales).

The Hedgerow Regulations 1997

The Hedgerow Regulations (1997) make provision for the protection of important hedgerows in England and Wales. The regulations affect hedgerows which are 20m or more in length, or connected at both ends to another hedgerow of any length.

They relate to hedgerows which are on, or adjoining land used for the following purposes: agriculture or forestry; the breeding or keeping of horses, ponies or donkeys; common land; village greens; and SSSIs (They do not include hedges that are attached to, or marking the boundaries of a private house.

It is an offence to intentionally or recklessly remove or cause or permit another person to remove a hedgerow or intentionally or recklessly remove, or cause or permit another person to remove, a hedgerow which is the subject of a hedgerow retention notice.

Appendix C : Local Planning Policy

The Vale of Glamorgan Local Development Plan (LDP) 2011-2026 provides the local planning policy framework for the Vale of Glamorgan and was adopted by the Council on 28th June 2017.

The Plan sets out the vision, objectives, strategy and policies for managing development in the Vale of Glamorgan, and contains a number of local planning policies and makes provision for the use of land for the purposes of housing, employment, retailing, recreation, transport, tourism, minerals, waste, and community uses. It also seeks to identify the infrastructure that will be required to meet the growth anticipated in the Vale of Glamorgan up to 2026, and provides a monitoring framework for assessing the effectiveness of the Plan.

Policies referring to nature conservation are outlined below. Full details can be found in Vale of Glamorgan Local Development Plan 2011-2026, Local Development Plan-Written Statement June 2017.

Policy	Details
Policy SP10 – Built and Natural Environment	<p>Development proposals must preserve and where appropriate enhance the rich and diverse built and natural environment and heritage of the Vale of Glamorgan including:</p> <ol style="list-style-type: none"> 1. The architectural and / or historic qualities of buildings or conservation areas, including locally listed buildings; 2. Historic landscapes, parks and gardens; 3. Special landscape areas; 4. The Glamorgan Heritage Coast; 5. Sites designated for their local, national and European nature conservation importance; and 6. Important archaeological and geological features. <p>The Vale of Glamorgan's natural and built environmental qualities significantly contribute to its identity and also provide valuable local recreation and tourism opportunities. These assets include areas recognised as being of European, national and local importance, including the Vale of Glamorgan's coastline which includes the Glamorgan Heritage Coast designation and the Severn Estuary Special Protection Area.</p> <p>Policy SP10 emphasises the need to protect the Vale of Glamorgan's natural and built environmental assets and reinforces that sensitive design and choice of location of new development can have a positive effect on the Vale of Glamorgan's built and natural heritage. Similarly, new development will be required to minimise its impact on natural systems, landscapes, species and habitats and, where appropriate, provide opportunities for the creation of new habitats or the sensitive enhancement of existing habitats.</p> <p>The LDP provides a policy framework that seeks to preserve and enhance the Vale of Glamorgan's important historic built environment particularly in relation to the numerous listed buildings (both statutory and local), conservation areas, scheduled monuments and historic landscapes, parks and gardens that exist. It should be noted that statutory listed buildings are also covered under Policy MD8 and are subject to separate legislation. In addition, it recognises the importance of preserving and enhancing the natural environment, principally the countryside and the coast, which have significant landscape and nature conservation value.</p>
Policy MG17 – Special Landscape Areas	<p>The following areas are designated as special landscape areas:</p> <ol style="list-style-type: none"> 1. Castle Upon Alun; 2. Upper & Lower Thaw Valley; 3. Ely Valley & ridge slopes; 4. Nant Llancafarn; 5. Dyffryn basin & ridge slopes; 6. Cwrt-yr-Ala basin. <p>Within the special landscape areas identified above, development proposals will be permitted where it is demonstrated they would cause no unacceptable harm to the important landscape character of the area.</p>

Policy

Details

Special Landscape Areas (SLA) have been designated to protect areas of the Vale of Glamorgan that are considered to be important for their geological, natural, visual, historic or cultural significance. These areas have been identified through the utilisation of a methodology devised by the former

Countryside Council for Wales (now Natural Resources Wales) in collaboration with a consortium of local authorities in South East Wales, which uses LANDMAP data. The process allows information about the landscape to be gathered, organised and evaluated into a nationally consistent, quality assured data set.

Details of the identified SLAs are contained within the Vale of Glamorgan Designation of Special Landscape Areas Background Paper (2013).

The designation of SLAs is not intended to prevent development but to ensure that where development is acceptable careful consideration is given to the design elements of the proposal such as the siting, orientation, layout and landscaping, to ensure that the special qualities and characteristics for which the SLAs have been designated are protected.

Development proposals within SLAs will be required to fully consider the impact of the proposal on the SLA through the submission of a Landscape and Visual Impact Assessment (LVIA). A LVIA will be required for any development that is likely to have a significant impact upon landscape character, or have a significant visual effect within the wider landscape (by virtue of its size or prominence or degree of impact on the locality) and will be prepared in accordance with the latest Landscape Institute and the Institute of Environmental Management and Assessment guidelines. Where applicable, this should form a key element of a planning application's design and access statement and should demonstrate that the proposal has been designed to remove or reduce any unacceptable impacts on the qualities for which the SLA has been designated. Any cumulative impacts that the proposal may have in relation to existing or planned proposals in the locality should also be considered. This is particularly the case for wind turbines or large structures and large-scale proposals such as solar farms. The level of detail required in each landscape impact assessment should be commensurate with the scale of the proposal.

 Policy MG18 – Green Wedges

Green wedges have been identified to prevent the coalescence of settlements and to retain the openness of land at the following locations:

1. Between Dinas Powys, Penarth and Llandough;
2. North West of Sully;
3. North of Wenvoe;
4. South of Bridgend;
5. Between Barry and Rhoose;
6. South Penarth to Sully; and
7. Between Rhoose and Aberthaw.

Within these areas development which prejudices the open nature of the land will not be permitted.

Land on the urban fringe particularly around the key, service and primary settlements within the South East Zone is vulnerable to speculative development that can blur the boundaries between settlement edges and the open countryside. Unchecked this development would result in the incremental loss of open land and ultimately lead to the coalescence of settlements with a resultant detrimental impact upon agriculture, the landscape and the amenity value of land.

While other policies of the LDP seek to prevent inappropriate development within the open countryside it is considered that the areas defined by the green wedges are more vulnerable and susceptible to change and require additional protection. Therefore, within the areas defined by the green wedges there will be a presumption against inappropriate development²⁰ which would contribute to urban coalescence, prejudice the open nature of the land, or have an adverse impact upon the setting of an urban area. In applying this protection, however, it is recognised that individual or small groups of dwellings exist within the designations and that activities such as agriculture, forestry and recreation, occur. Consequently, development associated with existing uses will be limited to minor structures which are strictly ancillary to existing uses. Details of each of the designations are contained within the Green Wedge Background Paper (2013).

 Policy MG19 – Site and

Development proposals likely to have a significant effect on a European site, when considered alone

Policy	Details
Species of European Importance	<p>or in combination with other projects or plans will only be permitted where:</p> <ol style="list-style-type: none"> 1. The proposal is directly connected with or necessary for the protection, enhancement and positive management of the site for conservation purpose; or 2. The proposal will not adversely affect the integrity of the site; 3. There is no alternative solution; 4. There are reasons of overriding public interest; and 5. Appropriate compensatory measures are secured. <p>Development proposals likely to have an adverse effect on a European protected species will only be permitted where:</p> <ol style="list-style-type: none"> 1. There are reasons of overriding public interest; 2. There is no satisfactory alternative; and 3. The action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range. <p>Internationally designated sites comprise Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar Sites. The Vale of Glamorgan has 2 international sites: - Dunraven Bay (SAC) and Severn Estuary (SAC, SPA, Ramsar) and is directly adjacent to the Kenfig SAC in the County Borough of Bridgend. The locations of the European sites are shown on the Constraints Map.</p> <p>Any development proposals that are likely to affect European designated sites or European Protected Species (EPS) will be determined in accordance with national planning policy set out in Planning Policy Wales and Technical Advice Note 5: Nature Conservation and Planning (2009) and relevant case law.</p> <p>In accordance with the Conservation of Habitats and Species Regulations 2010 (as amended), any development proposals that has the potential for adverse impact on the integrity of a European site will be subject to a Habitats Regulations Assessment.</p> <p>Prior to implementing any consent that may be granted which may affect species of European importance, developers will need to secure a derogation from Natural Resources Wales under the Conservation of Habitats and Species Regulations 2010 (as amended), the 'Habitats Regulations.</p>
MG20 – Nationally Protected Sites and Species	<p>Development likely to have an adverse effect either directly or indirectly on the conservation value of a site of special scientific interest will only be permitted where it is demonstrated that:</p> <ol style="list-style-type: none"> 1. There is no suitable alternative to the proposed development; and 2. It can be demonstrated that the benefits from the development clearly outweigh the special interest of the site; and 3. Appropriate compensatory measures are secured; or 4. The proposal contributes to the protection, enhancement or positive management of the site. <p>Development proposals likely to affect protected species will only be permitted where it is demonstrated that:</p> <ol style="list-style-type: none"> 1. The population range and distribution of the species will not be adversely impacted; 2. There is no suitable alternative to the proposed development; 3. The benefits of the development clearly outweigh the adverse impacts on the protected species; and 4. Appropriate avoidance, mitigation and compensation measures are provided. <p>For the purposes of the policy, nationally designated sites include Sites of Special Scientific Interest (SSSI). Within the Vale of Glamorgan there are 28 SSSI and these are detailed in Appendix 2 and their locations are shown on the Constraints Map. Protected species are those detailed within the Wildlife and Countryside Act 1981 (as amended) and species specific legislation e.g. the Protection of Badgers Act 1992.</p> <p>The presence of a protected species is a material consideration in the determination of planning applications. When assessing any development proposal which if carried out would be likely to result</p>

Policy

Details

in harm to a protected species or its habitat, the Council will be guided by advice received from Natural Resources Wales.

There will always be a presumption against development which is likely to harm a protected site or species. However, there may also be instances when the importance of a development proposal will outweigh the conservation value, either temporarily or permanently to a SSSI / protected species and in such instances, the objective will always be to ensure that the nature conservation value of the site or protected species is preserved and where possible enhanced.

Where development is permitted, appropriate conditions or agreed planning obligations will be used to secure adequate compensation or mitigation measures

Policy MG21 – Sites of Importance for Nature Conservation, Regionally Important Geological and Geomorphological Sites and Priority Habitats and Species

Development proposals likely to have an adverse impact on sites of importance for nature conservation or priority habitats and species will only be permitted where it can be demonstrated that:

1. The need for the development clearly outweighs the nature conservation value of the site;
2. Adverse impacts on nature conservation and geological features can be avoided;
3. Appropriate and proportionate mitigation and compensation measures can be provided; and
4. The development conserves and where possible enhances biodiversity interests.

Sites of Importance for Nature Conservation (SINC) are identified to protect areas of high wildlife value at a local level. Regionally Important Geological and Geomorphological Sites are locally designated sites of local, national and regional importance for geodiversity (geology and geomorphology).

Priority Habitats and Species for Conservation are identified in the Environment (Wales) Act 2016 Section 7. Species or habitats are important wildlife features, are rare or declining and are not protected by primary legislation.

Development which is likely to have an adverse impact on SINC, RIGS or Priority Habitats and Species will be required to demonstrate that every effort has been made to avoid and mitigate any adverse impacts and that the need for the development outweighs the nature conservation or geological value. Where on site mitigation is not possible or sufficient to prevent any adverse impact then off-site compensation will be required. Off-site compensation will be secured through planning conditions or Section 106 agreements as appropriate.

The Council will produce Supplementary Planning Guidance on 'Biodiversity and Development' to support these policies and provide advice for developers on the Council's approach to biodiversity issues.

Appendix D : Photographs

	
<p>Photograph 1: Amenity grassland with currant bushes and play area (Figure 1: TN 3 and 13).</p>	<p>Photograph 2: Species-poor hedgerow.</p>
	
<p>Photograph 3: Courtyard with ornamental planting (Figure 1: TN 5).</p>	<p>Photograph 4: Species poor hedgerow along southern boundary.</p>
	
<p>Photograph 5: Bare ground with membrane and wood chippings.</p>	<p>Photograph 6: Ornamental shrubs adjacent to Building 2.</p>



Photograph 7: Poor semi-improved grassland in Forest School nature area.



Photograph 8: Pond in Forest School nature area.



Photograph 9: Grass mound in Forest School nature area.



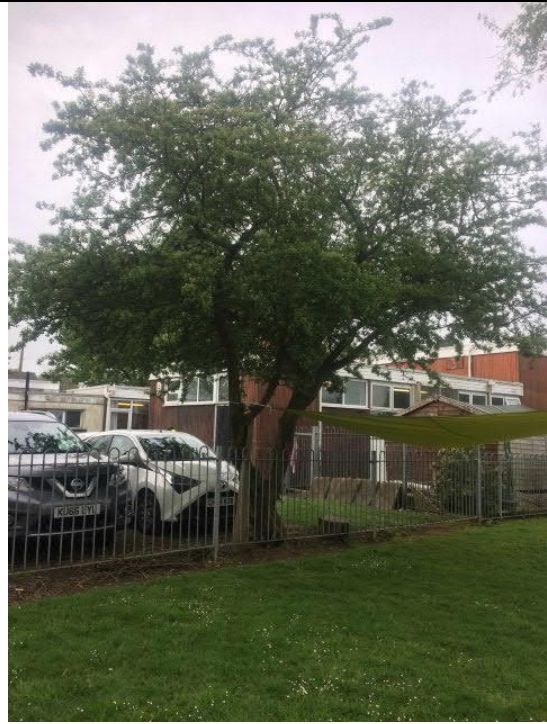
Photograph 10: Mixed plantation woodland in Forest School nature area.



Photograph 11: Public Right of Way and hedgerow with trees along eastern boundary.



Photograph 12: Hedgerow with trees along western boundary.



Photograph 13: Tree 1.



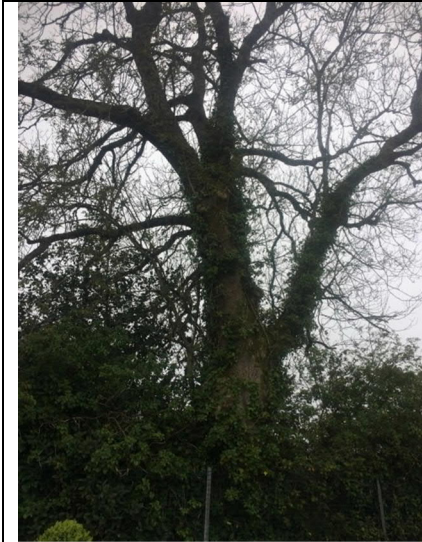
Photograph 14: Tree 2.



Photograph 15: Tree 3.



Photograph 16: Tree 4.



Photograph 17: Tree 5.



Photograph 18: Tree 6.



Photograph 19: Tree 7.



Photograph 20: Seating/stage area (Figure 1: TN 2)



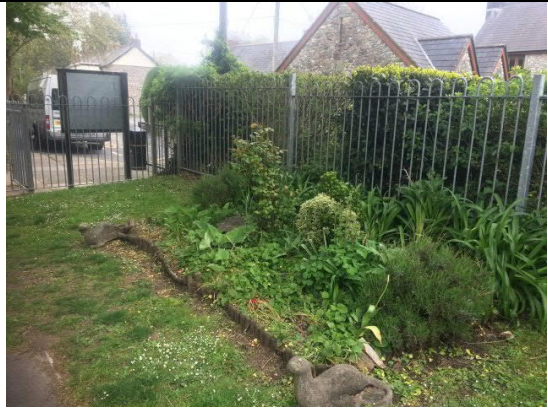
Photograph 21: Raised beds (Figure 1: TN 1).



Photograph 22: Row of trees along eastern boundary.



Photograph 23: Raised beds (Figure 1: TN 4).



Photograph 24: Ornamental planting (Figure 1: TN7).



Photograph 25: Bug house (Figure 1:TN6).



Photograph : Building 6.



Photograph : Building 2



Photograph : Building 4 ,East Face



Photograph : Building 4 - Bird Box – Used by active nest of blue tit



Photograph : Building 4 – Example of gaps under fascia boards between batons



Photograph : Building 4, 2 and 1



Photograph : Building 2 – House sparrow nesting in vent.



Photograph : Building 2 – gap between stonework and fascia board



Photograph : Building 4 – showing elevated central roof section



Photograph : Building 2



Photograph : Building 2 – gap between stonework and fascia board



Photograph : Building 1, south face



Photograph : Building 1, south face. School entrance.



Photograph : Building 1 – gap behind fascia board



Photograph : Building 1 – west face



Photograph : Building 4 – Example of gaps under fascia boards between batons



Photograph : Building 1 – north face. Example of gaps under fascia boards between batons



Photograph : Building 4




Photograph : Building 4 – School Hall



Photograph : Building 4 – Example of gaps under fascia boards between batons



Photograph : Building 4 – School Hall

	
<p>Photograph : Building 4 – Example of gaps under fascia boards between batons</p>	

Appendix E : Target Notes for Phase 1 Habitat Map

Target Note	Description
1	Raised beds
2	Seating area/stage area
3	Play area
4	Raised beds
5	Courtyard
6	Bughouse bird bath
7	Ornamental shrub bed
8	Ornamental shrub planters
9	Membrane with gravel, chippings and rubbish
10	Pond
11	Grass mound
12	Fire pit
13	Electricity substation
14	Currant bush x 3
15	Public Right of Way
16	Rabbit warren

Appendix F : Staff Pen Portraits - SQE

Lisbeth Nash BSc (Hons) MCIEEM

Principal Ecologist

Lisbeth is a Principal Ecologist over 12 years of field work and consultancy experience. She is responsible for the day to day management of the ecology team in the south west including resourcing, project delivery and technical input. Lisbeth has experience in surveying for protected species including planning, resourcing and managing landscape scale surveys including landscape scale surveys for wind farm, road and pipeline schemes. Lisbeth is practised in ecological desk studies, Phase 1 habitat surveys, ecological site supervision and internal inspections of buildings and structures. Lisbeth is experienced in assessing ecological impacts and preparing reports and assessment for successful planning submissions and has prepared scoping reports and chapters for Environmental Impact Assessment (EIA). She has experience of using remote sensing equipment and analysing bat sonograms using Analook Software. Lisbeth has completed successful European Protected Species Licence applications for bats and dormice and has undertaken supervision of works and post construction monitoring under licence. She has been involved in the mitigation and landscape design for a number of projects, developing ecological enhancements and protected species mitigation. Lisbeth has been a Consultant Ecologist on a number of BREEAM and CfSH Assessments and has been involved with design teams for landscape and lighting designs. Lisbeth is a bat survey licence holder in Wales and England and a great crested newt survey licence holder – England and Wales. She is a Full Member of the Chartered Institute of Ecology and Environmental Management.

Kevin Webb CEcol

Associate Director

Kevin is a Chartered Ecologist with twenty years' experience of undertaking professional ecological work in a range of public and private positions. He is currently responsible for the management of the AECOM ecology team in the south west and south Wales including overall responsibility for project delivery and technical input but works as required across the country on schemes which require technical input. Kevin has particular expertise in ornithology (including extensive international experience). He is familiar with the planning process and has been recently involved on a number of DCO projects. He still regularly undertakes fieldwork for a variety of ornithological schemes and has maintained his A- licence for bird ringing for the last twenty-five years. He holds barn owl survey and ringing licences for England and Wales and has recently held project specific NRW Schedule 1 survey licences for 9 species and SNH Schedule 1 survey licences and BTO ringing licences for a further 14 species. He is also very experienced with protected species survey and mitigation (design and implementation) and holds a number of development licences relating to (at present) great crested newt and badger. Kevin is very experienced in preparing Ecological Impact Assessments as part of the EIA process and has also reviewed more than one hundred Chapters for legal and policy compliance on behalf of planning authorities and developers. Kevin has appeared as an expert witness at public inquiry and has further experience of speaking and presenting evidence at a range of public consultation events for a variety of developments. Kevin has experience of preparing detailed habitat management plans, restoration plans and landscape and ecological management plans for a range of habitat types throughout the country. He is familiar with the management techniques required for implementing such plans and has more than five years practical experience of preparing and implementing management plans for SSSI calcareous grassland, dune slacks and lowland acid grassland. Kevin retains a broad understanding of the principles of habitat creation/restoration and regularly co-ordinates team of experts to ensure positive results. He has extensive experience of giving technical evidence at a range of public forums including planning and Council meetings.

Lucy Foster BSc (Hons) ACIEEM

Ecologist

Lucy is an Ecologist with seven years of consultancy experience. Lucy holds a First Class Honours Degree in Ecology from Cardiff University. Lucy is experienced in undertaking Phase I Habitat Surveys, bat surveys (manual and automated static surveys), bat roost assessments, protected species surveys including otter, water vole, badger, pine marten, reptile, red squirrel and Scottish wildcat, Habitat Suitability Index (HSI) assessments for great crested newts, and ornithology surveys (including vantage point surveys and raptor and wader walkover surveys). Lucy is competent in the use of Analook to analyse bat calls, ArcGIS to map data from field work, use of handheld GIS devices (Trimbles) to record observation in the field, and Excel to manage large databases. She has experience producing a wide range of reports for a range of clients including Phase I Habitat Reports, Habitat Management Plans, ornithology chapters for EIA and Phase II survey reports for breeding birds, badgers, otters, water vole, reptiles and bats.

Appendix G : 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

3.1. Management Protocol

3.1.1. Records

3.1.2. Biodiversity Action Plan

3.1.3. Habitat management

3.1.4. Species management

3.2. Monitoring

4. Organisational Management

4.1. Partnerships

4.2. Access and Informal Recreation

4.3. Funding Resources and Mechanisms

5. Annual Work Programme

5.1. Year One Work Programme

6. References

